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THE ASSISTANT MEDICAL OFFICER:

**A FURTHER STUDY OF HIS TRAINING AND
DUTIES WITH RECOMMENDATIONS
ON IMPLEMENTING SIMILAR PROGRAMS**

by

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**MEDICAL COLLEGE OF VIRGINIA
RICHMOND, VIRGINIA
MAY, 1967**

INTRODUCTION

This report completes the study of the medical auxiliary, the sub-professional known as the Assistant Medical Officer (AMO). It has been supported by A.I.D. contract number csd/312-#3433 which was begun in August 1963. The data in this report, to be meaningful, must be considered in conjunction with the first report to A.I.D., titled The Training and Duties of the Medical Auxiliary Known as the Assistant Medical Officer, March 1964. Many of the data in this report are related to findings previously obtained.

The data included in this final report were obtained by visits to the countries of Ceylon and Iran. In each country, the level of practitioner immediately below the university educated physician was studied. This middle level of health personnel is described in detail in the first report to A.I.D. The recommendations are based on findings included in the first report to A.I.D., a review of pertinent literature, interviews with individuals with experience in developing A.M.O. programs, international medical educators, government health officials, and proceedings from various conferences dealing with the subject. The list of individuals who have assisted in many ways is legion; it would be impossible to cite them all. I am, however, indebted to A.I.D. Its representatives have given me complete freedom in pursuing the data and including it, and the recommendations, in the reports.

For this last phase of the study, I am especially indebted to Dr. Mofidi in Tehran, Iran. He provided us with a wealth of information and made arrangements for visits to hospitals, clinics, and dispensaries.

He also arranged interviews with students, educators, health officers, and government officials.

Dr. Abhayaratne, Dean of the Ceylon Medical College was our host in Colombo, Ceylon. He, too, made it possible to pursue the study with thoroughness and made arrangements for us similar to those in Iran.

On the site visits, in addition to Dr. F. J. Spencer, Dr. Howard Holland, Dean of the School of Education, College of William and Mary, Williamsburg, Virginia, who is presently on leave to the American University, Bierut, Lebanon, and Dr. Robert Jessee, Director, Division of Local Health Services, Virginia State Department of Health, joined the "team." They proved to be invaluable colleagues and added immeasurably to the study. Their presence allowed us to reduce the time spent collecting data in each country.

Unlike the first phase of this study where teaching sessions were observed, this phase, because of its objectives, depended entirely on interviews. Interview schedules were developed and are included as Appendix D. Interviews were held with students, faculty, school administrators, health officials, government officials, AMO's, and practicing physicians. Because of the nature of many of the questions asked and the complete candor with which answers were given, it is not possible, nor appropriate, to attribute particular data with named individuals. As in the first phase of this study, because we were "university people," we were able to obtain information that would perhaps not have been available otherwise. Data were also obtained from printed sources included in the bibliography. In addition, approximately 20 different hospitals, clinics, dispensaries, aid stations,

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etc., were visited to observe the AMO or his equivalent in practice.

The typing of the manuscript was in the capable hands of Mrs. Carolyn Carneal. The thankless task of editing again was performed, with the usual competence, by Mrs. Karen Kevorkian.

E.F.R.

Richmond, Virginia
May 1967

CHAPTER I

BACKGROUND OF THE STUDY

The initial study on the role of the Assistant Medical Officer¹ (A.M.O.) in developing countries completed in 1964, showed that some additional data were needed to make clear the full evolution of the A.M.O. Information was required on countries that had utilized the A.M.O. or his equivalent, but had removed him from the medical services by phases. If possible, the following questions needed to be answered:

1. What training did A.M.O.'s receive initially?
2. What duties did they perform?
3. Why were they phased-out?
4. Who, if anyone, assumed their responsibilities after they were phased-out?
5. What training did their replacements receive?
6. What duties did the replacements perform?

The overall purpose of this follow-up study, however, was to complete the description of the status of the A.M.O. In an attempt to answer these questions, two countries were studied. Unlike the original study, these countries are this time identified. In the first study, it had been difficult to learn where A.M.O.'s were being trained. Contrarily, for this study it was easy to learn where the A.M.O.'s were supposedly being eliminated.

This slight shift/change in attitudes is important to note. When plans were first formulated to study the role of the A.M.O., it was found

¹Rosinski, Edwin F. and Spencer, F.J. The Assistant Medical Officer, University of N. Carolina Press, Chapel Hill, 1965.

that medical officials were widely reluctant to admit that A.M.O.'s were being trained. Many medical educators wanted the A.M.O. to have been a historical fact. By studying him, they feared too much attention would be directed toward a medical practitioner considered inadequate thereby putting the country's medical service in poor light. Since the study was published, interest in the A.M.O. has renewed. A.M.O.'s are now seen as a means of filling the public health gap in developing countries presently unable to supply themselves with adequate numbers of fully trained physicians. Therefore, it was easier to obtain the names of several countries that had dispensed with the training of A.M.O.'s.

India and Pakistan were the first two countries suggested. Both countries had a history of training licentiates, but their vast size precluded a study in depth. Vietnam, also was suggested, but was out of the question because of its political turmoil. Senegal, a possibility, had just been the subject of a Rockefeller Foundation study that included the medicin Africain.

Iran, which finally was included in the study, had been suggested by a number of officials from the World Health Organization, A.I.D., and Rockefeller Foundation. It was suggested because it had trained behdars (their A.M.O. equivalent) for a short time, and then had completely discontinued their program. Ten days were spent by the team in Iran.

Another country included was Ceylon. It had a long history of training apothecaries (their A.M.O. equivalent), who had played a major role in the development of that country's medical care program. Because of the size of the country all the necessary visits and interviews were

completed in seven days.

Thus, Ceylon and Iran were the two major countries visited. To supplement the information gathered from the Rockefeller report, part of the study team visited Senegal and discussed the medicin Africain with officials. In addition, the staff at the World Health Organization (W.H.O.) was consulted. (See appendix A) The W.H.O. visit gave perspective to the regional attitudes that had been encountered and provided a "global" picture of existing attitudes toward the training of A.M.O.'s.

Finally, part of the study team saw officials of England's technical assistance programs. (see Appendix A) England's vast experience with the development of A.M.O. training programs provided even greater insights into the problem of the A.M.O.'s role in medical service.

By conducting site visits, and receiving expert assistance from officials, answers were found to the questions investigated in this study.

CHAPTER II

THE APOTHECARY AND THE BEHDAR

Countries Visited - Ceylon

Ceylon, an island at the southern tip of India, is approximately 270 miles long and 140 miles wide, with a total area of 25,332 square miles. The mean population in 1959 was 9,625,000. It is a country with a low coastal area rising to hills in the interior. It was colonized by several groups but the British, who departed in 1948, were the last.

As in most former British colonies, the current pattern of medical services is rooted in that established by the British. But, since Ceylon became independent, various changes have occurred.

Medical education began in Ceylon in 1870 with the inauguration of an auxiliary program and a complete medical education program. The medical auxiliaries, comparable to the A.M.O. but called apothecaries, were trained in Ceylon Medical College which was the only medical school existing on the island. Now auxiliary medical personnel include nurses, midwives, pharmacists, and first aid dispensers.

In Ceylon, a separate group in charge of selection, training, and placing of auxiliary health officers was established. This was the Ceylon Medical College Council. At present the Director of Health Services is chairman of the Council. Other members include the professors of anatomy, physiology, medicine, surgery, and any other subjects taught to the apothecary students. This council is responsible for all policy decisions affecting the apothecaries and their training. As the members of the council are all faculty members of the

School of Medicine, it is not surprising that training the apothecaries early took on the character of superficial medical training. There was little opportunity for a distinctive, practical program to develop that would equip auxiliary medical personnel to function any differently than fully-trained medical practitioners.

When the study team arrived in Ceylon, it found, much to its surprise and concern, that the apothecary training program was still in operation. Officials claimed that the class of 1965 would be the last one. But it must be noted, that apothecary classes have theoretically been eliminated at the end of each of the last ten years, and there was no certainty from responsible officials that the auxiliary program would be discontinued in 1965. The decision is apparently to be made entirely by the Ceylon Medical College Council. Their decision will doubtless be dependent upon such factors as the number of physicians available and the ability of the Medical College Council and the Director of Health Services, to place the physicians in rural situations.

Even though the apothecaries were still being trained in Ceylon, it was decided to remain there and continue the study. It would have been impossible to make arrangements to visit another country in so short a time. A personal and professional decision was made to remain in Ceylon for discussion with the dean revealed that important information could be obtained by studying a country that produced both physicians and an A.M.O. Of great importance was the opportunity to observe both fully-qualified physicians and apothecaries working in similar settings,

and to relate their actual duties to their training. It was also helpful to observe why a country that intended to out grow its use of an A.M.O.-type of personnel had not been able to do so. This information, it was felt, would add to rather than detract from, the study.

Countries Visited - Iran

Iran, a highly rural country located in the Middle East, is bounded by the U.S.S.R., Afghanistan, and Pakistan, and the Persian Gulf, the Gulf Oran, and the Caspian Sea. The estimated mean population for 1960 was 20,633,000 in about 628,000 square miles. The country has wide desert areas, mountain ranges, and a heavy wooded area around the Caspian Sea. Nomadic tribes are prevalent and often cause problems relating to public health. As an example, in the summer of 1965 the spread of a cholera epidemic was attributed to one of the nomadic tribes.

