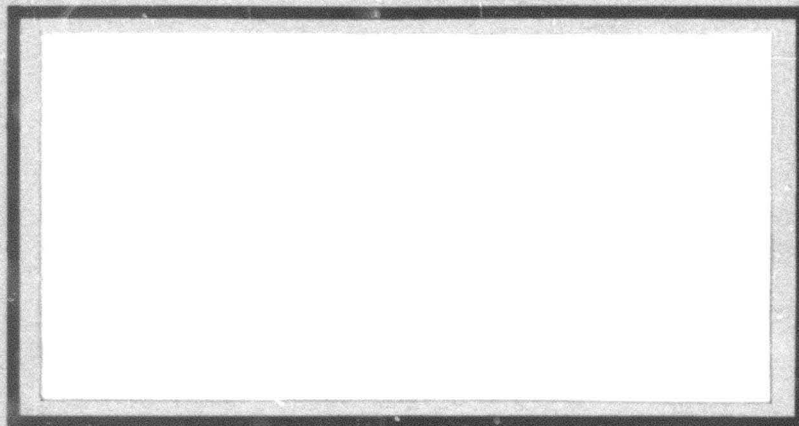


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AN ANALYSIS OF DEPARTMENT OF DEFENSE
MEDICAL CORPSMEN TRAINING PROGRAMS AND
POSSIBLE CONTRIBUTIONS TO CIVILIAN
PHYSICIAN'S ASSISTANT PROGRAMS

Captain William R. Cabral
Captain Wendell L. Stewart

SLSR-17-72A

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PROGRAMS AND POSSIBLE CONTRIBUTIONS TO CIVILIAN
PHYSICIAN'S ASSISTANT PROGRAMS

A Thesis

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

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January 1972

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MASTER OF SCIENCE IN LOGISTICS MANAGEMENT

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Committee Chairman

PREFACE

The growing complexity of life in the United States and the increasing demands of its citizens necessitate that a larger portion of the nation's resources be allocated to meet these challenges. The current health care crisis and physician shortage is one result of the increasing demands of our citizens. A partial solution to this problem is to utilize discharged military medical corpsmen in allied health manpower positions. This study is directing its attention to only one type of allied health manpower position. This is the position of physician's assistant.

Since this is a social problem, there is some question as to whether the Department of Defense (DOD), and in particular, the Air Force Institute of Technology's School of Systems and Logistics, should be concerned.

As far as the DOD is concerned, several prominent people including Dr. Curtis W. Tarr, former Assistant Secretary of the Air Force and current Selective Service Director, have pointed out that the military services have been involved in areas of social contribution throughout their histories. Therefore, the concept of the DOD as a natural resource is not new. It does, however, take on new dimensions. First of all, the problems the nation now faces have a scale that demands contributions from every source of support. In addition, we have reached the point when some of our military installations have become

so costly, we must employ them whenever their use will be significant to society.¹

The School of Systems and Logistics is less directly concerned with this problem. However, if we accept the description of operational logistics as set forth in a study by Williams and Breeding, we can see that logistics is affected. Their description states:

Operational logistics encompasses the broad area necessary to apply the totality of logistics means in direct and sustained support of combat forces in the field, at sea, and in the air. It maintains a pervasive distribution system to give time and place utility to the material assets accumulated by support logistics, and it applies a complete range of non-combat services such as administrative, personnel, construction, medical, maintenance, transportation, and other logistical services necessary for conduct of total military operation.²

If this study should prove that changes can be made to military medical training programs that would facilitate the transfer of former medics into positions as physician's assistants, the medical support included in operational logistics would most certainly be affected.

The authors gratefully acknowledge all of those civilian and military organizations which provided the material and information necessary to conduct this study. A special thanks is due to Colonel (Doctor) Jerold L. Wheaton and his staff at the School of Health Care Sciences, Sheppard AFB, Texas, for all of their support and advice. In addition, we are very much indebted to Major Edmund V. Pellettiere, MD, for his help in analyzing the available data. Most of all we must

¹Dr. Curtis W. Tarr, "The Air Force as a National Resource," Air University Review, XXI (May-June 1970), 33-34.

²Robert L. Breeding and Richard C. Williams, "A Conceptual Description of Military Logistics" (unpublished Master's thesis, School of Systems and Logistics, Air Force Institute of Technology, 1965), p. 48.

thank Stephen J. Greenberg, Ph.D., for suggesting the topic and providing the necessary guidance to finish the study.

Wright-Patterson AFB, Ohio
January, 1972

William R. Cabral
Wendell L. Stewart

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Chapter 1

INTRODUCTION

PROBLEM

President Richard M. Nixon, Dr. Walter C. Bornemeier, former President of the American Medical Association, and numerous medical authorities have stated that the United States is in the midst of a health care crisis. President Nixon stated in July 1969:

...We face a massive crisis in this area and, unless action is taken both administratively and legislatively to meet that crisis within the next two to three years, we will have a breakdown in our medical-care system which could have consequences affecting millions of people throughout the country...¹

The health-manpower shortage is being felt in many urban communities and is particularly acute in rural areas across the country. Physicians are overworked and many are leaving active patient care.² One means of helping to alleviate the physician shortage is the use of former military medical corpsmen as physician's assistants. These assistants would relieve doctors of the routine chores which do not require the skills of a highly trained physician. The problem is that former military medics receive only minimal credit for their military training and experience. Consequently, they must receive

¹"Medical Crisis and How to Meet It," Time (March 28, 1969), p. 34.

²MEDEX Communication Center, MEDEX - A Program to Extend the Physician's Capacity (Seattle, Washington: the author, November 1970), p. 1.

further training in civilian physician's assistant training programs before they may work as physician's assistants.

BACKGROUND

The magnitude of the health care problem is not readily apparent. However, there is general agreement by the public and the medical profession that the demand for health services exceeds supply. Although many categories of health personnel are needed, the shortage of physicians seems most critical. Evidence of this shortage is indicated by the following facts: (1) most practicing physicians are overworked and are struggling to keep up with the patient load, (2) many towns and counties have inadequate access to physician services, and (3) there is an unmet demand for physicians to fill positions in teaching, administration, research, and practice.¹

The complexity of the medical manpower field makes it extremely difficult to determine exactly how many physicians are needed. Indicators of the inadequacy of the medical care system in the United States are the facts that it ranks 18th among the nations of the world in life expectancy of men, 11th in life expectancy of women, 13th in infant mortality rates and 12th in maternal mortality rates.²

Table 1 shows a comparison between the United States and several other countries with better population per physician ratios. Although

¹American Medical Association, A Report on Physician Manpower and Medical Education (Chicago: the author, June 1971), p. 3.

²U.S. Department of Labor, Transferability of Military-Trained Medical Personnel to the Civilian Sector. Office of Manpower Research Contract 81-09-68-01 (Washington, D.C., July 1970), p. 18.

this table reflects only a few selected countries with better ratios, it does give an indication of the relative position of the United States in this area.

Table 1
Population Per Physician

Country	Population/ Physician	Country	Population/ Physician
United States	650	Hungary	550
Austria	570	Israel	420
Bulgaria	570	Italy	580
Czechoslovakia	510	U.S.S.R.	430

Source: Statistical Yearbook 1969 (Twenty-first Issue), (New York: United Nations Publishing Service, 1970), pp. 673-677.

In 1969 there were approximately 318,000 active physicians in the United States.¹ Actually, the number of physicians per 100,000 residents has risen steadily over the past few years. For example, in 1963 there were approximately 153 physicians per 100,000 population. By 1967 this figure had increased to 162 per 100,000 residents.² Although the figures quoted reflect a physician population which includes retirees, there is a definite and encouraging upward trend. The availability of medical care, however, has been affected by the trend of physicians turning from patient care to research, industry,

¹Statistical Abstract of the United States 1970 (91st ed.; Washington, D.C.: U.S. Government Printing Office, 1970), p. 65.

²Ibid., pp. 5, 65.

public health, teaching and hospital administration. These factors, in addition to the large number of specialists, caused the percentage of general practitioners to decrease approximately 8% from 1963 to 1967.¹ It is in the area of primary patient care such as that performed by the general practitioner that the authors feel the physician's assistant will contribute most significantly to the resolution of the doctor shortage.

Aside from the decrease in general practitioners, the uneven geographical distribution of physicians further aggravates the availability of health care. For example, New York State had 200 physicians for each 100,000 residents in 1967. In sharp contrast, Mississippi had only 69 physicians per 100,000 residents.² This maldistribution is accentuated by the fact that for transportation or other socio-ecological reasons, patients travel only a finite distance for health care. Beyond that distance the physician contacts drop off sharply.³

Compounding the problems cited above is the fact that highly trained physicians are performing tasks that could be carried out by less broadly trained personnel.⁴

The preceding paragraphs not only indicate a physician shortage but also point out that other countries lead the United States in

¹Statistical Abstract of the United States 1970, p. 65.

²Dan Cordtz, "Change Begins in the Doctors Office," Fortune, LXXXI (January 1970), 86.

³M. Clagett Collins and G. Gordon Bonnyman, Physician's Assistants and Nurse Associates: A Review, Health Services and Mental Health Administration Contract No. 110-70-371 (January 1970), p. 4.

⁴"Paramedics: New Doctor's Helpers," Time, XCVI (November 1970), 38.

national health standards. Admittedly, the problems cited are at least partially independent of the number of physicians. Merely increasing the physician population will not necessarily correct these problems. Influences such as social and economic conditions, the level of public education, and the frantic pace of modern society must also be considered.¹ Despite this, however, if the number of physicians or their ability to care for more patients is increased, the level of health care in the United States should increase somewhat. One method for increasing the physician's ability to care for more patients is the use of physician's assistants.

The Duke University Physician's Assistant Program, in Durham, North Carolina, was started in 1965. At approximately the same time, a corresponding program called MEDEX began at the University of Washington, Seattle, Washington. Since that time, the number and variety of programs for training new types of workers to assist physicians has grown tremendously. The U.S. Department of Health, Education, and Welfare currently lists 125 such programs. These programs vary in length, educational setting, prerequisites, proposed employment settings, and the level on which graduates are expected to function.² A major source of students for these programs is the Armed Forces. In fact, many of the courses specifically require that applicants have military medical corpsman experience.

¹American Medical Association, A Report on Physician Manpower and Medical Education, p. 4.

²Thomas C. Points, "Guidelines for Development of New Health Occupation," The Journal of the American Medical Association, CCXIII (August 17, 1970), 1170. (Mimeographed.)