In 1939 Iran's Council of Ministers approved a resolution creating a new program for the training of physicians. Nine months after the approval by the Council, a dean of the school was appointed. His first recommendation was that students not be trained as physicians, but as medical auxiliaries at a level below the physician. This officer was called a behdar. This proposal was accepted in 1940 by the Higher Council of Education and the first school was created in Bushire and eventually four schools were created. Ten years later the behdari program was no longer considered vital to medical health in Iran.

Two rules that proved significant in the success of the behdari program were established that guided these behdars. The first was that they would be secondary doctors; that is they were not first class or fully-trained physicians. The second ruled their practice definitely to rural areas.

Behdars were given four years of medical study and then sent to the remote areas where inhabitants were badly in need of medical care. No behdar was to work in a town larger than 10,000 population. Thus to improve the health of people in rural areas.

Behdars were not trained at the University of Tehran, which houses the medical school, nor at any time at the National University, a private university, located in Tehran.

The difficulty of transportation and communication in the 1940's had led to the establishment of schools for behdars; they were established to provide a broad geographic coverage. The recent improvement in transportation and communication has been a factor in the elimination. Currently moving clinics and facilities for transporting difficult cases from rural areas to a central hospital have come to exist. Consequently, it was decided that the behdars were not needed to handle all medical needs of a given remote area.

In 1950, when the program was discontinued, medical authorities were confident that the number of fully qualified physicians in Iran was sufficient to meet the health needs of the country. In addition, a definite, well-planned program to upgrade the behdars to physician-status was developed. It was anticipated that many of the former

behdars would return to practice medicine in the rural areas from which they came. More recently, another step has been taken to provide medical service exclusively to rural areas. A Health Corps has been organized and it is described later in more detail.

The behdar then remains as an example of an A.M.O. that no longer functions in its country's medical service. Increased communication and transportation to the rural areas that were the province of this health officer, and increased salaries to fully-trained physicians rendering them willing to serve in these relatively remote areas, were factors making the behdar less vital to the health of his country. Although Iran's behdars and Ceylon's apothecaries were providing similar medical services to their countries, it was the number of fully-trained physicians that make feasible the functioning of these auxiliary medical officers. It is also significant that this type of A.M.O. in Ceylon has remained an officer with second-rate medical training, while in Iran an attempt is being made to upgrade the training of the behdar. Other differences are further noted.

Educational Requirements - Apothecary

The Ceylon Medical College Council makes a yearly announcement for recruitment of candidates for courses for apothecaries, estate apothecaries and pharmacists. An entrance examination made by the school is given. It is designed to be answered briefly, testing the entire range of general education. About one-half the examination is devoted to scientific subjects, mainly biology.

The selection of each class is made by the Medical College Council (particularly the Registrar). Each class is made up of 96 students. The number of students is partially determined by available facilities, but mostly by need of the country. Characteristically, many more applicants answer the announcement than can be placed. In 1964, for example, 96 students were selected from 2,600 applicants. All of the students are "scholarship" students in that there is no tuition fee nor cost for training. In return, the graduated apothecary works wherever he is sent by the Director of Health Services.

No standardized tests, other than the school's own achievement test, nor standard rating forms, are used in the selection of candidates. Only Ceylonese are admitted. A candidate must have an original copy of a certificate of good character from a responsible person, preferably the head of the school last attended, or the head of an institution in which the candidate is employed. He must be from 17 to 30 years of age. He is apprised of the coming examinations by an advertisement in the Ceylon government Gazette. Appendix B is a copy of such an announcement.

A student must have ten to twelve years of preparatory training before he qualifies for either apothecary or medical school. Most apothecary applicants who have a twelfth grade preparatory education are students who were rejected by the medical schools. Students may apply to medical school three times. If they are rejected the third time, they may apply for apothecary training. There are both public and private schools on the Island of Ceylon. Experience has shown that students coming from the private schools ordinarily are better

prepared than those from public schools. Students accepted for apothecary training must have the ordinary college preparatory courses of study as a background. This includes English, mathematics, and chemistry.

Women are permitted in the program but few apply, while medicine, on the other hand, attracts a great number of females. In 1965 approximately forty per cent of the medical students were women while less than five per cent were enrolled as apothecaries.

Educational Requirements - Behdar

Students were accepted into behdari training after twelve years of preparatory education. There appeared to be a kind of quota for each district in Iran. For example, a behdar, presently studying medicine at the University of Tehran, said he became a behdar because in the year of his application 30 persons were being accepted for medical training and 30 for behdar training from his home districts. As his qualifications did not permit him to attend medical school, he selected behdar school with the intention of thereafter attending medical school.

Students were selected on a competitive basis. They had to come from approved Iranian schools and sit for a competitive examination used to screen applicants to Iranian universities. A high school diploma was required.

Admission requirements were the same as for medicine. However, as so many students endeavored to attend medical school, those refused by medical schools selected behdar schools simply because of the proximity to their homes. Another inducement was the prospect of obtaining immediate employment and a guarantee of a stipend as a behdar. In 1946,

at the behdar school in Isfahan, 60 to 70 students were admitted each year. This limitation on enrollment was determined only by facilities available.

Preparatory subjects in high school were those normally required of college preparatory students, with emphasis on science. There was no problem of grades as an index of admission because places always were available. The Ministry of Public Health evaluated the credentials of all applicants. He ordinarily chose top students for medical school and the next group for behdar school.

Courses of Study - Apothecary

While both the apothecary and behdar performed similar duties, a distinct difference is noted in the courses of study of the apothecary and the behdar. This may be accounted for by the need of the behdar to have a high school diploma for admission, while the apothecary can be admitted with only ten years preparatory education. Then, too, the apothecary program is considered a terminal program, consequently, it is not intended as a basis for additional education. Authorities initiating the behdar program had anticipated, on the other hand, the possibility of upgrading the behdar to the status of a qualified medical doctor. Such divergent views on the possibility of upgrading also account for the marked differences in the courses of study.

The apothecaries are being trained in a medical school environment. Their classrooms are in the same building that house medical school classrooms. The same faculty teaches both groups.

The apothecary course is of two years duration. It is under the administration of the Dean of the School of Medicine, but his authority does not appear to extend beyond the first year. An examination is held at the end of each year to determine qualification.

During the first year, pharmacy, elementary anatomy, and physiology are emphasized. In pharmacy approximately 150 hours are devoted to lectures and approximately 300 hours to practicals. Practical include exercises in dispensing of prescriptions, preparation of basic prescriptions, and recognition of crude drugs.

The anatomy and physiology course is a combined course with the objective of developing fundamental knowledge of osteology, general anatomy, and physiology.

The second year consists of course work in medicine, hygiene and public health, surgery, materia medica, antenatal and post-natal care, child welfare, and dispensing.

In medicine approximately 60 hours are given to formal lectures on etiology, symptoms, diagnosis, and treatment of various diseases. Bedside teaching consists of two sessions each week during the entire school year.

Surgery is almost identical to the course of study in medicine; both lectures and bedside teaching making up the bulk of the teaching program.

Materia medica covers material ranging from a general introduction to pharmacology to the effect of drugs on various body systems. In public health practical demonstrations on hygiene are held, and six classes in giving vaccinations are held. Practical classes in dispensing

are held once a week through the year. Students must, during their free time, dispense at local hospitals for additional experience.

The entire two-year curriculum is included as Appendix C.

The entire first year is spent in didactic training. There is little laboratory work with the principal exception of two classes per week in pharmacy. There is no dissection and no microscopic work. Students are shown parasites, but they do not do clinical pathology. This is because, "they are not expected to do analysis work in the field."

The teaching method is largely by lecture. A few seminars are held because of the large number of students in the classes. It was noted, however, that "students are not as ready as they are in the West" to participate on an interactive basis.

Examinations are of three types - written essay, oral, and practical. The practical examination is only given in pharmacy during the first year. The oral is rated on a 100-point basis, as are the written examinations. Even during the second year, examinations in medicine and surgery are both written and oral.

From school authorities' claims, it is anticipated that efforts will be made to introduce objective-type examinations. This move has been motivated by a government decision to make Sinhalese the official language. Because of difficulties in the Sinhalese language, objective examinations will be easier for students to interpret than either essay or oral.

Prior to 1964, the grading system of students put passing at 60%, with 60% to 70% designated third class work, and 70% and above

classified as first class work. As the students were not doing well enough on their examinations, in 1964 a revision was thought necessary. The Ceylonese solution to this problem was an upward revision of the grading system. Passing became 50%, 50% to 65% became second class, and 65% and over became first class. Anyone who has sat in on promotion meetings of American medical students will recognize this phenomenon as not indigenous to Ceylon.

The physical plant used by the apothecaries includes the same facilities established for full medical training. Apothecaries have been given a separate Common Room and a decidedly inferior library. They have not been permitted hostel housing, although about ten per cent of the regular medical students have been housed in university hostels.

There apparently is a clear separation between regular medical students and apothecaries. As one school authority noted, there was "little common mixing." The apothecaries have their own society, separate classes, and their own student newspaper which the faculty judges as journalistically inferior to the organ put out by the regular medical students.

Living expenses average about 100 rupees per month. About 25% of the class of apothecaries receives 20 rupees per month from private sources. This contrasts with the considerable support from foundations, private health agencies, and general scholarships given to practically all medical students.

Changes in the curriculum are instituted through the Ceylon Medical

Council, which is extremely powerful in determining the content of the apothecary curriculum. Up to the present all instruction has been in English. Although the faculty protests the expected change to Singhalese in 1968, at the direction of the Council they are busily revising textbooks preparatory to the change.

Apothecary students get no degree, but obtain a certificate at the end of two years of successful study.

In interviews with several government officials hope was expressed of extending the present program to three years with an opportunity for upgrading to full-physician status. This is a point of view in contradistinction to the one held by some medical educators that calls for completely discontinuing the apothecary program. This matter at the time of the visit was not fully unsolved.

A similar auxiliary medical officer is trained with the apothecary. The large tea plantations on the Island of Ceylon have a large work force needing medical care. Therefore, an estate apothecary is also trained. Candidates for this course are selected by the Planters Association Estate Health Scheme. Students selected are also given a two-year program. Those who successfully complete this program may be appointed by the Planters' Association to any one of the numerous estates on the Island. Also, graduates of this program are eligible to register themselves as pharmacists. The estate apothecaries receive a higher salary than do regular apothecaries.

Estates also have estate dispensers who, after a three-year apprenticeship, can sit for examinations that upgrade them to estate apothecaries.

As stated earlier, the program for training behdars followed a pattern dissimilar to that of the apothecary. Also, Ceylon has only one school to train their auxiliary officer, while Iran had developed schools in Bushire, Shiraz, Isfahan and Meshad.

The standard approach of announcing vacancies for training are made. Since the original intent was to train full-fledged physicians it was anticipated that a regular college matriculation requirement could be established. Originally, students were admitted to a training school for behdars with a ninth-grade education. Applicants for admission were informed there were no tuition charges, but upon completion of the training program, service in rural areas was required to repay the cost of their education.

In 1946, when two additional schools were created, a twelfth-grade education was required for admission. This was all that was required for admission to an M.D. program. The candidates for behdar training, despite the twelfth-grade requirement, were educationally inferior to the students applying for medical school. Therefore, applicants for behdar training were either (1) individuals who did not have the academic background to be admitted to medical school, (2) could not afford the cost of a higher education, or (3) wanted to begin earning a living with a minimum of education.

Applicants were screened by their grades, recommendations from secondary school teachers, and entrance examinations. No elaborate rating scales or psychological tests were administered. Quotas for districts were established for medical and behdar training, and these

quotas determined the number of students admitted to training.

Courses of Study - Behdar

The original curriculum was a four-year course of study. In the first year, anatomy, physics, chemistry, botany, zoology, embryology, and physiology were offered. Histology, pathology, microbiology, and parasitology were given in addition to the clinical subjects of medicine and surgery during the second year. Students also were given an opportunity to study a foreign language. Medicine, surgery, and parasitology continued during the third, with the addition of pharmacology. In the fourth year students took clerkships in the specialities of pediatrics, obstetrics, gynecology, hygiene, skin diseases, tropical and infectious diseases, therapeutics, and infectious diseases, in addition to continued work in medicine and surgery. In general the four-year behdar curriculum looked like the typical U.S.A. medical school curriculum, the first two years devoted to the basic sciences and the last two years to the clinical sciences.

In terms of courses taken there was no difference between the behdar and Iranian M.D. course of study. However, the behdar program was of four-years duration while the Iranian M.D. program was of seven-years. The M.D. received an education in depth while the behdar received one in breadth. The behdar program was referred to as "compressed," on a "lower level," or, "not as deep as that of a medical doctor."

The resemblance between the behdar and M.D. program was deliberate. When approval was given for the training of behdars, it was officially decided that, after eight years of practice, all behdars would have

the opportunity to seek admission to a medical school at the fifth-year level. Consequently the curriculum was so structured that a behdar entering a medical school at the fifth year would continue his past education; the behdar and M.D. programs were looked on as sequential. This concept was significant in the upgrading of the behdar after he ceased to be valuable as an auxiliary officer. This subject is considered later in this report.

Nothing unusual in the teaching or evaluating of students existed in the program. Lectures, laboratories, and bedside teaching were the chief modes of teaching. As was typical in training of A.M.O.'s in other countries, students were given clinical responsibility, but in the first two years of this greater emphasis was placed on didactic teaching. That behdars ultimately could be admitted to a medical school, and therefore should be well-grounded in the basic sciences, provides reasoning for this approach. Thus, the first two years emphasized didactic teaching, and the last two years, clinical or on-the-job training.

The behdar program began with one school. By the time the program was eliminated, there were four schools spread throughout Iran. Again, with an eye toward behdars becoming a historical fact, as the schools were built they were planned as future medical schools. In 1950 all the former behdar schools became full-fledged medical schools. The faculty was retained and expanded. At least one school, at Shiraz, developed into a qualified medical school deeply involved in curriculum development. It expanded its program to include the teaching of agriculture, literature, sciences, and the arts. It probably will become an independent university.

No inservice nor refresher courses have been given since the program was started. It originally was proposed that once every five years the behdars would be called to a central point for additional training. This proposal has never become a reality because most of the behdars become physicians.

Differences Between the Apothecary and Behdar

These educational programs provide an opportunity for contrasting two efforts to provide medical services that meet the immediate needs of a society. They provide insights into (1) how programs for the training of auxiliaries can be established, (2) how they operate, and (3) how they can be eliminated or phased out of use. Before this comparison can be made, a brief look at how the behdar program was upgraded is essential.

During their training, behdars were paid and education was free, although they had an eight-year commitment to the Ministry of Health upon completion of the training program. If, before finishing eight years of service, a behdar returned to medical school to complete his medical education, he was obligated to complete the eight years of service after becoming an M.D. For instance, if he decided to return to medical school after four years of practice, on completing medical school he still would have four years of service to perform for the Ministry of Health. If he decided not to satisfy the commitment to the Ministry of Health, he would have to re-pay the government three times the owed sum.

There were no entrance examinations to matriculate in the medical school. Three general criteria were observed for enrollment:

(1) previous grades in behdar school, (2) the quality of medical service rendered in rural areas, and (3) the number of years of service as a behdar. Examinations were given, however, to test the behdars' knowledge of bacteriology and parasitology to determine if refresher courses were needed in these subjects to continue the medical school work.

Up to 1963 behdars were accepted for medical education at the University of Teheran. Since then, all are expected to obtain their M.D. degrees at the institutions which formerly trained them as behdars. The University of Teheran has no program geared for former behdars.

The academic performance of behdars in medical school varies. As the behdar schools evolved into medical schools, the quality of education improved. Faculties claim that recent behdar graduates do better in the basic sciences than do the older graduates, but the older behdar graduates are better in clinical subjects. Generally, the behdars who enter medical school have a commendable academic record.

From the beginning of the program it had been planned to eliminate this medical auxiliary as quickly as could be accomplished without damaging rural medical care. Yet similar programs in other countries were supposed to be temporary, but continued indefinitely. In Iran they were able to abide by the original conception of the program as a stopgap enterprise.

The conclusion of the behdari program was actively pursued. The supply of M.D.'s increased and undeniably there was a feeling among officials that behdars were subquality doctors. Almost twelve years after the conclusion of the program, a highly placed official

behdars would return to practice medicine in the rural areas from which they came. More recently, another step has been taken to provide medical service exclusively to rural areas. A Health Corps has been organized and it is described later in more detail.

The behdar then remains as an example of an A.M.O. that no longer functions in its country's medical service. Increased communication and transportation to the rural areas that were the province of this health officer, and increased salaries to fully-trained physicians rendering them willing to serve in these relatively remote areas, were factors making the behdar less vital to the health of his country. Although Iran's behdars and Ceylon's apothecaries were providing similar medical services to their countries, it was the number of fully-trained physicians that make feasible the functioning of these auxiliary medical officers. It is also significant that this type of A.M.O. in Ceylon has remained an officer with second-rate medical training, while in Iran an attempt is being made to upgrade the training of the behdar. Other differences are further noted.

Educational Requirements - Apothecary

The Ceylon Medical College Council makes a yearly announcement for recruitment of candidates for courses for apothecaries, estate apothecaries and pharmacists. An entrance examination made by the school is given. It is designed to be answered briefly, testing the entire range of general education. About one-half the examination is devoted to scientific subjects, mainly biology.

The selection of each class is made by the Medical College Council (particularly the Registrar). Each class is made up of 96 students. The number of students is partially determined by available facilities, but mostly by need of the country. Characteristically, many more applicants answer the announcement than can be placed. In 1964, for example, 96 students were selected from 2,600 applicants. All of the students are "scholarship" students in that there is no tuition fee nor cost for training. In return, the graduated apothecary works wherever he is sent by the Director of Health Services.

No standardized tests, other than the school's own achievement test, nor standard rating forms, are used in the selection of candidates. Only Ceylonese are admitted. A candidate must have an original copy of a certificate of good character from a responsible person, preferably the head of the school last attended, or the head of an institution in which the candidate is employed. He must be from 17 to 30 years of age. He is apprised of the coming examinations by an advertisement in the Ceylon government Gazette. Appendix B is a copy of such an announcement.

A student must have ten to twelve years of preparatory training before he qualifies for either apothecary or medical school. Most apothecary applicants who have a twelfth grade preparatory education are students who were rejected by the medical schools. Students may apply to medical school three times. If they are rejected the third time, they may apply for apothecary training. There are both public and private schools on the Island of Ceylon. Experience has shown that students coming from the private schools ordinarily are better

prepared than those from public schools. Students accepted for apothecary training must have the ordinary college preparatory courses of study as a background. This includes English, mathematics, and chemistry.

Women are permitted in the program but few apply, while medicine, on the other hand, attracts a great number of females. In 1965 approximately forty per cent of the medical students were women while less than five per cent were enrolled as apothecaries.