Table 2 indicates that the Department of Defense (DOD) discharges thousands of medical corpsmen each year. Many of these corpsmen are called on to display the judgment and skills of a doctor and have been exposed to a wide range of medical problems. The various branches within the DOD spend up to \$25,000 for training corpsmen who may receive from 600 to 2000 hours of formal medical training.¹ Of the approximately 30,000 medical corpsmen being discharged annually, over 10,000 have one or more years of training coupled with three or more years experience.² This amount of training and experience will qualify these individuals for the Physician's Assistant programs such as the or

Table 2

Separations of Enlisted Personnel From
Military Medical Departments, FY 1965-69

Year	Total	Army	Navy	Air Force
1965	N.A.	N.A.	5,604	3,352
1966	27,301	18,368	5,425	3,508
1967	28,011	17,334	6,938	3,739
1968	35,025	23,654	7,146	4,225

Source: U.S. Department of Labor, Transferability of Military-Trained Medical Personnel to the Civilian Sector, p. 26.

¹"Helping Out the Doctor," Time, XCVII (March 29, 1971), 42.

²D. R. Howard and C. E. Fasser, "A Progress Report on Duke University's Physician's Assistant Program," Hospital Progress, LI (February 1970), 49.

Duke University. A somewhat smaller number of these individuals would be qualified as independent duty technicians which are required in the MEDEX type programs.¹

Despite the qualifications of these men, the actual rate of transfer from a military medical career to a civilian medical career is distinctly lower than expected. Table 3, drawn from the study by Robert R. Nathan Associates, Inc., reflects the difference between the proportion of military medical personnel who considered transferring to civilian health jobs and those who actually did transfer. What explains this difference between contemplated transfers and actual transfers?

Table 3

Difference Between Proportion of Military Medical Personnel
Who Considered Medical/Health Work and Who
Did or Plan to Transfer

(In Percent)

Respondents	In Service	Out-of-Service
Careerists:		
Considered...	86.9	82.7
Transfer...	60.0	40.4
Non-careerists:		
Considered...	81.6	68.9
Transfer...	51.9	22.9

Source: U.S. Department of Labor, Transferability of Military-Trained Medical Personnel to the Civilian Sector, p. 70.

¹Judith R. Lave, Lester B. Lave, and Thomas E. Morton, Paramedics: A Survey of the Issues (Pittsburgh: Carnegie-Mellon University, March 1971), p. 10.

There appear to be several barriers to transfer. These barriers include hiring standards, pay, educational requirements, and working conditions. This study will concern itself only with the educational requirements. At the present time there are no states in which individuals may work as physician's assistants without first receiving training in a formal accredited civilian program. If civilian universities were able to grant more credit for the military training and experience of former medics, the transfer of these medics to positions as physician's assistants would be greatly facilitated.

SCOPE

This study was limited to the standard medical training programs of the Army, Navy, and Air Force. Programs conducted by the Green Berets and other specialized groups were not included. Selected civilian university physician's assistant training programs were also examined.

The study was concerned with only those Armed Forces enlisted personnel serving in specific medical specialties requiring a broad knowledge of general medicine and involving direct patient care. The study involves the Air Force Specialty Code 902X0 as well as the comparable Army and Navy career fields. No limitation was placed on the corpsmen's length of service.

For the purposes of this study, the term physician's assistant was used in lieu of Paramedic, Physician's Associate, and other terms. When referring to the Duke University program and the University of Washington program, the terms Physician's Assistant and MEDEX were used respectively.

A physician's assistant is defined as:

...a skilled person qualified by academic and practical training to provide patient services under the supervision and direction of a licensed physician who is responsible for the performance of the assistant.¹

Actually there are three types of physician assistants as described below. This study will consider only the Type A physician's assistant.

The Type A assistant is capable of approaching the patient, collecting historical and physical data, organizing these data, and presenting them in such a way that the physician can visualize the medical problem and determine appropriate diagnostic or therapeutic steps. He is also capable of assisting the physician by performing diagnostic and therapeutic procedures and coordinating the roles of other, more technical, assistants. While he functions under the general supervision and responsibility of the physician, he might, under special circumstances and under defined rules, perform without the immediate surveillance of the physician. He is, thus distinguished by his ability to integrate and interpret findings on the basis of general medical knowledge and to exercise a degree of independent judgment.

The Type B assistant, while not equipped with general knowledge and skills relative to the whole range of medical care, possesses exceptional skills in one clinical specialty or, more commonly, in certain procedures within such a specialty. In his area of specialty, he has a degree of skill beyond that normally possessed by a Type A assistant and perhaps beyond that normally possessed by physicians who are not engaged in the specialty. Because his knowledge and skill are limited to a particular specialty, he is less qualified for independent action. An example of this type of assistant might be one who is highly skilled in the physician's functions associated with a renal dialysis unit and who is capable of performing these functions as required.

The Type C assistant is capable of performing a variety of tasks over the whole range of medical care under the supervision of a physician, although he does not possess the level of medical knowledge necessary to integrate and interpret findings. He is similar to a Type A assistant in the number of areas in which he can perform, but he cannot exercise the degree of independent syntheses and judgment of

¹Malcolm C. Todd, M.D., Chairman, American Medical Association Council on Health Manpower, The Physician's Assistant - A Progress Report (Chicago: American Medical Association, 1971), p. 1. (Mimeographed.)

which Type A is capable. This type of assistant would be to medicine what the practical nurse is to nursing.¹

OBJECTIVES

The objective of this thesis is to determine whether additional academic credit can be granted by civilian university medical training programs to DOD-trained medical corpsmen. This additional credit would help facilitate the transfer of former military corpsmen to positions as physician's assistants.

HYPOTHESES

1. Civilian universities can grant additional academic credit to former military medics for their previous training and experience.
2. The credit can be granted without making major changes in the basic training programs of the DOD and civilian universities.

NATURE AND SOURCES OF DATA

The primary data used to test the hypotheses was gained from the academic course descriptions of both the military medical corpsmen training programs and the civilian university physician's assistant training programs.

In addition, information of a more general nature was gained by reviewing the multitude of articles and studies provided by governmental

¹The Ad Hoc Panel on New Members of the Physician's Health Team of the Board on Medicine of the National Academy of Sciences, New Members of the Physicians Health Team: Physician's Assistants (Washington, D.C.: National Academy of Sciences, 1970), pp. 3-4.

agencies, universities, and civilian health and scientific associations, Personnel interviews were also conducted with officials and students of the School of Health Care Sciences, Sheppard AFB, Texas.

DATA ANALYSIS AND HYPOTHESES TESTING

As this study progressed, the authors noted that because of the large number and variety of both civilian and military medical training programs it would be impossible to compare all of them. However, it was also noted that a large number of the civilian programs were patterned after the Duke Physician's Assistant program or the MEDEX program at the University of Washington. Consequently, it was decided to use these two programs as representative of civilian programs, in general, and to compare them with only a few selected military training programs. The course descriptions for all courses considered are outlined in Appendices A and B.

The available data was analyzed by first grouping the military courses into three categories. Once this was accomplished, the programs were compared to Duke's Physician's Assistant program and Washington's MEDEX program. In addition, the book, A Guide to the Evaluation of Educational Experiences in the Armed Forces, was used as a source of information and guidance.¹

¹Cornelius P. Turner (ed.), A Guide to the Evaluation of Educational Experiences in the Armed Services (Washington, D.C.: American Council on Education, 1968).

Chapter 2

CIVILIAN MEDICAL TRAINING PROGRAMS

As stated in Chapter 1, the number and variety of programs to educate physician's assistants has proliferated since the original programs were introduced in 1965. A March 1971 booklet¹ published by the United States Department of Health, Education, and Welfare lists 125 different training programs for physician support personnel. Of this number, there are 43 separate physician's assistant-type programs. These programs are in various stages of planning, implementing, or actual operation. Not all of these programs are relevant to this particular study, which is concerned solely with the physician's assistant who will be serving with a physician in a general or family practice.

In 1965, the University of Washington opened the first MEDEX training program in the United States. At the same time, Duke University was starting its Physician's Assistant training program. These two programs have quite different requirements regarding entrance procedures, length of training in the didactic and clinical training phases, type of recognition granted by the institutions upon completion of training, and post-training program doctor-physician's assistant relationships. It is not within the capabilities of the authors to judge the relative merit of the approaches taken by these two programs.

¹U.S. Department of Health, Education, and Welfare, Selected Training Programs for Physician Support Personnel (Washington, D.C.: Department of Health, Education, and Welfare, March 1971).

However, it is apparent that each program has the same ultimate goal. This goal is to provide trained personnel who can expand the capabilities of the health care system to provide better and more far reaching care to the American people.

Colonel (Doctor) William H. Behrens, Jr., Chief, Department of Medicine of the School of Health Care Sciences, Sheppard AFB, Texas, succinctly stated the distinguishing characteristics of the two types of programs. He said:

In rural areas where sufficient physicians are not available, the MEDEX can undoubtedly augment the capabilities of the physicians who are available. The health-care personnel crisis is multifaceted and I think the MEDEX and PA programs are each meeting a definite, but different, facet of the need. The PA program offers the individual capable of upper college level work the opportunity to develop skills to work semi-independently (though still under the protective umbrella of a physician) while MEDEX offers the man with less potent academic credentials and training to meet an equally obvious need (functioning in a somewhat more dependent manner).¹

This chapter will use the University of Washington MEDEX program and the Duke University Physician's Assistant program as models of the two different approaches in training physician's assistants. These two programs were the pioneers in their respective types of training and other curricula which have been started since 1965 have used these two programs as their basis. Naturally, subsequent programs have been altered to various degrees to conform more closely to the host college and state environments.

¹Statement by Colonel (Doctor) William H. Behrens, Jr., Chief of Medicine of the School of Health Care Sciences, Sheppard AFB, Texas, personal interview, October 20, 1971.

UNIVERSITY OF WASHINGTON MEDEX PROGRAM

The MEDEX (formed from the beginning letters of the French expression Medecin Extension) program started as a project jointly sponsored by the Department of Preventive Medicine, School of Medicine, University of Washington and the State Medical Education and Research Foundation of the Washington State Medical Association. The aim of the project was to provide a new kind of health professional who could act to help extend the physician's capacity to furnish needed patient care.¹

At present, there are five MEDEX projects in operation, in the states of California, New Hampshire, North Dakota, Utah, and Washington. The normal curriculum consists of a three-month didactic (academic) phase followed by a one-year preceptorship phase.

As presently constituted, the MEDEX program does not require admission to a university. Thus, MEDEX is not bound by university eligibility requirements, but is able to evaluate the applicant based upon his record of medical experience and training. This is one of the unique features of the MEDEX program.

Another unique attribute of MEDEX is its complete reliance upon former military corpsmen to fill the program. As of March 1971, every graduate of a recognized MEDEX program had been a former corpsman.² Furthermore, a bulletin published by MEDEX says in regard to eligibility requirements, "The MEDEX program is primarily for former U.S. military

¹The term MEDEX is used to refer to the program at the University of Washington. An individual who has completed this program is known as a Medex.