Educational Requirements - Behdar

Students were accepted into behdari training after twelve years of preparatory education. There appeared to be a kind of quota for each district in Iran. For example, a behdar, presently studying medicine at the University of Tehran, said he became a behdar because in the year of his application 30 persons were being accepted for medical training and 30 for behdar training from his home districts. As his qualifications did not permit him to attend medical school, he selected behdar school with the intention of thereafter attending medical school.

Students were selected on a competitive basis. They had to come from approved Iranian schools and sit for a competitive examination used to screen applicants to Iranian universities. A high school diploma was required.

Admission requirements were the same as for medicine. However, as so many students endeavored to attend medical school, those refused by medical schools selected behdar schools simply because of the proximity to their homes. Another inducement was the prospect of obtaining immediate employment and a guarantee of a stipend as a behdar. In 1946,

at the behdar school in Isfahan, 60 to 70 students were admitted each year. This limitation on enrollment was determined only by facilities available.

Preparatory subjects in high school were those normally required of college preparatory students, with emphasis on science. There was no problem of grades as an index of admission because places always were available. The Ministry of Public Health evaluated the credentials of all applicants. He ordinarily chose top students for medical school and the next group for behdar school.

Courses of Study - Apothecary

While both the apothecary and behdar performed similar duties, a distinct difference is noted in the courses of study of the apothecary and the behdar. This may be accounted for by the need of the behdar to have a high school diploma for admission, while the apothecary can be admitted with only ten years preparatory education. Then, too, the apothecary program is considered a terminal program, consequently, it is not intended as a basis for additional education. Authorities initiating the behdar program had anticipated, on the other hand, the possibility of upgrading the behdar to the status of a qualified medical doctor. Such divergent views on the possibility of upgrading also account for the marked differences in the courses of study.

The apothecaries are being trained in a medical school environment. Their classrooms are in the same building that house medical school classrooms. The same faculty teaches both groups.

The apothecary course is of two years duration. It is under the administration of the Dean of the School of Medicine, but his authority does not appear to extend beyond the first year. An examination is held at the end of each year to determine qualification.

During the first year, pharmacy, elementary anatomy, and physiology are emphasized. In pharmacy approximately 150 hours are devoted to lectures and approximately 300 hours to practicals. Practical include exercises in dispensing of prescriptions, preparation of basic prescriptions, and recognition of crude drugs.

The anatomy and physiology course is a combined course with the objective of developing fundamental knowledge of osteology, general anatomy, and physiology.

The second year consists of course work in medicine, hygiene and public health, surgery, materia medica, antenatal and post-natal care, child welfare, and dispensing.

In medicine approximately 60 hours are given to formal lectures on etiology, symptoms, diagnosis, and treatment of various diseases. Bedside teaching consists of two sessions each week during the entire school year.

Surgery is almost identical to the course of study in medicine; both lectures and bedside teaching making up the bulk of the teaching program.

Materia medica covers material ranging from a general introduction to pharmacology to the effect of drugs on various body systems. In public health practical demonstrations on hygiene are held, and six classes in giving vaccinations are held. Practical classes in dispensing

are held once a week through the year. Students must, during their free time, dispense at local hospitals for additional experience.

The entire two-year curriculum is included as Appendix C.

The entire first year is spent in didactic training. There is little laboratory work with the principal exception of two classes per week in pharmacy. There is no dissection and no microscopic work. Students are shown parasites, but they do not do clinical pathology. This is because, "they are not expected to do analysis work in the field."

The teaching method is largely by lecture. A few seminars are held because of the large number of students in the classes. It was noted, however, that "students are not as ready as they are in the West" to participate on an interactive basis.

Examinations are of three types - written essay, oral, and practical. The practical examination is only given in pharmacy during the first year. The oral is rated on a 100-point basis, as are the written examinations. Even during the second year, examinations in medicine and surgery are both written and oral.

From school authorities' claims, it is anticipated that efforts will be made to introduce objective-type examinations. This move has been motivated by a government decision to make Sinhalese the official language. Because of difficulties in the Sinhalese language, objective examinations will be easier for students to interpret than either essay or oral.

Prior to 1964, the grading system of students put passing at 60%, with 60% to 70% designated third class work, and 70% and above

classified as first class work. As the students were not doing well enough on their examinations, in 1964 a revision was thought necessary. The Ceylonese solution to this problem was an upward revision of the grading system. Passing became 50%, 50% to 65% became second class, and 65% and over became first class. Anyone who has sat in on promotion meetings of American medical students will recognize this phenomenon as not indigenous to Ceylon.

The physical plant used by the apothecaries includes the same facilities established for full medical training. Apothecaries have been given a separate Common Room and a decidedly inferior library. They have not been permitted hostel housing, although about ten per cent of the regular medical students have been housed in university hostels.

There apparently is a clear separation between regular medical students and apothecaries. As one school authority noted, there was "little common mixing." The apothecaries have their own society, separate classes, and their own student newspaper which the faculty judges as journalistically inferior to the organ put out by the regular medical students.

Living expenses average about 100 rupees per month. About 25% of the class of apothecaries receives 20 rupees per month from private sources. This contrasts with the considerable support from foundations, private health agencies, and general scholarships given to practically all medical students.

Changes in the curriculum are instituted through the Ceylon Medical

Council, which is extremely powerful in determining the content of the apothecary curriculum. Up to the present all instruction has been in English. Although the faculty protests the expected change to Singhalese in 1968, at the direction of the Council they are busily revising textbooks preparatory to the change.

Apothecary students get no degree, but obtain a certificate at the end of two years of successful study.

In interviews with several government officials hope was expressed of extending the present program to three years with an opportunity for upgrading to full-physician status. This is a point of view in contradistinction to the one held by some medical educators that calls for completely discontinuing the apothecary program. This matter at the time of the visit was not fully unsolved.

A similar auxiliary medical officer is trained with the apothecary. The large tea plantations on the Island of Ceylon have a large work force needing medical care. Therefore, an estate apothecary is also trained. Candidates for this course are selected by the Planters Association Estate Health Scheme. Students selected are also given a two-year program. Those who successfully complete this program may be appointed by the Planters' Association to any one of the numerous estates on the Island. Also, graduates of this program are eligible to register themselves as pharmacists. The estate apothecaries receive a higher salary than do regular apothecaries.

Estates also have estate dispensers who, after a three-year apprenticeship, can sit for examinations that upgrade them to estate apothecaries.

As stated earlier, the program for training behdars followed a pattern dissimilar to that of the apothecary. Also, Ceylon has only one school to train their auxiliary officer, while Iran had developed schools in Bushire, Shiraz, Isfahan and Meshad.

The standard approach of announcing vacancies for training are made. Since the original intent was to train full-fledged physicians it was anticipated that a regular college matriculation requirement could be established. Originally, students were admitted to a training school for behdars with a ninth-grade education. Applicants for admission were informed there were no tuition charges, but upon completion of the training program, service in rural areas was required to repay the cost of their education.

In 1946, when two additional schools were created, a twelfth-grade education was required for admission. This was all that was required for admission to an M.D. program. The candidates for behdar training, despite the twelfth-grade requirement, were educationally inferior to the students applying for medical school. Therefore, applicants for behdar training were either (1) individuals who did not have the academic background to be admitted to medical school, (2) could not afford the cost of a higher education, or (3) wanted to begin earning a living with a minimum of education.

Applicants were screened by their grades, recommendations from secondary school teachers, and entrance examinations. No elaborate rating scales or psychological tests were administered. Quotas for districts were established for medical and behdar training, and these

quotas determined the number of students admitted to training.

Courses of Study - Behdar

The original curriculum was a four-year course of study. In the first year, anatomy, physics, chemistry, botany, zoology, embryology, and physiology were offered. Histology, pathology, microbiology, and parasitology were given in addition to the clinical subjects of medicine and surgery during the second year. Students also were given an opportunity to study a foreign language. Medicine, surgery, and parasitology continued during the third, with the addition of pharmacology. In the fourth year students took clerkships in the specialities of pediatrics, obstetrics, gynecology, hygiene, skin diseases, tropical and infectious diseases, therapeutics, and infectious diseases, in addition to continued work in medicine and surgery. In general the four-year behdar curriculum looked like the typical U.S.A. medical school curriculum, the first two years devoted to the basic sciences and the last two years to the clinical sciences.

In terms of courses taken there was no difference between the behdar and Iranian M.D. course of study. However, the behdar program was of four-years duration while the Iranian M.D. program was of seven-years. The M.D. received an education in depth while the behdar received one in breadth. The behdar program was referred to as "compressed," on a "lower level," or, "not as deep as that of a medical doctor."

The resemblance between the behdar and M.D. program was deliberate. When approval was given for the training of behdars, it was officially decided that, after eight years of practice, all behdars would have

the opportunity to seek admission to a medical school at the fifth-year level. Consequently the curriculum was so structured that a behdar entering a medical school at the fifth year would continue his past education; the behdar and M.D. programs were looked on as sequential. This concept was significant in the upgrading of the behdar after he ceased to be valuable as an auxiliary officer. This subject is considered later in this report.

Nothing unusual in the teaching or evaluating of students existed in the program. Lectures, laboratories, and bedside teaching were the chief modes of teaching. As was typical in training of A.M.O.'s in other countries, students were given clinical responsibility, but in the first two years of this greater emphasis was placed on didactic teaching. That behdars ultimately could be admitted to a medical school, and therefore should be well-grounded in the basic sciences, provides reasoning for this approach. Thus, the first two years emphasized didactic teaching, and the last two years, clinical or on-the-job training.

The behdar program began with one school. By the time the program was eliminated, there were four schools spread throughout Iran. Again, with an eye toward behdars becoming a historical fact, as the schools were built they were planned as future medical schools. In 1950 all the former behdar schools became full-fledged medical schools. The faculty was retained and expanded. At least one school, at Shiraz, developed into a qualified medical school deeply involved in curriculum development. It expanded its program to include the teaching of agriculture, literature, sciences, and the arts. It probably will become an independent university.

No inservice nor refresher courses have been given since the program was started. It originally was proposed that once every five years the behdars would be called to a central point for additional training. This proposal has never become a reality because most of the behdars become physicians.

Differences Between the Apothecary and Behdar

These educational programs provide an opportunity for contrasting two efforts to provide medical services that meet the immediate needs of a society. They provide insights into (1) how programs for the training of auxiliaries can be established, (2) how they operate, and (3) how they can be eliminated or phased out of use. Before this comparison can be made, a brief look at how the behdar program was upgraded is essential.

During their training, behdars were paid and education was free, although they had an eight-year commitment to the Ministry of Health upon completion of the training program. If, before finishing eight years of service, a behdar returned to medical school to complete his medical education, he was obligated to complete the eight years of service after becoming an M.D. For instance, if he decided to return to medical school after four years of practice, on completing medical school he still would have four years of service to perform for the Ministry of Health. If he decided not to satisfy the commitment to the Ministry of Health, he would have to re-pay the government three times the owed sum.

There were no entrance examinations to matriculate in the medical school. Three general criteria were observed for enrollment:

(1) previous grades in behdar school, (2) the quality of medical service rendered in rural areas, and (3) the number of years of service as a behdar. Examinations were given, however, to test the behdars' knowledge of bacteriology and parasitology to determine if refresher courses were needed in these subjects to continue the medical school work.

Up to 1963 behdars were accepted for medical education at the University of Teheran. Since then, all are expected to obtain their M.D. degrees at the institutions which formerly trained them as behdars. The University of Teheran has no program geared for former behdars.

The academic performance of behdars in medical school varies. As the behdar schools evolved into medical schools, the quality of education improved. Faculties claim that recent behdar graduates do better in the basic sciences than do the older graduates, but the older behdar graduates are better in clinical subjects. Generally, the behdars who enter medical school have a commendable academic record.

From the beginning of the program it had been planned to eliminate this medical auxiliary as quickly as could be accomplished without damaging rural medical care. Yet similar programs in other countries were supposed to be temporary, but continued indefinitely. In Iran they were able to abide by the original conception of the program as a stopgap enterprise.

The conclusion of the behdari program was actively pursued. The supply of M.D.'s increased and undeniably there was a feeling among officials that behdars were subquality doctors. Almost twelve years after the conclusion of the program, a highly placed official

said, "we don't need persons of less quality."

Another reason for elimination of the program was the tendency of behdars to try to improve their status. Irrespective of their initial motives, once they had received behdar training and begun medical degrees, they would change their objective to specialty work. This made inevitable their move to large cities to practice their specialty, and led to the depletion of the rural medical staff.

The improvement of communication and transportation also contributed to the elimination of the program. Improved transportation hopefully permits the needs of rural people to be met adequately by visiting teams such as the Health Corps, and also permits sending serious cases to city hospitals. However, again a highly placed official pointed out that inspite of improved communication and transportation the health needs of rural people are not being adequately met. Although, several officials had indicated that behdars "could not do the best job" because they did not understand medicine beyond the technical level, the elimination of behdars left a problem. From the point of view of public health they pointed out that it is impossible to supply all the regions of Iran with qualified medical doctors. Needs in preventive medicine and therapeutics hardly can be met by visiting Health Corps teams, nor by inferior medical personnel relying upon laboratory and diagnostic work done at a considerable distance from the patient.

When government officials are asked who is to do the work in rural areas when all of the behdars become M.D.'s, the usual answer given is that new physicians will be regular employees of the Ministry

of Health and they will handle preventive and therapeutic practice in return for medical education. If these men prefer to specialize, they may do so after they have finally finished their eight years of service to the government. Of course, this is theory, yet to be tested.

As most of the behdars sooner or later will become physicians, the behdar will be a historical fact. The problems that already are present because of this upgrading will be considered.

A comparison between the programs of Iran and Ceylon now is possible:

1. Both programs were developed to provide front-line medical practitioners to meet the immediate health needs of each country.

2. The decision was made by the governments that the behdar and the apothecary would be generalists, not having the status or training of an M.D.

3. As these programs were designed to meet immediate health needs, they abided by the original decision to eliminate the behdar as the number of physicians increased. Ceylon, although the number of physicians has increased in that country, has been reluctant to discontinue training apothecaries. Political motives appear to lie behind Ceylon's continuance of its program.

4. As a means of eliminating the program of sub-professionals, behdars were given an opportunity to return to medical school. Through upgrading, in Iran the incompletely trained medical practitioner would disappear. No provision for upgrading was incorporated into the Ceylon plan. This notion now is being considered.

5. While both programs were designed to train A.M.O.'s, the type of education offered differed because Iran planned to upgrade and Ceylon did not. The behdars' training was longer with greater emphasis on the basic sciences than Ceylon's. This was done to facilitate the entering of medical school at a later date by the behdar. The apothecaries' training was intensive and condensed, with heavy emphasis on bedside teaching. This method was designed to get the apothecaries quickly into rural areas.

6. Although the behdars were trained at a level lower than physicians, in practice they often equaled physicians. It was true in a number of situations where both behdars and physicians staffed a clinic or hospital that they rotated their duties. The apothecaries, whenever working with physicians, were relegated to less professional responsibilities.

7. The apothecaries were trained in the same physical plant preparing physicians. The apothecaries' academic position was viewed as inferior and this inferior attitude prevailed in practice as the medical students compared themselves to apothecaries, while the behdars had their own schools. There was only one medical school and it did not train behdars. The attitude of condescension that prevailed in Ceylon did not appear to exist in Iran.

Further similarities and differences in these two programs are further noted.

CHAPTER III
THE PRACTICING A.M.O.

Ceylon

The apothecary has acted as general practitioner to the people of Ceylon. He may have been employed by the government or by an estate (a tea plantation). The estate apothecaries have had a completely separate administration and, on the whole, better facilities. Therefore, they have offered better services than their government contemporaries. Both types of apothecaries have received the same training in the government establishment.

However, the role of the apothecary is changing, as more doctors are provided for the population. He is becoming more a pharmacist, particularly in the larger hospitals. In rural areas, the pharmacy is maintained by an individual with less training than the apothecary, a dispenser trained during an apprenticeship. In the larger hospitals, several apothecaries work under the supervision of a senior apothecary in the pharmacy. The Columbo General Hospital had a complex system of drug storage and requisition controlled by several apothecaries, each responsible for one particular type of drug, e.g., antibiotics, and sedatives.

It is apparently the intention of the government to use the remaining apothecaries in the position of pharmacists until there are available no more apothecaries. The apothecaries, according to government officials gradually will be pharmacists who receive an education beyond that which the rural pharmacists and dispensers now receive. It is generally suggested that the more capable apothecaries might

receive further education and degrees in pharmacology, but this scheme is opposed by some. The majority of the apothecaries probably will become dispensers or general health workers for use in surveys, immunization programs, etc.

In the rural dispensaries, the apothecary acts as physician for the area. He receives considerable opposition in this position from the Ayur-Vedic physicians who still are recognized by the majority of Ceylonese as the equivalent, or in many cases the superior, of both apothecaries and physicians. The Ayur-Vedic practitioners, receive their training in the Ayur-Vedic College in Colombo, Ceylon. An Ayur-Vedic physician see 100 or more patients per day for whom he prescribed native herbs and other drugs prepared from natural substances.

In Kandy, the dispensary visited contained a physician, an apothecary, and a dispenser. However, the physician did not practice medicine, being employed solely in a medico-legal capacity. He dealt with cases reported by the authorities and workman's compensation cases. The dispensary therefore was under the direction of the apothecary. The equipment was limited but sufficient for the practice, as all cases of severity were referred to the local hospital which was staffed by consultants in the specialties. Ceylon appeared to be unusually well-covered by specialists, most of whom had higher degrees from the Royal Colleges in England.

The urban dispensary has no beds where patients can be kept for even a limited length of time. Rural dispensaries, however, have male, female, obstetric, and pediatric beds where patients admitted through the outpatient department are treated. Supervision by the

district medical officer, who is a physician, is minimal because of difficulties in communication and transportation. The estate apothecaries usually have no beds because their patients are transported to hospitals, the tea plantations being served by adequate transportation on hard surface roads. The estate apothecary is also the sanitarian on the estate, enforcing regulations. He is loosely supervised by the district medical officer who already has more government apothecaries under his direction than he can give attention. The estate apothecary's salary is usually more than that of the government service apothecary, but despite this, about 25% of the estates do not have qualified apothecaries.

Government service does not attract physicians. Private practice is the rule. although these physicians make use of government consultants in hospitals. Government physicians may retire at age 55 with a pension and then go into private practice. Although the referral relationship between private practitioners and government consultants exists unofficially, regulations pertaining to this situation are said to be restrictive in intent.

The trend in Ceylon is toward "peripheral units," established by the government which presently are in charge of apothecaries but eventually will become the domain of physicians. These units are located in rural areas. These units contain wards for males, females, obstetrics, and a dispensary or outpatient department. In some instances a pediatric ward is included as a sub-unit of the female ward. These "peripheral units" remain in their infancy and obviously the intention is to establish them as "health centers" which will form the nucleus

of health services in rural and urban Ceylon. The units also will include midwife services and the apothecaries will work in them as pharmacists-dispensers.