²Selected Training Programs for Physician Support Personnel, pp. 1-49.

corpsmen. All programs require a level of training and experience of independent duty technician (or civilian equivalent)."¹

Acceptance into the MEDEX program is based upon previous training, experience, and performance. All of the Medex must either have served on independent duty or have received advanced training that qualifies them for independent duty. Their formal medical training ranges from the 900 hours of the Air Force corpsman (independent duty technician), the 1400 hours of the Navy "Class B" Hospital Corpsman,² to the 1900 hours of formal medical training of the corpsmen classified in the 91C series of Army Military Occupational Specialties. For acceptance into the MEDEX program, their practical experience can range from two to twenty years in the provision of primary medical care within the defense system's medical operations. There is no age limit, and there are no educational requirements other than prior military medical training.

This reliance upon prior military medical training in lieu of any other educational requirement does not present a problem. The military services give tests to all incoming enlisted personnel to determine their intelligence level and capabilities. Those personnel who are assigned to the medical fields must perform in the upper percentiles on these tests to be allowed to work in any of the medical specialties. Thus the fact that a man has had duty in the medical field is an indirect measure of his ability to handle the academic and practical portions of his MEDEX training.

¹MEDEX Communication Center, MEDEX Communication Center Information Sheet (Seattle: the author, 1971), p. 1. (Nimeographed.)

²This type corpsman is not to be confused with the Type B assistant described in Chapter 1.

The MEDEX program tries to place its graduates in individual physicians' offices and therefore has a training program that requires very specific types of background. Thus, the "selection" process usually includes the following steps: (1) an application form is filled out. This application form requires character references and also must include all military performance reports so that the screening committee can trace the types of duty an applicant has had and how well his supervisors believe he has performed those duties; (2) each MEDEX project screens the application forms and invites those applicants whose qualifications are most appropriate to the program for a weekend of interviews. This expense-paid weekend selection is scheduled approximately six weeks to two months before the start of a particular class, and consists of interviews by the MEDEX staff and the physician/preceptors; (3) finally, the staff and physician/preceptors review the interviewed candidates and make the final selections. Trainees are paid a stipend of approximately \$5,400 a year for the 15-month program, plus a dependency allowance. At the end of the preceptorship, the physician/preceptor will hire the Medex.¹

The MEDEX program is divided into two phases: (1) a University training phase and (2) a preceptorship phase. The University training phase lasts three months and consists of a mix of didactic and clinical teaching with an orientation toward the performance of tasks. Heavy emphasis is placed upon pediatrics, geriatrics (chronic disease), history-taking, physical examination, and transition from the field of military medicine to the setting of civilian medical practice. Appendix

¹MEDEX Communication Center Information Sheet, p. 2.

A contains the schedule for the MEDEX class attending from August 2, 1971 to November 3, 1971.

It was not possible to compile an authorizative summary of a standard curriculum and course descriptions for the MEDEX program because the MEDEX projects have not settled on a formal curriculum. Due to the nature of the MEDEX program, the curriculum and contents vary with each course. This variation is produced because the administrators of each MEDEX program are trying to adjust their programs to meet the demands of the participating physician/preceptors and to conform to their host college and state requirements. Therefore, since it is not possible to present a standard curriculum for MEDEX in Appendix A, the authors have provided a University of Washington schedule to illustrate the types of courses taught and the relative emphasis each course receives.

The preceptorship phase is twelve months long. During this phase, additional training takes place in the physician/preceptor's office, rather than in an academic setting. Preceptors are primary-care physicians who have expressed a desire to increase their capacities to provide primary care services. They act as teacher/trainers during the preceptorship phase of the training. Criteria for their selection include: (1) a desire by the physician to increase his capacity to provide medical services; (2) a willingness to provide task-performance training to the Medex during the Medex's twelve months of on-the-job training (preceptorship); and (3) a willingness to employ a Medex after the preceptorship, if economics and compatibility are favorable.¹

¹MEDEX - A Program to Extend the Physician's Capacity, p. 3.

For the first few months that a Medex is working for his preceptor, he will assist the physician by learning and applying primary medical-care skills under the physician's close supervision. When the physician has developed enough confidence in the Medex, he can be used in a variety of ways. These uses include: screening patients to be seen by the doctor, making screening house calls, taking emergency calls, assisting at surgery, applying and removing casts, performing limited laboratory work, taking patient histories, performing parts of physical examinations, or aiding in other tasks that do not require a physician's extensive training. All of these activities are directed toward extending the physician's capacity.

The Medex can only progress as far as his preceptor wishes him to go. The preceptor controls the degree to which a Medex either resembles a glorified file clerk, a near-physician, or any point on a continuum between these extremes. Naturally, the physician is going to allow his assistant to handle only that portion of the workload which the physician thinks his assistant is capable of handling. In effect, the preceptor molds his assistant into a subordinate who best complements the working habits of the preceptor and shares the workload as the preceptor sees fit.

The drawback to this phase of MEDEX training is that the Medex can become completely dependent on his preceptor for the degree of excellence he attains in providing quality health care. Other than the initial three-month didactic training period, the Medex relies almost exclusively on his preceptor to strengthen those skills he acquired while working as a corpsman, and to instruct him in any other phase of health care that he is weak in. The result of this type of instruction

is that no standard set of knowledge is imparted by a preceptor to his assistant. All instruction is completely dependent upon the unique relationship between any one set of preceptors and their students.

If the Medex should leave his preceptor for any reason, he will not have the more standardized set of skills of his Duke counterpart. (Their skills could be viewed as being more standardized because they are exposed to a standard curriculum for nine months as opposed to three months.) This lack of standardized skills would make it more difficult to work with another preceptor. The preceptor would have no way of knowing the Medex's strengths and weaknesses. A transition to another preceptor could take much longer than necessary while the Medex learned the new preceptor's habits and procedures and tried to adjust to them.

One means of resolving this problem has already been put into effect. A continuing education program is conducted during and after the preceptorship phase. Approximately once each month, clinical conferences/seminars are conducted over a three-day weekend by physicians in private practice. These meetings are geared toward filling the gaps in the Medex's knowledge as they are identified.

Another educational process that should become available in the near future is the use of Physician's Assistant Journals (much like the Journal of the American Medical Association) to pass along information on new developments, procedures, equipment, drugs, etc. The main purpose of such a process is to help assure that physician's assistants could remain as current as their preceptors.

At the end of the preceptorship, the physician/preceptor will hire the Medex to aid in his practice, thereby adding a pair of skilled hands

that will function under the physician's constant supervision. The salary of the graduate Medex is the responsibility of the individual Medex and the employing physician. Potential physician/employers have mentioned initial salaries starting at \$8,000 to \$12,000 per year.¹ The Medex will have been trained for general practice, but more specifically for each physician's particular setting.

DUKE UNIVERSITY PHYSICIAN'S ASSISTANT PROGRAM

More than a decade ago specialists at the Duke Medical Center, concerned with applying new diagnostic and therapeutic procedures found that they could safely and effectively delegate many of their functions to non-physicians and thereby extend their services to a greater number of patients. Because of the scarcity of nurses and allied health professionals, the specialists relied primarily on former military corpsmen who had previous health related education and experience, but who did not fit readily into the civilian health care system. At the same time, the plight of the overworked primary care practitioner was becoming more apparent. Dr. Eugene A. Stead, Jr., then Chairman of the Department of Medicine at Duke, saw that the specialist's use of former military corpsmen might be modified effectively to solve the dilemma of the primary care physician.

As a result, a committee was appointed to evaluate the manpower needs of the health services industry and the effectiveness of existing educational programs as they related to these needs. The committee concluded that:

¹MEDEX - A Program to Extend the Physician's Capacity, p. 6.

(1) there was a need for extensive numbers of highly trained technical personnel both within and outside the Medical Center; (2) two types of allied health personnel were needed, one very highly skilled in a specific area, and the other a more broadly educated individual with a sophisticated background in general medical concepts; (3) there was a need for a core curriculum that would simultaneously permit academic achievement and career variation; (4) it was essential to define specific solutions which could resolve individual manpower problems; and (5) there should be a method of attracting career-oriented, qualified candidates to the health services industry and providing them with a functional, progressive, and compact curriculum.¹

The committee studied all aspects of this new program to establish program requirements that would culminate in the training of a new member of the health care team. The entrance requirements and academic curriculum which resulted from this committee's work will be presented in a later portion of this paper.

On October 4, 1965, four candidates, all of whom were ex-Navy corpsmen, were selected to begin the course work designed to educate and train physician's assistants. These individuals were chosen for several reasons: (1) they wanted to pursue a full-time career in the health field; (2) they brought with them a background of education and experience which had motivated an intense interest in caring for sick people; and (3) as representatives of an unused manpower resource it would not be necessary to recruit candidates from other fields who were already in short supply.²

Initial efforts were directed solely toward training former military corpsmen. Since then, the program has been expanded to accept

¹Duke University, Bulletin of Duke University Physician's Associate Program (Durham, N.C.: Duke University, June 1971), p. 1.

²Ibid., p. 2.

non-military applicants. It was realized that many members of the traditional intermediate level health professions had the desire and ability to assume greater patient care responsibilities.¹ This of course is a distinguishing characteristic of the Duke University-type Physician's Assistant program. The reader will recall that the only applicants which have been considered for acceptance in the MEDEX program must have performed as military independent duty technicians. Obviously, the Duke program has a wider base of applicants to choose from than the MEDEX program. However, applicants with military corpsmen backgrounds still have the advantage of having worked under conditions closely resembling the working atmosphere of graduate physician's assistants.

As physicians in other specialties began to demand professional assistants, the curriculum was modified so that the first nine months could meet the needs of all disciplines from family practice to radiology and pathology. In keeping with the original objective, however, the emphasis of the clinical teaching has continued to be in the primary care specialties of family practice, internal medicine, and pediatrics.

Minimum requirements for admission to the program are:

¹Some interesting statistics were contained in The Third Annual Duke Conference on Physician's Assistants, Durham, North Carolina, November 1970. Of the forty-five students which will graduate from the Duke University Physician's Assistant program in the Fall of 1972, thirty-eight are men and seven are women. Applicants to the program have an average of five years of medical experience at the time of application. Fifty-three percent of the class came from the medical corps, twenty-one percent were trained technicians of varied specialties, six percent were registered nurses, five percent were licensed practical nurses and fifteen percent represented other allied health fields and college students without patient care experience.

1. Graduation from high school and transcripts of all grades from high school, college, and business, technical trade, and military schools;
2. Three evaluation forms including one from a physician with whom the applicant has recently worked, one from the applicant's current supervisor or commanding officer, and one from a personal acquaintance of five years or more;
3. Intelligence and personality tests. Our selection test battery includes the following: the College Entrance Examination Boards - Scholastic Aptitude verbal, the SAT math, the Math Achievement Test - Level I, and the Minnesota Multiphasic Personality Inventory. Candidates for admission into the program can take the CEEB tests during regular national administrations and have their scores sent to the Duke Medical School as part of their application. Tentatively selected applicants are invited to Duke for personal interviews and at that time, the MMPI is administered. MMPI profiles are used to check on interview findings;
4. The final requirement is a personal interview. We feel the personal interview is advantageous in that it allows for an exchange of information between the admissions committee and the applicant. Generally, interviews last approximately 20 minutes. The interviewing committee is comprised of representatives of the administrative staff, a graduate physician's assistant, and physicians from participating clinical disciplines.¹

For the 1971-1972 catalogue, an additional admission prerequisite has been added. It states:

Previous experience in the health field with at least 2,000 hours involving direct patient contact. (Experience gained as a medical corpsman, radiologic technician, Registered Nurse, Licensed Practical Nurse, surgical technician, medical technologist, physical therapist, inhalation therapist, etc., are all considered valid.)²

Once accepted at Duke, the student enters a concentrated twenty-four month educational program. The curriculum has been developed to

¹Duke University, The Third Annual Duke Conference on Physician's Assistants (Durham, N.C.: Duke University School of Medicine, November 1970), pp. 36-37.

²Bulletin of Duke University Physician's Associate Program, p. 14.

provide students with an in-depth understanding of the medical sciences and clinical routines. During the course of a student's studies, it is expected that the assistant will work in clinics, in hospital settings, and in physicians' offices, always in association with, and under the supervision of, a physician who will assume the legal responsibility involved.

The program has been divided into three phases. Phase I is nine months long and is a basic core program in clinical and bioscience principles. In this portion of the program, the student is involved in over 1,000 hours of academic education.¹ This phase is required of all students regardless of their specialty interest. The courses offered during these first nine months include: (1) biochemistry; (2) anatomy; (3) pharmacology; (4) physiology; (5) medical terminology; (6) history; philosophy and ethics of medicine; (7) epidemiology; (8) clinical medicine; (9) radiology; (10) patient evaluation; (11) basic laboratory procedures; (12) animal surgery; (13) human growth and development; (14) micro-biology; (15) chemistry; and (16) electrocardiography.²

Phase II (required clinical rotations) and Phase III (elective clinical rotations) last thirty-six and twenty-four weeks, respectively. During this aspect of the educational program, the student is expected to develop expertise in the application of his pre-clinical learning. These rotations are supervised exercises in defined disciplines within the medical center and surrounding hospitals. These disciplines allow the students to apply the knowledge gained in the

¹The Third Annual Duke Conference on Physician's Assistants, p. 39.

²Duke University, Bulletin of Duke University Medical Center (Durham, N.C.: Duke University School of Medicine, May 1971), p. 110.

didactic portion and to develop additional skills through individual, supervised instruction.

Throughout the clinical rotations, students attend weekly seminars supervised by faculty members, but with material presented by the students themselves. The required clinical rotations include: (1) eight weeks in an out-patient clinic with alternate nights in the Emergency Room; (2) an in-patient service of eight weeks, supervised by the Chief Resident of the service; (3) an outside rotation spent in an office and hospital practice with a community-based physician; (4) a four week rotation in an intensive care unit; and (5) a four week rotation in a health clinic.¹

The elective clinical rotations provide each student with the opportunity of selecting a clinical program that will meet his own desires and needs. Clinical programs are currently available in family practice, internal medicine, pediatrics, surgery, obstetrics and gynecology, psychiatry, radiology, pathology, industrial medicine, allergy and respiratory diseases, cardiology, dermatology, endocrinology, gastroenterology, hematology, nephrology, neurology, neurosurgery, ophthalmology, orthopaedic surgery, otolaryngology, plastic surgery, and urology.²

The academic course outline for the Duke University program is in Appendix A.

During Phase II of the training, the student physician's assistant first starts to form a relationship with his preceptor. The student is

¹The Third Annual Duke Conference on Physician's Assistants, p. 39.

²Bulletin of Duke University Physician's Associate Program, p. 14.

required to spend a rotation in an office or hospital practice with a community-based physician. Normally, by the time a student has reached this phase of his training, he will have been interviewed by several doctors who wish to have an assistant as soon as one becomes available. The student and interviewing doctors will exchange ideas and information on their particular views of patient care, working conditions, areas of interest, etc., to see if they have a basis for forming the more permanent relationship which is a hallmark of the physician/preceptor and physician's assistant combination.

Once a student physician's assistant and a preceptor have agreed to form themselves as a health care team, the student can serve his required clinical rotation at the same time he is starting to become acquainted with the practices of his employer. For those students who are participating in the general medicine and family practice portions of the elective clinical rotations, the early formation of a partnership with their preceptor likewise gives them a head start in becoming familiar with the specific duties which they will be expected to perform.

SUMMARY

The physician's assistant functions primarily as a data-gatherer. He can take detailed histories of patients, perform comprehensive physical examinations, and collect clinical and diagnostic data by performing intricate technical procedures such as gastric analyses, arterial punctures, lumbar punctures, pulmonary function studies, bone marrow biopsies, blood counts, urinalyses, and a variety of other procedures. He also assists the physician in many time-consuming

therapeutic tasks. In this role, he is taught to administer and regulate intravenous fluids, to instruct patients in numerous areas of rehabilitation as designated by the physician, to apply and remove casts, to redress and evaluate post-operative incisions, and to discuss the implication of certain diagnostic procedures in order to reduce the patient's confusion and apprehension.¹

Through communications, the physician's assistant can further aid the physician by being an extension of the physician in alternate locations. When the physician is in his office, the assistant can be in the hospital performing admissions work-ups, narrative summaries, or scheduling and explaining diagnostic procedures as mentioned before. In the office, the physician's assistant can increase the efficiency of the patient-care system by collecting this type of data for the physician so that the actual physician-patient contact can be spent in a more meaningful way. In the home, the physician's assistant can again provide his physician with an extra set of sensory organs and also aid in routine management for invalid patients. Perhaps the greatest value of the physician's assistant lies in the fact that the physician has a well-trained, virtually unrestricted assistant to whom he can teach both skills and functions that will allow his particular practice to function in a more efficient, effective and economical manner.²

Upon completion of a Duke University-type Physician's Assistant program, a graduate is probably more prepared to handle a broader variety of tasks than his counterpart who has graduated from a MEDEX

¹The Third Annual Duke Conference on Physician's Assistants, p. 40.

²*Ibid.*, p. 40.

program. The fact that a Duke Physician's Assistant graduate has been exposed to six more months of didactic training and three more months of clinical training would seem to indicate that he would have to be less closely monitored than would a Medex in their initial years after graduation.

There are, of course, variations in the amount of talent and ability which any one person might possess. Thus, just because a person is a graduate of a MEDEX program does not necessarily mean that he is less capable in assisting a doctor than a Duke program graduate. One has to keep in mind all the variables involved. These variables include the amount of prior experience of each assistant, the specific duties which the preceptor wishes the assistant to perform, and the availability of further educational materials to improve any weak areas of medical knowledge which an assistant might have.

One of the real identifying features of the MEDEX program is the preceptorship phase of training. The Duke Physician's Assistant program likewise relies on a preceptorship phase but Duke students are expected to put into practice some of the lessons they have been taught in their more extensive didactic phase of training. The MEDEX students are expected to first learn about some of the cases they will normally see and then start to practice on them. Thus, the MEDEX students have to rely on seeing some cases in their preceptorship phase that the Duke students might have seen in their more extensive academic or clinical experiences.

In reality, a Medex can progress only as far as his preceptor allows. (This restriction is also shared by graduates of the Duke-type Physician's Assistant program and is a result of the physician's legal

liability for his assistant.) The majority of the Medex's training time is spent learning the specific procedures and routines for performing those procedures as each individual preceptor instructs. One result of this practice is that there is no standardization in training in the MEDEX program other than the didactic and clinical training received in the three-month University phase.

The monetary aspects of the MEDEX program are in direct contrast to the Duke University program. In the MEDEX program, the student is paid approximately \$5,400 per year. If one considers the fact that the MEDEX program prefers applicants who are married, it would seem that the MEDEX program might have more appeal to married ex-corpsmen because of the stipend. In the Duke program, the student is expected to pay normal college tuition, books, fees, housing, etc., without the benefit of a similar stipend. There is certainly some form of financial assistance available to a Duke Physician's Assistant student who is otherwise qualified, but the lure of being paid while going to school must be considered by candidates who are trying to decide which program to apply for.

There is a quid pro quo, however, because a graduate of the Duke program can get either a baccalaureate degree or a certificate for his studies, depending on the total number of college credits he has amassed prior to his formal entry into the program. Since MEDEX does not satisfy university degree-granting requirements, MEDEX training does not confer regular college credit at this time. A certificate is awarded to each Medex trainee upon completion of the academic training phase; another certificate is awarded to each Medex upon completion of the year of preceptorship.

Undoubtedly, each program has its advantages and disadvantages and as noted by Colonel Behrens, each program is meeting a definite, but different facet of the health-care personnel crisis.¹

To accomplish the goals of having a more efficient, effective and economical practice, the main point is that a physician's assistant takes care of the time consuming tasks while the physician is freed to handle more patients and give greater concentration to each patient. The degree to which a physician's assistant is effective in accomplishing this task is shown by the following quote:

It has been shown that a well-trained physician's assistant will free from 30 to 50 percent of the physician's time and will markedly increase the number of patients that can be adequately cared for by the physician.²

¹Behrens, personal interview.

²Bowman-Gray School of Medicine, Wake Forest University, Physician's Assistant (Winston-Salem, N.C.: Bowman-Gray School of Medicine, June 1971), p. 1.

Chapter 3

MILITARY MEDICAL TRAINING PROGRAMS

Military medical training programs vary greatly in both their scope and depth in which they are taught. For this reason the authors decided that only a few specific programs could be considered in this study. These programs include the Army's Medical Corpsman and Clinical Specialist courses, the Navy's Class A and Class B Hospital Corpsman courses, and the Air Force's Medical Service Specialist, Medical Service Technician - Independent Duty and Physician Assistant courses. These courses were selected, primarily, because they include the general medical knowledge and direct patient care which is required of a civilian physician's assistant. The general course outlines for each of these training programs are outlined in Appendix B of this study.

The limited detail provided in the course outlines made it difficult to compare these training programs. In addition, one could only draw general conclusions about the level of instruction provided in these courses. These conclusions were drawn by examining who instructs the courses, the educational level of the trainees, and by soliciting opinions of personnel who are directly involved with the training.

Because of the above limitations, it was necessary for the authors to divide each course, with the exception of the Air Force Physician Assistant course, into five categories. The five categories are : (1) military training - drills and ceremonies, physical conditioning and various military topics; (2) course administration - in and out processing, commander's time, etc.; (3) administrative topics - military

medical organizations, records and reports, and education and instructor training; (4) basic sciences - primarily anatomy and physiology; (5) clinical/practical - training in various medical duties, responsibilities and methodologies. In each of the following sections the courses are discussed in terms of these categories and in terms of their relative strengths and weaknesses.