Medical services in Ceylon do not seem to have deteriorated as they have in other countries after independence was gained. They seem to have remained as they were, or practically as they were, under British control. A bureaucratic approach is evident, although this may reflect the social, economic and cultural composition of the population. The inequality in payment received by private and government practitioners, both physicians and apothecaries, constantly is mentioned as a source of dispute. The aim of some government physicians seems to be to obtain their pension and enter private practice. Providing care in rural areas is unlikely to become attractive to physicians. Almost certainly apothecaries will supervise care in rural centers for many more years. When the number of physicians increases, they should have more adequate supervision and ultimately, with improved communications, physicians can maintain services in all parts of the country. The apothecary realizes he is not going to assume the role of physician in Ceylon and has resigned himself to this. He has no official organization representing him and generally appears to accept his subordinate position without quarrel. Despite inadequate supervision, he seems to fulfill the medical needs of the people he serves, perhaps because of the freedom from malaria which Ceylon enjoys. The calibre of local administration is impressive, particularly when compared to the chaotic conditions which seem common in Colombo, the capital. In other matters, the apothecaries' practice is similar to other A.M.O.'s.

Iran

At present, the behdar is used only in villages having less than 10,000 population unless the behdar is supervised by an M.D. The elimination and upgrading of the behdar is proceeding rapidly. It is estimated that he will be replaced completely within four or five years time. At the moment there are about 900 behdars in the country, all employed by the Ministry of Health.

The secondary role of the behdar in medical care is similar to that of other A.M.O.'s. A visit to the Isfahan Clinic, however, revealed a behdar and a physician working together, an uncommon practice. The physician formerly had been a behdar, but he had returned to school and received his M.D. degree. He served primarily in the maternal and child health clinic in Isfahan, seeing about 25 patients per day there. Apparently, in this case, there was a complete interchange of duties between the behdar and the physician. When one was not available the other substituted for him. In other words, they were both doing exactly the same work and appeared to have similar clinical skill. However, the behdar probably is not versed in medical theory whereas the physician receives the theoretical basis of medical practice during his upgrading course.

The reluctance of physicians to enter practice in rural areas was again prominent in Iran. An attempt is being made to meet the resulting lack by a Health Corps. At the moment there are approximately 70 of these Health Corps teams in Iran and the addition of at least another 90 is anticipated. The physicians in these teams are required by the government to work for two years in rural areas under military

direction through the Ministry of Health. An auxiliary worker will be used in addition to nurses, midwives, sanitarians, etc. in the program. The behdar who is not upgraded will function as this auxiliary and will be a multipurpose type of health worker. He will visit outlying villages, administer immunizations, and collect samples for surveillance work in communicable diseases. This position appears ideal for continuing behdar services, but apparently only the most incompetent workers will be used, the others receiving further medical education. The rural health center is the working base for the Health Corps team, containing a 25-bed hospital supervised by two physicians. The distribution of these units will be made on the basis of political jurisdictions.

The administration of the Ministry of Health seems efficient and supervised by well-qualified personnel. The overall maintenance of health services appears adequate, as exemplified by a control program for cholera, a disease recently introduced into the country from Afghanistan.

The public health authorities, the Medical Officer of Health, have practically no contact with dispensaries containing behdars or physicians. This is principally because of the prohibitive size of the districts. As in Ceylon, the MOH relies upon reports and requests for assistance from personnel in rural areas to assess the adequacy of the local services.

The main objection to the upgrading of behdars is their tendency to specialize as they become physicians. It was stated that there

were many well-qualified specialists in Tehran who were unable to work effectively because of the fierce competition from large numbers of specialists. The use of the Health Corps team, that requires the services of general practitioners, is intended to off set this trend of specialization. Apparently the program of upgrading is soundly established and proceeding satisfactorily, although, of course, not all behdars are being upgraded to become physicians. Some of the behdars are being upgraded to become physicians. Some of the behdars remain as multipurpose health workers or dispensers in the rural dispensaries, and others are being retired or moved into other employment.

Comparison

The duties of the apothecary in Ceylon and the behdar in Iran correspond to those of the A.M.O. described in the previous report. In both countries, however, a recognized movement functions to eliminate the A.M.O. and replace him by a physician, although Ceylon continues to draft A.M.O.'s. The current physician-population ratio's in Ceylon are 1/4500 and in Iran 1/3800. A ratio the governments consider still inadequate. The majority of physicians will come from the ranks of the A.M.O.'s by being further educated. This pattern is accepted completely by the Ministries of Health and medical professions in both countries, although the mechanics of this process have not yet been worked out in Ceylon. Those A.M.O.'s incapable of benefiting from further education are being used as auxiliary workers in the rural dispensaries. Ultimately these auxiliaries will be retired. Until then, they revert to non-clinical practice under supervision. In Ceylon, they constitute the dispensers in hospitals, and Iran, the multipurpose health workers in rural areas.

The patterns of private practice and government practice are not well defined in Ceylon where, because of government disruption, there is some question about the veracity of the stated methods of control. In Iran, the government appears to have more control of medical practice than in Ceylon, although they have no reliable method of circumventing the increase in specialists which hinders the proper distribution of medical services.

Senegal

The elimination of the A.M.O. in Senegal is attended by three difficult situations.

First, the native physicians cannot meet the medical demands of the people. Therefore, the Senegalese authorities have kept the core of physicians of the French Colonial Medical Service in Senegal. These physicians work in the general hospital in Dakar and provide the bulk of medical services for the local population, or at least for those who have been educated to demand good medical care. This illustrates that, as an elite group emerges in the developing countries, these individuals require the best medical care which usually is not supplied by native practitioners. It was categorically stated that the standard of medicine practiced in the French hospital was superior to that in the other medical facilities in Dakar. This hospital is used by the government officials and other members of the power structure in Senegal. A sensible and realistic approach such as Iran's, of the transition from A.M.O. services to a program of medical care in which all participants will be native physicians may be a solution to this difficulty.

Second, the shortage of physicians is compounded by the drift of native physicians into other positions in the government. This situation is a consequence of the education and knowledge of the physician which equip him admirably to work as an administrator in the government services. Several of the persons employed in positions of authority in the government are doctors. These individuals use the French hospital for medical care and refer their friends to their personal physicians. Government services not only attracts physicians into its mesh, but also dilutes the pool of persons wishing to enter medical education as they can achieve a key position in government service after spending less time on their education.

Third, it is said that the graduate of the Dakar School of Medicine is inferior to that of the French schools of medicine. The situation can be compared to that which is said to exist in Algeria, where native physicians are not given the same respect within and outside of their country. This bigoted approach is characteristic of the attitude of some developed to some developing countries, engendered by different standards of education.

The role of the A.M.O. in Senegal therefore is undetermined when compared to Ceylon and Iran. It is the impression of a limited visit that the intent is to maintain service, where possible, with French physicians. This is to allow the Senegalese to become physicians who can supervise the A.M.O.'s in the roles of general health workers.

In summary, the approach to medical care in Senegal appears realistic in that the country did not attempt to eliminate all foreign medical services at the same time. This allows for a gradual transition

to be made to an adequate state of self-care. This is difficult in countries where all expatriate physicians have been expelled. Within the present Senegal structure, however, there is the danger of a medical service for the elite replacing a service for the inhabitants of the whole country. The medical school in Dakar, although maintaining close relationships with medical schools in France, is experiencing difficulty in blending an academic approach to medical education with the pressing clinical needs of local conditions. The maintenance of health services by the French authorities, as a temporary expedient, is useful.

CHAPTER IV

THE FUTURE OF THE A.M.O.

Opposition to A.M.O.

While the function of the A.M.O. remains indefinite and flexible, opposition to him as a sub-quality medical practitioner has diminished recently. This can be attributed to the problem of physician distribution that still exists in many countries. Regardless of the increase in physician-population ratio, qualified M.D.'s are reluctant to serve in rural areas. Therefore, medical services must be provided through other sources. The A.M.O., or a near equivalent, appears a suitable answer.

However, some opposition to the A.M.O. will persist at the local, national, and international levels. Several trends emerge in the reasoning behind the opposition. These trends are significant enough to be cited, as the continued use and evolution of the A.M.O. depends on the merit of the opposition.

1. The reason most often heard is that the A.M.O. is a "second-class" doctor. ("Cheap," "watered-down," and "poor" are other adjectives used to describe him.) This second-class status is justified by the condensed medical curriculum, compacted by a faculty who frequently teach medical students, that is often received by the A.M.O. The education of the A.M.O. then is regarded by the faculty as an added burden to an already heavy teaching and patient load.

2. The A.M.O. assumes the responsibilities of a physician once he is in practice. This argument especially is damning when it can be supported that the A.M.O. is trained only to offer a patient minimal clinical assistance.

3. Because the A.M.O. must be supervised by a qualified M.D. to insure (a) he does not assume the responsibility of an M.D. and (b) that his performance as an A.M.O. is acceptable, additional qualified M.D.'s are needed. Furthermore, adequate supervision would require the services of M.D.'s who otherwise could be used more effectively in providing direct patient care.

4. The distinction between the A.M.O. and the qualified M.D. becomes less evident to the public and medical standards deteriorate. This argument is based on the belief that the A.M.O.-lacking supervision, and assuming more of the responsibilities of a physician, and without the commensurate education of the M.D. - offers second-class patient care. While the A.M.O. can make judgements on symptoms, often he does not know what he is prescribing nor the theory of the disease and its treatment. The "poor" quality of medicine offered by the A.M.O. is regarded as the norm offered by the medical profession.