ARMY

Medical Corpsman

The Army Medical Corpsman (MOS 91A10) course is designed to train qualified enlisted personnel to perform routine phases of patient care and treatment in combat areas and other medical facilities.¹

Prerequisites for the course include completion of Basic Combat Training, a standard score of 100 or higher in aptitude area General Test, and the rank of E-4 or below.²

The instructors for this course include enlisted personnel who have completed the course and who have experience in the field. In addition, Registered Nurses provide both supervision and teaching of the course. According to personnel involved with the training program, the nurses spend a considerable amount of time conducting classes.³

The course is 400 hours (10 weeks) long for male trainees. The basic course structure includes 95 hours of instruction in basic nursing

¹U.S. Department of the Army, Office of the Surgeon General, Enlisted Medical Occupational Specialty Training (Washington, D.C.: Office of the Surgeon General, n.d.), p. 21.

²Ibid., p. 22.

³Statement by Major Walter H. Keim, MS, U.S. Army, telephone interview, December 2, 1971.

procedures, 31 hours in proficiency testing, and approximately 70 hours of practical application in basic nursing procedures. No actual clinical experience is given during the course.¹ Although the course is only ten weeks long, 13.8 percent of the training time is spent on general military training such as drills and physical conditioning. Also, 16.2 percent of the time is devoted to course administration. In sharp contrast, only four percent of the training time is spent on a basic science (that is, anatomy and physiology) block of instruction.² The balance of the course involves training in such areas as basic emergency medical treatment, medical symptomology, and field surgery. A large portion of the training in these areas involves the practical application of the training, rather than the theory behind it.

Examination of the lesson plans used in this course indicated that the course is on the high school level. Basically, the course trains the personnel to be practical nurses and would be more than equivalent to a Red Cross first aid course given to high school juniors and seniors.

College level credit recommendation of the American Council on Education: Credit in first aid and hygiene on the basis of institutional examination.³

¹Based on personal correspondence between Major Walter H. Keim, MS, Adjutant, U.S. Army Medical Training Center, Fort Sam Houston, Texas, and the authors, August 20, 1971.

²U.S. Department of the Army, Advanced Individual Training Program (MOS 91A10), YUSAMEDTC Draft Army Subject Schedule 8-91A10, 1 July 1971.

³Cornelius P. Turner (ed.), A Guide to the Evaluation of Educational Experiences in the Armed Services (Washington, D.C.: American Council on Education, 1968), p. 197.

Clinical Specialist

The Army Clinical Specialist (MOS 91C20) course provides enlisted personnel with a working knowledge to supervise and perform patient-care duties appropriate to hospital and field medical assistants.¹ Prerequisites for the course include: grade E-3 or above and qualified as a Medical Specialist (MOS 91B20). The trainees must also have less than 16 years of active duty service with 24 months remaining on his commitment; be a high school graduate or equivalent with a standard score of 45 or higher on the General Education Development Test 5, high school level; and have a standard score of 100 or higher in the aptitude area General Test.²

The instructors in this course include both officers who are Registered Nurses and enlisted personnel who are Licensed Practical Nurses.³

The course is 1760 academic hours (40 weeks) long. A significant portion of the course is spent on subjects and administrative matters not closely associated with academic medicine. For example, 16.9 percent of the time is spent on military training and course administration. In addition, another 9.8 percent of the course is spent on academic topics related to the administrative portion of the Clinical Specialist's duties.⁴ These topics include medical records

¹Enlisted Medical Occupational Specialty Training, p. 25.

²Ibid., p. 26.

³Statement by Lt Col H. H. Clark, Jr., MSC, U.S. Army, telephone interview, December 7, 1971.

⁴U.S. Department of the Army, Clinical Specialist Course (MOS 91C20) (Fort Sam Houston, Texas: Brooke Army Medical Center, 17 February 1971).

and reports, techniques of management, the Army Medical Field Service and so forth. Although these topics are necessary for this individual to perform his duties, they have little relation to academic medicine. The remainder of the course material contains no specific training in the biological sciences. Rather, the basic science presented is incorporated into the methodology of the particular topic.

Overall, the course leans toward the practical application of medicine, but appears to be well balanced. The material, combined with the level of instruction, places the course above the high school level. However, in the authors' opinion, it is very doubtful that the material covered would be on the same level as that existing in a pre-med course.

College level recommendation of the American Council on Education: This course is at the pre-professional or professional level. The following hours could be awarded: two semester hours in first aid and hygiene, two hours in principles of administration and management of nursing service, and credit in physiology on the basis of institutional examination.¹

NAVY

Class A Hospital Corpsman

The Navy Class A Hospital Corpsman course trains enlisted personnel in the basic principles and techniques of direct patient-care and first aid procedures.² Prerequisites for the course include

¹Turner, p. 199.

²Ibid., p. 323.

completion of basic training and a combined score of 100 in the Arithmetic and General Classification Tests. It is possible to waive up to ten points on this requirement.¹

The instructors for the course include both enlisted personnel and Registered Nurses.²

The course is 640 hours (16 weeks) long and 9.4 percent of the training hours are spent on non-medical subjects. These subjects include naval and medical department organization and naval customs and traditions. The basic science portion of the course amounts to approximately 12.6 percent of the course time and consists of 80 hours of anatomy and physiology.³ The balance of the course time is spent on subjects whose basic purpose is to impart knowledge to the trainee in direct patient care. These topics include such areas as principles and techniques of patient care, first aid and emergency procedures, and preventive medicine.

An individual receiving this training would be considered equivalent to a practical nurse. The training is primarily concerned with patient care, with limited amounts of medical theory included in the instruction. The 80 hours of anatomy and physiology is one strong point in the curriculum and may possibly be considered college material. However, it would not be presented in the depth that a medical student would receive.

¹Statement by H. G. Edrington, Captain, Bureau of Medicine and Surgery, telephone interview, November 30, 1971.

²Ibid.

³U.S. Department of the Navy, Bureau of Medicine and Surgery, Navy Department Formal Schools, DUMED Instruction 1510.9B (Washington, D.C.: Government Printing Office, 15 November 1967), pp. 13-14.

College level credit recommendation of the American Council on Education: Three semester hours in elementary anatomy and physiology and two semester hours in hygiene.¹

Class B Hospital Corpsman

The Navy Class B Hospital Corpsman course provides instruction in advanced principles and techniques of patient care with emphasis on tentative diagnosis and on acquiring skills necessary for assignment to duty independent of direct medical officer supervision.²

Prerequisites for the course include completion of basic training and a combined score of 100 in the Arithmetic and General Classification Tests. It is possible to waive up to ten points on this requirement.³

Instructors for the course include both enlisted personnel and officers who are Registered Nurses.⁴

This course is 800 hours (20 weeks) long. Despite the increased length, relatively little more in the way of academic medical material is presented than that covered in the Class A course. In fact, approximately 23.1 percent of the course is involved with administrative topics which relate to the corpsman's duties. These subjects include the Naval Bureau of Medicine, education and instructor training, and clerical forms and procedures. Instruction in basic science includes only 60 hours of anatomy and physiology or 7.5 percent of the total

¹Turner, p. 323.

²Ibid.

³Edrington, telephone interview.

⁴Edrington, telephone interview.

training hours. The remaining portion of the course is primarily concerned with military training (16.2 percent) and courses which are applied clinical science in nature (53.2 percent).¹

The individual trained in this program is fairly well-equipped to work in an independent duty type situation. As he gains experience, his ability to do diagnosis will improve. However, it should be pointed out that his basic medical knowledge is relatively limited.

College level credit recommendation of the American Council on Education: Four hours in hygiene, sanitation, and first aid. Two semester hours in anatomy and physiology.²

AIR FORCE

Medical Service Specialist

The Air Force Medical Service Specialist (AFSC 90230) course includes training to assist professional personnel in the care and treatment of patients in the medical wards, dispensaries, clinics, and related U.S. Air Force medical activities.³ Prerequisites for the course include a minimum Airman Qualifying Examination General Score of 60. In addition, completion of a high school level course in any three or more of the following courses is desirable: anatomy or physiology, biology, chemistry, general science, hygiene, and psychology.⁴

¹Navy Department Formal Schools, pp. 15-22.

²Turner, p. 323.

³U.S. Department of the Air Force, Medical Service Specialist (Sheppard AFB, Texas: Sheppard Technical Training Center, 6 April 1971), p. i.

⁴U.S. Department of the Air Force, Formal Schools Catalog, Air Force Manual 50-5 (Washington, D.C.: Headquarters U.S. Air Force, 1 July 1971).

Instructors for this course include enlisted personnel who have had training and experience in the career field. Also, Registered Nurses supervise the conduct of the course as well as spend a portion, of their time actually instructing.¹

This course is 398 hours (12 weeks) long and most of the training hours are devoted to the clinical/practical area of study. This material is concerned with routine patient care, first aid procedures, and other practical applications of medical knowledge. In contrast, only 5.3 percent of the training is utilized for instruction in a basic science (anatomy and physiology).²

The course is essentially designed to train a practical nurse. Overall, it is equivalent to a good Red Cross course in first aid. The level of instruction is approximately equal to that received by a high school student. This conclusion was confirmed by the training advisor at the School of Health Care Sciences, Sheppard AFB, Texas.³

College level credit recommendation of the American Council on Education: Two semester hours in physiology and hygiene.⁴

Medical Service Technician - Independent Duty

The Air Force Medical Service Technician - Independent Duty (AFSC 90270) course trains personnel to conduct a medical clinic in the absence of a physician at a small, isolated station. Students are

¹Statement by William E. Baird, Training Advisor, School of Health Care Sciences, Sheppard AFB, Texas, telephone interview, December 2, 1971.

²U.S. Air Force, Medical Service Specialist, pp. iii-v.

³Baird, telephone interview.

⁴Turner, p. 72.

trained to render emergency treatment within their capabilities or to recommend evacuation to a location where medical facilities are available.¹ Prerequisites for the course include completion of the Air Force 3AAR90270-1 course, possession of at least a five level proficiency and a minimum of two years experience in the 902X0 career field.²

Instructors include enlisted personnel who have had the training, in addition to field experience. Also, a physician is used as a consultant and instructor in the course. The physician is required to assure an authoritative basis for discussion groups in which students ask for clarification of various subjects.³

The course is 280 hours (9 weeks) long. Of these 280 hours, only 7.5 percent is spent on topics of a non-medical nature. This material includes course administration and administrative topics.⁴ The curriculum is very heavily weighed in favor of the practical application of medical techniques. Basic sciences, per se, are not taught. However, they are incorporated into specific topics and the methodology of completing various tasks, such as basic laboratory techniques, pharmacy and therapeutics, and emergency procedures. A significant portion of the curriculum describes and discusses the clinical hallmarks of diseases in major body systems. Students are also trained in patient interviews (history taking) and intravenous fluid therapy. It should

¹U.S. Department of the Air Force, Medical Service Technician - Independent Duty (Randolph AFB, Texas: Headquarters Air Training Command, 18 February 1969), p. 1.

²USAF Formal Schools Catalog, p. 50-90-1.

³Baird, telephone interview.

⁴Medical Services Technician - Independent Duty, pp. C-1 to C-5.

be noted that 7.5 percent of the course material involves instruction in military public health. Topics such as insect and rodent control and poisonous plants and animals are discussed. Although these subjects are very necessary for this type of individual, it would appear that they are not subjects which would be given college level credit.

Overall, the course trains the student for general nursing duties and acute-care emergency treatment. The trainee who completes this course is probably at least as sophisticated as a nurse in the duties he performs. However, he definitely does not have the academic background which a nurse would possess.

College level credit recommendation by the American Council on Education: Course not listed.

Physician Assistant

The Air Force Physician Assistant (AFSC 91730) course provides training to qualify selected non-commissioned officers for assignment as a physician's assistant to perform duties in the Physician Assistant Ladder of the Airman Medical Career Field. Students are trained to assist the physician in examining, diagnosing, and treating diseases and injuries by performing patient histories, physical examinations, and laboratory studies. Students also perform a broad spectrum of designated diagnostic and therapeutic procedures such as lumbar punctures, administration of injections, suturing of minor lacerations, interpreting medical findings and referring them to the supervising physician, and preparing and using effective written and oral communications with patients and medical personnel.¹ Course prerequisites

¹U.S. Department of the Air Force, Physician Assistant (Sheppard AFB, Texas : Air Training Command, 15 January 1971), p. 1.

include possession of an AFSC of 90XXX, 91XXX, or 98XXX; a minimum of one year's experience in direct patient care; a minimum of three year's active service and serving in grade E-4 through E-9; and a minimum Airman Qualifying Examination General Score of 60.¹

The instructors in the Physician Assistant program are, on the average, better qualified academically than any other group of military medical instructors. With the exception of the Medical Laboratory Technicians (AFSC 90470), all of the personnel involved in instruction have at least a college degree. In fact, with the exception of the General Biomedical Laboratory Officer, all of these instructors are required to have advanced degrees, from Pharmacy to a Master of Science in Biochemistry to a Doctor of Medicine.²

The Air Force's Physician Assistant program is the result of the Air Force's recognizing the chronic shortage of physicians in the United States as well as their responsibility to contribute to the solution. Existing civilian physician's assistant training programs were studied in detail to insure that a training program developed within the Air Force would meet reasonable accreditation or licensing standards which any legislative or professional body might establish. In addition to providing the Air Force with highly qualified medical personnel, this program would allow the individual Physician Assistant to gain accreditation as a civilian once his service career or commitment was completed. In this way, the taxpayer's investment in

¹Physician Assistant, p. 1.

²Ibid., pp. F-2 to F-3.

the individual's training would pay additional dividends in the ultimate expansion of the civilian health manpower pool.¹

The program is divided into two phases. Phase I is primarily didactic in nature and is twelve months long. This phase is conducted at the School of Health Care Sciences, Sheppard AFB, Texas, in conjunction with the Sheppard Air Force Base Hospital. Within the didactic phase the material is covered in 1276 academic hours. These hours are divided into 438 hours of basic biological science and 838 hours of basic clinical science.² Major areas of study include: Anatomy, Medical Terminology, Human Growth and Development, Pharmacology, Clinical Laboratory Procedures, Radiology, Biochemistry, Clinical Chemistry, Clinical Medicine and Surgery, Physical Diagnosis and Physiology.³ Only two percent of the course work is devoted to non-medical type training.

Phase II of this program is primarily clinical and is also twelve months long. This portion of the training program is conducted at various United States Air Force hospital facilities. The primary medium of instruction is the assignment of students through a series of medical and surgical clinical rotations. These rotations are under the direct instruction and supervision of the chiefs of the various specialty services or designated preceptors with equivalent training in the various specialties. The series of rotations include: (1) Internal Medicine; (2) Dermatology; (3) Pediatrics; (4) Surgery-Emergency Room;

¹Physician's Assistant Training in the United States Air Force, Air Training Command, Sheppard AFB, Texas, 1971, p. 1.

²Physician Assistant, p. B-2.

³Ibid., pp. 1-2.

(5) Orthopedics; (6) Obstetrics; (7) Otorhinolaryngology; (8) Ophthalmology; (9) Psychiatry; and (10) General Therapy. During each rotation the student will attend all rounds and professional conferences which his preceptor attends; attend all postmortems and conferences on his patients; prepare histories and physical examinations on patients as assigned by the preceptor; accomplish diagnostic and therapeutic procedures under the supervision of the preceptor. Emphasis in each area will be on the types of problems commonly encountered in Air Force General Therapy Clinic. Each rotation, with the exception of the General Therapy Clinic, requires a minimum of two hours of library research projects.¹

Overall, this course is taught on the highest level of any military medical training. It is heavily oriented toward basic medical knowledge and is equal to comparable courses offered by civilian institutions.²

College level credit recommendation by the American Council on Education is not available because the book was published before this course was initiated.

SUMMARY

With the exception of the Air Force Physician Assistant program, Tables 4 and 5 summarize the courses presented in this chapter. Table 4 presents the number of hours which each course devotes to a particular

¹U.S. Department of the Air Force, Physician Assistant (Phase II) (Sheppard AFB, Texas: Sheppard Technical Training Center, 18 June 1971), pp. 4-5.

²Statement by Colonel (Doctor) William H. Behrens, Jr., Chief, Department of Medicine, School of Health Care Sciences, Sheppard AFB, Texas, personal interview, October 20, 1971.

category. Table 5 presents the same courses and categories, but the figures are percentages rather than hours. It was not deemed necessary to include the Physician Assistant course in these tables because it is definitely a college level program.¹

Chapter 4 will discuss these military training programs in more detail and compare them to the Duke Physician's Assistant program and the University of Washington MEDEX program.

¹Statement by Colonel (Doctor) Jerold L. Wheaton, Commander, School of Health Care Sciences, Sheppard AFB, Texas, personal interview, October 20, 1971.

Table 4
 Military Medical Program Curricula - Categories
 (In Hours)

Program	Military Training	Course Administration	Administrative Topics	Basic Sciences	Clinical-Practical	Total
Army: Medical Corpsmen Clinical Specialist	55 100	65 198	8 173	17 --	255 1289	400 1760
Navy: Class A Class B	60 130	-- --	-- 185	80 60	500 425	640 800
Air Force: Medical Service Specialist Medical Service Tech-ID	6 --	9 1	6 20	21 --	356 259	398 280

Source: Computed from respective course outlines.

Table 5
 Military Medical Program Curricula - Categories
 (In Percent)

Program	Military Training	Course Administration	Administrative Topics	Basic Sciences	Clinical/ Practical	Total
Army: Medical Corpsmen Clinical Specialist	13.8 5.7	16.2 11.2	2.0 9.8	4.3 ---	63.7 73.3	100.0 100.0
Navy: Class A Class B	9.4 16.2	--- ---	--- 23.1	12.6 7.5	78.0 53.2	100.0 100.0
Air Force: Medical Service Specialist Medical Service Tech-ID	1.5 ---	2.3 .5	1.5 7.2	5.3	89.4 92.5	100.0 100.0

Source: Computed from respective course outlines.

Chapter 4

COMPARISON OF CIVILIAN AND MILITARY TRAINING PROGRAMS

Chapters 2 and 3 presented the civilian physician's assistant training programs and the military medical training programs, respectively. The purpose of this chapter is to present the comparisons and the conclusions drawn about the relative merits of these medical training programs. The reader should be aware, however, that these conclusions are general in nature. For example, the fact that a particular military course does not compare favorably with one of the civilian programs does not mean that an individual graduate is not well qualified. The varying capabilities of the individual, his personal experiences and the amount of on-the-job training that he has had are all factors which must be considered when judging qualifications. But, because these factors were beyond the scope of this study, only the course material and general level of instruction were considered.

While conducting this study, the authors noted that, in general, the military medical training programs fell into three groups. The first group consisted of the basic courses and included the Army's Medical Corpsman course, the Navy's Class A Hospital Corpsman course and the Air Force's Medical Service Specialist course. The second group involved courses at the intermediate level or for independent duty assistants. These courses included the Army's Clinical Specialist course, the Navy's Class B Hospital Corpsman course and the Air Force's Medical Service Technician - Independent Duty course. The third group

had the highest level military medical training course for enlisted personnel. The only course in this group was the Air Force's Physician Assistant program. Once the courses were grouped in this manner, it was much simpler for the authors to compare the courses within each group and then discuss them in terms of Duke's Physician's Assistant program and Washington's MEDEX program. The following sections present the results of those comparisons.

BASIC MILITARY PROGRAMS COMPARED TO CIVILIAN PROGRAMS

As mentioned previously, the Army's Medical Corpsman course, the Navy's Class A Hospital Corpsman course and the Air Force's Medical Service Specialist course were placed in the group of basic military training programs. These three courses, for the most part, require the same qualifications for entrance, teach essentially the same curriculum, and instruct on approximately the same academic level. By referring to Table 4 and Table 5 in Chapter 3, the reader can see how the curriculum of each course is divided.

Table 4 shows that the Army devotes a very large share of its training hours to military training and course administrative matters. In contrast, the Navy and Air Force courses spend relatively little time in these two areas. The other significant comparison is the 80 hours of basic science which is taught in the Navy Class A course versus the 21 hours and 17 hours taught in the Air Force and Army courses, respectively. These figures point out the fact that the Navy course is the strongest of the three, in terms of academic hours of basic science. Actually, the number of hours of anatomy and physiology received in this course is approximately four times the number of hours taught in either

the Medical Corpsman or the Medical Service Specialist courses. The number of hours taught also exceeds the number of classroom hours which would be required in a three-credit hour college course.¹ It should be noted, however, that the speed and depth with which the material is covered is not as great as that in a college course.

Overall, all three programs are equivalent to a good first aid course. The Air Force and Navy programs, however, appear to be somewhat better than the Army program. Individuals graduating from any of these programs would be considered equivalent to practical nurses.

When the curricula of the military courses was compared to the didactic portion of the University of Washington's MEDEX program, the courses did not appear to be on the same academic level. Although they cover some of the same topics, the MEDEX program is concerned with the malfunctions and methods of treatment for various body systems. This program contrasts with the military training programs which simply try to familiarize their trainees with these systems and their functions. In addition, the MEDEX program presents information on subjects such as pediatrics, dermatology and arthritis, while the military programs either ignore the topics or treat them only superficially.

The average level of qualifications of the instructors in these programs are also significantly different. The MEDEX program is taught primarily by physicians and other individuals with advanced degrees while the military courses are taught by enlisted personnel, practical nurses, and Registered Nurses. The use of instructor nurses points out

¹It is assumed that the average 3 credit hour course meets approximately 3 times a week for 15 weeks, or a total of 45 hours.

the nursing orientations of these three military courses versus the physician orientation of the MEDEX program. They are more concerned with the practical nursing aspects of patient care than they are with the actual diagnosis and treatment which a Medex or physician's assistant would assist in.