5. By continuing the training of A.M.O.'s, a country will content itself with existing medical services and not exert effort to improve the quality or quantity of medical education. While A.M.O.'s are considered to be "doctors" by the public, the public will be content with the services supplied by the A.M.O.'s, and no grass-roots moves will be made to improve medical services. It is argued that the public will become complacent.

6. All efforts have failed to insure that A.M.O. focus on what many consider his major contributing role - public health officer. If the A.M.O. is to be a contributing member of a health team, it is thought he should devote his attention to public health, a problem

an individual with his training could handle adequately. But as soon as the A.M.O. is placed in a rural area, where he is little supervised, he quickly turns from preventive to curative medicine. As soon as he practices curative medicine he begins to justify all of the arguments already cited.

7. Many A.M.O.'s are not content with their status. As they assume more of a physician's responsibilities, they want commensurate status. Obviously this cannot be granted as it would lower the status of the qualified M.D.'s.

8. As the A.M.O.'s become discontent, many want to be upgraded either by edict or additional education. Opposition to upgrading is vehement in some circles as it equates a university "educated" physician (M.D.) with a "trained" technician (A.M.O.). Upgrading by additional schooling creates problems, for usually the A.M.O. enters a medical school curriculum during its clinical years without undergoing study of the same basic medical sciences nor having satisfied the rigorous entrance requirements required of medical students.

These are some of the reasons for opposing the creation or continuance of a medical auxiliary similar to the A.M.O. In spite of these arguments, there is agreement that the A.M.O. does fill the need of front-line medical care, even though it is of an elementary nature. Until countries develop an adequate number of physicians serving all the health needs of society, an intermediate practitioner such as a medical auxiliary will be necessary.

Solution

Most of the situations behind the arguments against an auxiliary

can be corrected with a well-planned program for the training and utilization of the auxiliary. The following is a possible solution to the problems just posed and is based on the findings of this study and the report made to A.I.D., March 1969.

First and foremost, objectives of the educational program for the auxiliary must be defined precisely. These objectives must be distinctly different from those of a university-educated M.D.

Conflicts between the A.M.O. and the M.D. often arise because of the similarity between the educational programs of the M.D. and the A.M.O., as in Iran. If the educational objectives are explicitly stated then it can be seen whether the A.M.O.'s educational program is different from that of the M.D., and then faculty teaching plans can be supervised to see if they are distinctly different from those used to educate M.D.'s.

This lack of well-defined objectives appears to cause much of the opposition to the A.M.O.'s. Were educational objectives spelled-out, (1) the limits of the educational program would be established, (2) the faculty would have to confine their teaching within those limits, and (3) school administrators and health officials could objectively determine whether the program has been limited to the objectives. This should result in a graduate A.M.O. whose education has fitted him for a limited responsibility. It is when objectives are not cited that faculty, especially those teaching clinical subjects, become reluctant to develop teaching plans for their daily program. What compounds the problem is that they often assume that a general clinical education will suffice, and that general clinical education

invariably resembles a condensed version of their own university medical education.

While establishing objectives seems an obvious first step, it is their absence that causes the difficulties arising from having an auxiliary such as the A.M.O. It is obvious that the objectives of an A.M.O.'s education must be markedly dissimilar to those for the education of an M.D.

It is also true that limiting the A.M.O.'s educational activities will give further assurance that the graduate A.M.O. will have been exposed only to those experiences essential to carrying out his assigned duties.

Limiting the program should have the further desirable effect of appreciably shortening the time spent in school. The student can sooner graduate and become a practitioner. In addition, by narrowly defining the program greater emphasis can be placed on some of the new technics of pedagogy such as programmed texts, self-study films, and audio-tapes. The use of these devices should free the faculty from didactic teaching to work with students individually.

In summary, arguments against the use of a medical assistant can be combatted if (1) the objectives of the training program are clearly delineated, (2) the objectives are obviously dissimilar to those for an M.D. program, (3) the faculty outlines its teaching program to conform to those objectives, and (4) all the learning experiences are confined to the achievement of the stated objectives.

Adhering to these four points is no guarantee that the practicing A.M.O. will not exceed his professional competence. There will be

those who by default (no one else around to provide medical care) will assume greater and greater responsibility for patient care. Activity of A.M.O.'s cannot be strictly limited by these four points. As limitations are placed in the educational program, so must consideration be given to other roles the A.M.O. may come to play.

There are several ways in which the current role of the A.M.O. may be altered.

1. The present A.M.O. may be upgraded and, with further education, become a physician.

2. The A.M. O. may be downgraded and occupy a subsidiary position in medical care, e.g., the dispenser in Ceylon.

3. The A.M.O. may continue as an independent practitioner, salaried by the government, working under the close supervision of government employed physicians.

4. The A.M.O. may become a member of a health care team, headed by a physician, which services areas based on population estimates or political jurisdictions, e.g., the Health Corps in Iran.

5. The A.M.O. may act as an independent practitioner, licensed by the government, and perform his duties as a physician without direct government supervision while receiving his income from any source he chooses.

All these possibilities, except the fifth, are in actual practice, today. There are inherent disadvantages in all of them, but probably the easiest adjustment for the A.M.O. and the most beneficial effect for the patient population is achieved with the "Health Corps" principle.

Certainly all A.M.O.'s could be assimilated into this type of program whereas it is improbable that A.M.O.'s could perform their duties as satisfactorily in the other programs.

The team approach to medical care is preached in most parts of the world and practiced in few. There are indications that many countries are accepting the idea of team medicine. In some, this has become a reality. This type of program is not confined to Asia and Africa. In Chile, for instance, a team is used to promote health and other services according to population districts. This Chilean team consists of medical personnel as well as representatives of other departments, e.g., agriculture and education.

It is in this context that the future role of the A.M.O. is most realistic. Each country will be able to design its program as an entity with the A.M.O. providing a particular service in the team. This will enable the country to determine the type of individual needed and his training. In some instances, it may be that a general purpose low-grade A.M.O. is indicated for disease control, e.g., malaria spraying and smallpox vaccination. In other countries, an A.M.O. of more education and initiative may be required, to participate as a prominent member of a health team that indulges in routine health activities, e.g., clinical duties, health education, and administration of health services. The achievement of this again, is based on clearly stated and soundly developed educational objectives.

The future of the A.M.O. is apparent. The question is not whether an individual of the A.M.O. - type should be a member of a health team, but, rather, what position he should fill in the team. The pattern of

modern health care will resolve into the physician delegating more and more duties to members of the team having less education and training. This phenomenon is true, not only in the developing countries, but also in the United States as exemplified by the creation of the "Home Health Aide" in the Medicare program which functions in this fashion. There are indications that even those countries which supposedly have abolished the A.M.O. are reconsidering his position in their health services. As an example, in India the training of health workers of an A.M.O. - type is found in the Ford Foundation program. Thus, the A.M.O. will provide a real and valuable function for a public, increasingly sophisticated in medical matters that demands more health services. These services cannot be met by the present number of physicians in the world, and it will be impossible to graduate immediately the requisite number of physicians for each country. It is evident that even the United States, which has one of the lowest physician-population ratios in the world, provides incomplete health services to its people. It is equally evident, therefore, that the A.M.O. must continue as a vital member of the health team, although it is probable that his practice as a "subsidiary" doctor will continue in many countries as at present. The evaluation and application of health service statistics should reveal the place of the A.M.O. or his equivalent in the country's individual programs.

APPENDICES

APPENDIX A

KEY INDIVIDUALS AND OFFICERS CONTACTED

World Health Organization

Dr. P. Dorolle
Dr. F. N. Izmerov
Dr. A. Bellerive
Dr. M. Etemadian
Dr. D. Messinezy
Dr. E. Grzegorzewski

Iran

Dr. Mofidi
Dr. Sotudeh
Representatives of Ministry of Education
Representatives of Ministry of Health

England

Dr. James Liston (London)
Dr. John Ellis (London)
Dr. Thomas McKeown (Birmingham)
Dr. Patrick Dill - Russell

Republic of Ireland

Dr. Paul Hill (Trinity College)

Ceylon

Dr. Abhayaratne, Dean, Ceylon Medical College
Dr. V. H. Gunaratne
Representatives of Ministry of Health

Representatives of Ministry of Education

Senegal

Colonel Andre' Carayon

APPENDIX B

EXCERPTS FROM CEYLON
GOVERNMENT GAZETTE
AUGUST 7, 1964

Ceylon Medical College Council

Recruitment of Candidates for Courses for Apothecaries, Estate Apothecaries and Pharmacists.

A competitive examination for candidates desirous of following the course of training for the certificate of proficiency as an Apothecary, Estate Apothecary and Pharmacist will be held at the Faculty of Medicine, University of Ceylon, Kynsey Road, Colombo 8, commencing on October 31, 1964.

APPLICATIONS

2. Applications for admission to the examination must be addressed to the Registrar, Ceylon Medical College Council, Colombo 8, to reach him not later than 4 p.m. on 28th August, 1964. The candidate should make application in the form set out below. The form must be typewritten on a half sheet of foolscap paper measuring about 13 1/2" x 8 1/2" but must be completed by the candidate in his own handwriting.