When these three military medical training programs were compared to Duke's Physician's Assistant program, the difference in academic levels was similar to that found in the MEDEX program. In fact, in the authors opinion, the disparity between the course materials in the respective courses was even greater than that found in the MEDEX program. This is due to the very heavy emphasis on basic biological and clinical sciences found in the Physician's Assistant program. Not only do students receive a great deal more course work in the basic and clinical sciences, the level of both the material and instruction is much higher. The instructors are equally as qualified as the MEDEX instructors, but rather than stressing systems malfunctions, the Physician's Assistant program puts great emphasis on basic medical and scientific knowledge.¹ Again, as with the MEDEX program, the Physician's Assistant program is oriented toward a physician's duties, not those of a practical nurse as in the military medical programs.

INDEPENDENT MILITARY PROGRAMS COMPARED TO CIVILIAN PROGRAMS

The intermediate or independent duty type medical training programs considered in this study include the Army's Clinical Specialist course,

¹This case is true during the didactic phase. During preceptorship, emphasis is placed on diagnosis and treatment of specific problems as well as the more practical aspects of patient care.

the Navy's Class B Hospital Corpsman course and the Air Force's Medical Service Technician - Independent Duty course. Personnel serving in these specialties are considered qualified for duty independent, in varying degrees, of the direct supervision of a medical officer. Quite often they serve as primary medical care personnel at remote or isolated military installations.

The comparison of these programs showed them to be relatively equal in the academic level of their course material and in the academic qualifications of their instructors. They did, however, vary considerably in length and subject emphasis and, to a lesser extent, in entrance requirements. By referring to Table 5, it is possible to see that the Army and Navy spend 16 to 17 percent of their training hours conducting military training and administering their courses. In contrast, the Air Force spends approximately three-tenths of one percent of their training time on these areas. In addition, the Navy program devotes 23.1 percent of its course to administrative topics related to reports and record keeping, clerical forms and procedures and instructor training. On the other hand, the Navy's course is the only one which teaches basic science per se. This block of instruction consists of 60 hours of anatomy and physiology.

The courses emphasized different areas of instruction and were from nine to forty weeks long. Despite this it appeared to the authors that the graduates would be relatively equal in training and qualifications. Although the Air Force course was the shortest, its student will, on the average, enter their course at a higher enlisted grade and skill level than either the Army or Navy students. In addition, the Air Force course spends a great deal less time on military

training and administrative topics because their personnel have more experience.

These three programs match the MEDEX program closely. The major difference in the courses is the academic qualifications of the instructors. Again, the MEDEX instructors are qualified to teach on the college level while, on the average, the military instructors are not. Generally, the MEDEX program reteaches a portion of the knowledge that the independent duty corpsman has been taught or has experienced. There are, however, reasons for this and they will be discussed in Chapter 5.

A comparison of the independent duty courses to the Duke Physician's Assistant program led the authors to approximately the same conclusions as with the basic courses. Neither the course material nor the academic qualifications of the military programs can match the Physician's Assistant program. There is relatively little academic medicine or theory in these three courses. Rather, they stress nursing and the treatment of specific problems. In contrast, the Duke Physician's Assistant program provides the student with a basic biological and clinical science background before moving into the direct patient care phase of the course.

AIR FORCE PHYSICIAN ASSISTANT PROGRAM COMPARED TO CIVILIAN PROGRAMS

According to Colonel Jerold L. Wheaton, Commander, School of Health Care Sciences, Sheppard AFB, Texas, the Air Force Physician Assistant program was designed to be at least equivalent to comparable programs

at civilian institutions.¹ Actually, the course is very comparable to the Duke Physician's Assistant program. The curriculum, faculty qualifications and course length are very similar. Both programs stress the basic biological and clinical sciences and strive to give the student a very sound background in basic scientific and medical knowledge. For example, the Duke Physician's Assistant program includes 72 classroom hours of physiology and 48 classroom hours of pharmacology. The Air Force Physician Assistant program contains 91 classroom hours of physiology and 75 classroom hours of pharmacology. Overall, the Air Force program includes 1266 classroom hours of these basic sciences while Duke's program has 1128 hours. On the other hand, Duke's preceptorship phase is 15 months long while the Air Force's is 12 months long.

By referring to Appendices A and B, the reader will note that the curricula of both programs are almost identical to each other. There is no doubt that the Air Force Physician Assistant program is conducted at the college level. Additional evidence of this fact is the offer by the University of Texas to sponsor accreditation of the course.²

It was more difficult to compare the Air Force Physician Assistant program to the MEDEX program. As was noted in Chapter 2, the programs were designed to meet two different facets of the health care crisis. Overall, the Air Force program exceeded the MEDEX program. This was true, primarily, because of the 12 months of didactic training received

¹Statement by Colonel Jerold L. Wheaton, MC, Commander, School of Health Care Sciences, Sheppard AFB, Texas, personal interview, October 20, 1971.

²Ibid.

in the Air Force program versus the 3 months of training received in the MEDEX program. The Air Force graduate will have a much better scientific background, and, although the preceptorships are of the same length he would have a more standardized training.

SUMMARY

This chapter presented the comparisons and significant differences found in the various medical training programs of both the military and civilian schools. Basically, the Army's Medical Corpsman course, the Navy's Class A Hospital Corpsman course and the Air Force's Medical Service Specialist course are far below both the University of Washington's MEDEX program and Duke University's Physician's Assistant program. This is true in both the academic level of the subject matter and the academic qualifications of the instructors. The independent duty military medical programs are comparable to Washington's MEDEX program in academic material, although they rank below the MEDEX program in instructor qualifications. None of the independent duty programs compare to Duke's Physician's Assistant program because of the large amount of basic biological and clinical sciences presented in the Duke program. The Air Force's Physician Assistant program ranks above Washington's MEDEX program and is quite comparable to Duke's Physician's Assistant program. Chapter 5 summarizes the problem and presents the authors conclusions and recommendations.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

The Department of Defense (DOD) is a vast and complex organization which has extensive resources for performing its mission. Within the DOD, each of the services (Army, Navy, and Air Force) spend large amounts of money training their personnel in various specialties such as communications, maintenance, supply and medicine. Unfortunately, thousands of these individuals are discharged annually and enter careers totally unrelated to the skill which they acquired while serving in the military. In addition to the loss of skills, the thousands of dollars of public funds spent to train each of these individuals is almost totally wasted.

At the same time that the military training of these individuals has been wasted, there has developed within the United States a health care crisis and physician shortage. The shortage has developed not so much from an increasing population as it has from the increasing demands of citizens for more and better health care as well as the ever-increasing number of physicians who are turning from direct patient care to research, full-time teaching, public health work and various governmental and administrative positions. As a result of the overall physician shortage, many small communities are being deprived of health care by the migration of physicians to metropolitan areas. The use of physician's assistants has been established as a partial solution to,

resolving this health care shortage, particularly in the smaller rural type community.

Since 1965, the Duke University Physician's Assistant program, the University of Washington's MEDEX program and other programs have been training individuals to become physician's assistants. These programs, for the most part, have drawn on former military medical corpsman as their source of trainees. This choice of manpower was obvious, as the military services rely on medically trained personnel other than physicians in such diverse locations as submarines and isolated radar sites. Also, other than in formal medical schools, the military services have the largest pool of trained medical personnel in the United States. It seems appropriate that as the physician shortage becomes more acute, the military can contribute its medical training (in the form of medical corpsmen) to help alleviate that shortage.

There have, however, been several barriers to the transfer of these former military corpsmen to positions as physician's assistants. These barriers include hiring standards, pay, educational requirements, and working conditions.

This study has been concerned only with educational requirements. The authors felt that if former military medical corpsmen, seeking to transfer to positions as physician's assistants, were given full credit for their military training and experience, they would be able to progress through accredited civilian programs more easily and faster and thus help relieve the national health care crisis. The purpose of this study was to determine specifically whether civilian universities can grant additional credit to former military medics for their previous training and experience. Additionally, the authors were

trying to prove that if this credit could be awarded, it could be done without making major changes in the training programs of either the DOD or the civilian universities.

CONCLUSIONS

The authors found that, with the exception of the Air Force Physician Assistant program, civilian university physician's assistant programs cannot give any additional credit to former military corpsmen for their training and experience. In addition, the military services would have to make very major changes in their curricula, in their faculty, and in the prerequisites for entering these courses before they would be on a high enough level to receive credit.

The reasons for these conclusions vary depending on whether one refers to the Duke University program or the University of Washington program. The following sections explain the reasoning behind the conclusions for each type of program. A third section discusses the Air Force Physician Assistant program and its relationship to both the military and civilian environments.

University of Washington MEDEX Program

Neither the course material nor the instructor's academic qualifications of the Army Medical Corpsman, the Navy Class A Hospital Corpsman and the Air Force Medical Service Specialist courses were equivalent to the MEDEX program. Despite the fact that the American Council on Education recommended some college level credit for each of these programs, the authors do not feel that these courses have the depth necessary for the MEDEX program. In addition, the material presented in these courses is very strongly oriented toward the practical

nursing aspects of medicine and not the diagnosis and treatment of specific body malfunctions of the MEDEX program.

The independent duty corpsman courses (Army Clinical Specialist, Navy Class B Hospital Corpsman, and Air Force Medical Service Technician - Independent Duty) are quite comparable to the MEDEX program. In fact, with the exception of training in pediatrics and one or two other subjects, the experienced graduate of these courses could probably enter directly into a MEDEX preceptorship.¹ This statement is based on the similarities of training, the shortness of the MEDEX didactic training, and the fact the MEDEX trainees must have been independent duty medical corpsmen to qualify for the course.

Despite the fact that these individuals could enter preceptorship more directly, the authors feel that it would work to the disadvantage of the program. First of all, the three-months of didactic training serve as a very good refresher course for the MEDEX trainee. This training could be very important in the case of retired military corpsmen who may have completed their military course as much as ten years earlier. Second, these three months of training allow the MEDEX student to become oriented to both civilian medicine and the academic atmosphere in which his future preceptor was trained. Third, and most important, the authors feel that the time devoted to the trainee becoming acquainted with his preceptor is extremely critical. If the trainee did not have this opportunity, there would very likely be many unsatisfactory Medex/preceptor relationships. The net result of this

¹The authors feel that a graduate of one of these programs could advance to this level even though the academic program of instruction is at a different level.

situation would be disillusionment with the program by both parties and the possibility of both dropping their participation.

Duke University Physician's Assistant Program

Neither the basic courses nor the independent duty courses should be granted credit when their graduates enter the Duke program. The academic level of these courses is below that in the Physician's Assistant program. This statement was confirmed by students of the Air Force Physician Assistant program. The students interviewed had had both the basic and independent courses. They did not consider their training worthy of credit in the Air Force Physician Assistant program.¹ Since the Air Force and Duke programs are very similar, this training would also not be worthy of credit in the Duke program.