- (1) a certificate (in original) of good character from a responsible person preferably from the Head of the School last attended or the Head of the Institution in which the candidate is employed; and
- (2) a receipt from a Kachcheri for the deposit to the credit of the Ceylon Government of a sum of Rs. 10 as entrance fee for the examination;
- (3) a certificate of the registration of the candidate's birth showing him to be over 17 years and under 30 years of age on January 1, 1965--

- (a) the special certificate of birth issued for the purpose of admission to schools will not be accepted for the examination;
 - (b) affidavits will not be accepted as substitutes for birth certificates;
 - (c) baptismal certificates will not be accepted as substitutes for birth certificates;
- (4) proof of educational qualifications. Where a certificate of the educational attainment has not been issued by the Department of Examinations, a statement (in original) signed by the Head of the School (himself) will be accepted. The certificates should indicate in which subjects a candidate has passed or secured a credit pass. Where the S.S.C./G.C.E. Certificates are available they should be submitted (in original) as proof.
3. Eligibility. -- A candidate must --
- (i) be a Ceylonese;
 - (ii) be over 17 years and under 30 years of age on 1.1.65;
 - (iii) either (a) passed the S.S.C. with credit passes in 2 subjects and passed in Chemistry and English Language on that occasion or any other occasion; or (b) passed the G.C.E. (Ord. Level) in 5 subjects with not less than credit passes in 2 subjects in one occasion and passed in Chemistry and English Language obtained on any occasion; or (c) passed the G.C.E. (Ord. Level) in 4 subjects with not less than credit passes in 2 subjects in one occasion and passed in Chemistry and English Language and a 5th subject obtained in any occasion.

4. Applications which do not conform to any of the requirements specified above will be rejected. Ineligible candidates will be disqualified at any stage.

5. Applications will not be entertained from candidates --

(a) who qualified at the Ceylon Medical College after a course of studies as Pharmacists or Estate apothecaries or apothecaries; or

(b) who have been admitted to the Pharmacist Course.

REFUNDS

6. In no case will a refund of the fees paid be granted.

SUBJECTS

7. The entrance examination shall be held in the subjects set out below: - -

(a) Arithmetic,

(b) General Knowledge,

and could be taken by the candidate in any medium.

APPENDIX C

APOTHECARIES" CURRICULUM OUTLINE

FIRST YEAR

Pharmacy

Lectures: One lecture a day for 5 days in the week each term. (approx. 140 - 150 hrs) Practicals: One class of 2 hrs. duration for a day for 5 days in the week each term. (approx. 280 - 300 hrs)

Syllabus

1. Weights and Measures. Imperial and Metric system.
2. General principles of dispensing. The compounding and dispensing of Powders, Cachets, Capsules, Mixtures, Emulsions, Pills, Lotions, Ointments, Suppositories, Percentage solutions and Incompatibility.
3. Physical chemistry of simple pharmaceutical operations. Solutions, Evaporation, Distillation, Buffer solution, pH value, Viscosity and Emulsions.
4. Elementary microbiology, Sterilization, Immunological preparations.
5. Active principles in crude drugs. Preparation of Extracts and Tinctures. Nature of Glycosides, Alkaloids, Hormones, Proteins, Starches, Oils, Vitamins, and Tannins.
6. Modes of administration of drugs. Depot preparations.
7. The Chemical nature of the more important drugs.
8. Recognition of crude drugs commonly used in Pharmacy.
9. Deterioration and storage of drugs.
10. Ferensic Pharmacy as it applies to Ceylon.

Practicals: Dispensing of prescriptions. Preparations of the B.P.
Standardization of simple inorganic preparations. Preparation of
Tinctures from Extracts. Recognition of crude drugs.

ELEMENTARY ANATOMY AND PHYSIOLOGY

Lectures: 3 hrs. for a week for 3 terms. (approx. 85 to 90 lectures)

This course is intended to give students an elementary knowledge of
Osteology and the General Anatomy and Physiology of the human body.

SECOND YEAR

ELEMENTARY MEDICINE

Lectures: Two lectures a week each term. (about 50 to 60 lectures)

This course of lectures is intended to give students an elementary
knowledge of the etiology, symptoms, diagnosis and treatment of the
various diseases met with in Ceylon.

Clinical classes in Medicine: Two per week for all three terms.

Elementary bedside instruction.

HYGIENE AND PUBLIC HEALTH

Lectures: First and Second Terms - once a week (about 15 to 20 lectures)

This course consists of lectures and practical demonstrations.

Elementary Hygiene as applied to Ceylon.

ELEMENTARY SURGERY

Lectures: Two lectures per week each term (about 50 to 60 lectures.)

This course of lectures is intended to give students an elementary
knowledge of the symptoms, diagnosis and treatment of surgical diseases,
fractures, injuries, etc.

MATERIA MEDICA

Lectures: Two lectures per week for three terms.

Syllabus

- (1) General introduction to Pharmacology - absorption fate and excretion of drugs. Modes of administration. Pharmacopoeia. Standardization of drugs.
- (2) Chemotherapy - sulphanamides, antibiotics, anti-tuberculosis drugs. amoebicidal drugs, anthelmintics. antimalarials. anti-spetics.
- (3) Blood - Drugs used in the treatment of anaemia. anticoagulants, coagulants. Drugs used in Leukaemia (brief account).
- (4) Alimentary Tract - Bitters, antacids, carminatics. Volatile oils, emetics, antiemetics. Purgatives, enemata, drugs used to check diarrhoea.
- (5) Respiratory Tract - Expectorants. Cough Sedatives. Antiasthmatic drugs. Gases: Oxygen.
- (6) Kidneys - Diuretics and Urinary antiseptics.
- (7) Cardiovascular System - Cardiac glycosides Quinidine. Antihypertensive drugs. Coronary vasodilators.
- (8) Histamine and Antihistamine. Vaccines and Sera
- (9) Central Nervious System - Stimulants, general anaesthetics, Hypnotics and Sedatives, Tranquilizers, Antiepileptic drugs. Narcotic anagesics, Antipyretic analgesics.
- (10) Peripheral nervous System - Sympathemimetic drugs and their antagonists. Parasympathomimetic drugs and their anata-gonists. Drugs acting on autonomic ganglia. Muscle relaxants. Local Anaesthetics.
- (11) Vitamins and Hormones.
- (12) Heavy Metals: - Mercury, Bismuth, Arsenic, Lead, Antimony, Gold and Silver.

VACCINATION - 6 classes.

ANTE-NATAL AND POST-NATAL AND CHILD WELFARE - 2 classes a week for one term at the Desoysa Maternity Hospital

DISPENSING - Practical classes once a week throughout the three terms.
Dispensing at the Colombo Hospitals during free hours.

APPENDIX D

AUXILIARY HEALTH PERSONNEL STUDY *

1. History of School
 - A. Its development
 - B. Organization - administrative
 - C. Physical plant
 - D. Projected growth

2. Educational Requirements (criteria)
 - A. Number of years of preparatory education
 - B. Kinds of subjects required in preparatory education (language-science-math, etc.)
 - C. Minimal acceptable grades in required and non-required subjects
 - D. Standardized tests used for admission
 - (1) I.Q.
 - (2) Achievement
 - (3) Personality
 - (4) University matriculation
 - (5) Others
 - (6) Who interprets tests
 - E. Recommendations
 - (1) From Teachers
 - (2) Others
 - (3) Rating scales used
 - F. Who decides on admission
 - (1) Principal
 - (2) Faculty committee
 - (3) Other
 - G. Limitations on applicants
 - (1) Geographic
 - (2) Sex
 - (3) Marital
 - (4) Age
 - (5) Ethnic
 - (6) Religious
 - (7) Other

3. Supply and Demand of Applicants
 - A. How is number of desired graduates determined (demand)?
 - B. Is this achieved?
 - C. How is number of entering students determined (quota)?
 - D. Is this achieved?
 - E. If not, why not?
 - F. The number of applicants per entering class
 - G. The number of rejections per entering class
 - (1) Major causes of rejection
 - (2) Opportunity to apply to other health fields

* The Same questions as in the Original study were asked, but in past tense.

4. Recruitment of Applicants

- A. Is there a recruitment policy?
- B. If no, why not? If yes, what is it?
- C. Do you consider the recruitment program adequate? What would you do if no limitations were present?

5. Course of Study

- A. School objectives
- B. Subjects
 - (1) Required
 - (2) Elected
- C. Number of hours in each
 - (1) Didactic
 - (2) Laboratory
 - (3) Clinic
- D. How are required courses determined? Also number of hours?
- E. What changes in courses has taken place in recent years?
- F. Mechanism for instituting change

6. Methods and Materials

- A. Types of teaching methods used
- B. Reasons for using them
- C. Rating of them in each class
- D. Types of teaching materials used
- E. Reasons for using them
- F. Rating of them in each class
- G. Availability of materials
- H. Library resources
 - (1) Number of volumes
 - (2) Kinds of volumes
 - (3) Measuring student use of resources
 - (4) Serials, etc.
- I. Use of preceptors

7. Kinds of Appraisal Techniques

- A. Paper and pencil tests - essay and objective
- B. Orals - recitations
- C. Grading system
- D. Weights of grades assigned
- E. Failure criteria
- F. Allowing to repeat

8. Credentials of Faculty

- A. Who are the faculty?
- B. Where do faculty come from?
- C. How selected?
- D. Background - education - experience - etc.
- E. Faculty teaching load - research load - service (clinic) responsibilities

- F. Faculty privileges
- G. Faculty committees
 - (1) Any
 - (2) How selected
 - (3) Voice in school operation
 - (4) Curriculum responsibilities
- H. Governmental restrictions
- I. Promotion
 - (1) Opportunities
 - (2) Rules

9. Finances

- A. Tuition costs
- B. Room and board
 - (1) Facilities
 - (2) Costs
- C. Governmental subsidies
- D. Other support
 - (1) Foundations
 - (2) Private health agencies

10. Post Graduate and Refresher Courses

- A. Courses offered
- B. How are courses determined
- C. Enrollment
- D. Field courses

APPENDIX E

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