Even if the military programs were suitable for credit in the Duke program, there would be little change in how fast the students became physician's assistants. At most, the military programs would not be worth more than three to eight hours of credit. This amount of credit is not particularly significant in terms of a two-year course.

Air Force Physician Assistant Program

The Air Force has taken the lead among military services in developing a new medical specialty and the attendant training course. This new medical specialty is the Air Force Physician Assistant. At the present time, plans call for the School of Health Care Sciences to graduate approximately 100 students per year.

¹Joint statement by Charles E. Angell and Robert L. Burroway, School of Health Care Sciences, Sheppard AFB, Texas, personal interviews, October 20, 1971.

These Physician Assistants are without a doubt as well trained as any civilian university student. Their value lies not only in helping to relieve the military physician, but also in their future contributions to civilian society once they retire or are discharged from the service. The authors feel that if the Army and Navy also decide to train their own physician's assistants, the impact on the health care crisis will be truly significant in a few years.

RECOMMENDATIONS

None of the courses, considered in this study, enabled their graduates to enter either Duke's Physician's Assistant program or Washington's MEDEX program with advanced standing. Nevertheless, the authors feel that no major change should be made in their structures. The respective services should continue to teach these courses on as high a level as possible, but without ignoring their own mission requirements. Their biggest contribution, through these programs, is to continue to provide well-trained and motivated personnel to civilian physician's assistant programs.

The authors do recommend that the Army and Navy start physician's assistant programs based on their individual needs. We believe that the quality of medical care within the military can be improved with the implementation of the physician's assistant concept. In addition, separating and retiring personnel who have been trained as physician's assistants will help relieve the medical manpower shortage in the United States. The benefits of this concept have been so extensive and

valuable that it can be safely assumed that the physician's assistant, as a bona fide member of the health team, is here to stay.¹

¹Bulletin of Duke University Physician's Associate Program, 1971-72,
p. 4.

APPENDIX A

CIVILIAN PHYSICIAN'S ASSISTANT TRAINING PROGRAMS

DUKE UNIVERSITY

Physician Assistants Program

Length: 36 Weeks

Source: Preclinical Curriculum Proposal

History, Philosophy, and Ethics of Medicine
PA 101

Hours: 18 Lecture

An eighteen hour lecture course designed to provide knowledge and understanding of current ethical standards by means of historical development and the orientation of these ethical standards into the current framework of the health team structure provides students with the ability to observe and apply these standards in the various settings and relationships in which they function. In addition, emphasis is placed on an historical overview of significant medical facts in the development and use of non-physician members of the medical team. The remaining portion is delegated to analysis and application of medical and paramedical roles toward the fulfillment of current and future medical needs of society.

Basic Clinical Laboratory
PA 103

Hours: 36 Lecture
36 Lab

A seventy-two hour lecture-laboratory course designed to introduce the use of laboratory equipment and the obtaining and processing of various specimens. Each student develops the capability of accurately performing numerous fundamental laboratory procedures including a complete blood count, urinalysis, and Gram stain. The interpretation and usefulness of laboratory data in physical diagnosis and treatment is stressed. In addition, during the laboratory portion, students develop a proficiency with such procedures as collecting needed chemistry samples.

Medical Terminology
PA 105

Hours: 18 Lecture

An eighteen hour lecture course that (1) formulates a working knowledge of medical etymology through the study of Greek and Latin word roots and the evaluation and correction of medical records and other forms; (2) develops an early understanding of the accepted methods for recording significant historical, physical, and clinical data; and (3) emphasizes the necessity of proper spelling, correct punctuation, and legible penmanship.

Inorganic Chemistry
PA 107

Hours: 18 Lecture

An eighteen hour lecture course which teaches the student fundamental concepts, measurements and problem-solving, matter and its classification, periodic classification of the elements, chemical bonds, writing chemical formulas, empirical and molecular formulas, equations and mass relationships, the gas laws, the mole and volume relationships of gases, solutions, particles, acids and bases, pH and salts, standard solution and titration, and chemical equilibrium. This accomplishes a fundamental systematic study of the nature of matter and its properties, combining theoretical and applied chemistry.

Introduction to Animal Experimentation
PA 109

Hours: 30 Lecture

A thirty-hour lecture course that presents (1) the extrinsic and intrinsic causes of disease due to a nutritional excess or deficiency; (2) the zoonotic management of disease transmission to man and the necessity for food hygiene; (3) the transmission of disease and the basics of epidemiology; (4) the common and specific diseases transmitted from animal to man to include rabies, leptospirosis, salmonellosis, brucellosis, and the mycoses; and (5) the selection and handling of various experimental animals.

Community Health
PA 185

Hours: 24 Lecture

Twenty-four hours of seminars, discussions, and field trips to the community health organizations to acquaint students with local, state, and federal health agencies for the purpose of developing a sociological appreciation of community living, public health education for disease detection and prevention, and financial aid available to the community population for the acquisition of health care.

Bacteriology
PA 131

Hours: 24 Lecture

A twenty-four hour course designed as an introduction into the clinical applications of bacteriology and microbiology. A study is made of the common bacteria, fungi, and viruses that cause disease in man. The student becomes acquainted with the proper methods of specimen collection, handling, and identification and the methods and procedures employed in bacteriological laboratories. The instruction is designed to give the student a clear concept of: (1) how organisms gain entrance to the body; (2) the types of toxins which they produce; (3) the nature of the immune bodies which are produced by the host; and (4) the methods of preventing the disease by active and passive immunization.

Anatomy
PA 133

Hours: 48 Lecture
48 Lab

The core course in anatomy constitutes ninety-six hours during a twenty-four week period in Phase II. The gross anatomy of the head, neck, trunk, back, pectoral and pelvic girdles, and the limbs as well as the interior of the cranium, including the gross anatomy of the ear, orbit, oral and nasal passages, paranasal sinuses, and, finally, neuroanatomy is presented. Instruction is designed to be as informal and as nearly individual as possible. General principles and the functional viewpoint of living anatomy are stressed in the hope that the student may be stimulated to secure a working knowledge of anatomy in the broadest sense. Patients exemplifying anatomical principles are presented, some within the classroom, others over live television or videotape at the appropriate time in the students' learning process. All of the above is integrated with the physiology, patho-physiology, and clinical medicine taught during Phase II.

Physiology
PA 134

Hours: 72 Lecture

The core course in physiology consists of seventy-two hours of lectures over a twenty-four week period in the second phase. The course includes the following topics: (1) theory of diffusion of metabolizing systems; (2) osmotic equilibrium and transport processes; (3) cellular basis of activity in skeletal, cardiac, and smooth muscle; (4) ionic properties of muscle membranes; (5) molecular basis of contraction; (6) cardiac electrophysiology; (7) development of cardiac action potentials; (8) processing and exchange of gases with the atmosphere, transport of carbon dioxide and oxygen, and exchanges of gases in the pulmonary and systemic capillaries; (9) mechanism of action of hormones, their effect on cell membrane permeability, enzyme systems activity, growth regulation, osmoregulation, and reproduction; (10) neurophysiology to include neurone synaptic interrelationships and transmitter substances. This course is integrated with the anatomy, pathology, and clinical medicine courses during Phase II.

Essentials of Chemical Biology
PA 135

Hours: 72 Lecture

A twenty-four week seventy-two hour lecture presentation of the fundamentals of inorganic, organic, and biological chemistry through lectures, laboratory exercises, and demonstrations. The course is outlined to focus attention on the basic theories and laws of chemistry and physics as applied to the structures and function of living cells, tissues, organic systems, and the whole organism, particularly man. Students become acquainted with more frequently used medical laboratory equipment, chemicals, techniques, and the mathematical calculations used in handling chemical problems. Students perform those qualitative procedures essential for understanding basic concepts of these two areas of chemistry as they apply to physiological mechanisms and processes. An introduction to metabolic processes is considered by a study of the

environment and nutrition of man, respiration and energy requirements, and the mechanisms necessary for regulating and maintaining homeostasis. Consideration is also given to the pathological interruption of these control mechanisms.

Introduction to Clinical Medicine
PA 137

Hours: 240 Lecture

A twenty-four week, 240 hour course providing the basic direction for the core curriculum of Phase II. Its purpose is to acquaint students with the common pathologic and psychosomatic disorders seen in clinical medicine. Lectures are given by physicians, nurses, dietitians, physical therapists, and specialists in other related disciplines, for the purpose of developing techniques of planning total patient care based on the knowledge and understanding of a disease's etiology, pathology, signs and symptoms, clinical course, complications, prognosis and prophylaxis as well as the personal circumstances surrounding the patient. Each student is exposed to the patient, his family, and the ward staff. He follows the patient's course for several days, and then develops a written and oral presentation in accordance with hospital guidelines, presenting the patient to the class, at which time he directs the class discussion concerning the prognosis, therapeutic plan and future therapy.

Pharmacology
PA 139

Hours: 48 Lecture

A forty-eight hour lecture course taught during the core phase that: (1) introduces the student to the scope of pharmacology and its relation to other sciences; (2) develops an analytical approach to drugs, i.e., indications for actions, side effects, precautions, contraindications, usual dosage, toxic effects, and related treatment; and (3) teaches the student to evaluate each drug with the patient in mind. Drugs are presented according to their reactions and correlated with the diseases concurrently being studied in the clinical medicine course. Consequently, drug therapy is covered regarding common diseases seen in the following systems: skeletal, skin, cardiovascular, respiratory, renal, endocrine, neurology, and eye, ear, nose, and throat.

Physical Evaluation
PA 141

Hours: 24 Lecture
24 Lab

Clinical Chemistry
PA 143

Hours: 16 Lecture
32 Lab

The purpose of this course is to familiarize the student with the equipment, reagents, values, and implications of numerous clinical testings. The students are given the methods to develop an understanding of blood banking, immunohematology, hepatic metabolism, enzymes

in cardiology, gastroenterologic studies, and rheumatoid studies. The student becomes knowledgeable in the performance of ABO and RH typing; PSP, BSP, and creatinine clearance testing; blood urea nitrogen and electrolytes; sulikowitch testing; sedimentation rates, lupus preps, schilling tests, and histalog testing. This exposure helps develop a knowledge of normal and abnormal test values and the ability to assist those that may be doing them on an emergency basis.

Diagnostic Procedures
PA 145

Hours: 16 Lecture
32 Lab

Provides the student with the fundamentals of the more unusual and detailed laboratory and clinical procedures including applied sterile technique, basic physical therapy exercise, demonstration of cast application and splinting, cutdowns, spinal taps, thoracentes, paracenteses, tracheotomies, nasogastric intubation, gastric analysis with histalog, bone marrow taps, gastroscopy, sigmoidoscopy and proctoscopy, skin testing, glucose, insulin, and orinase tolerance testing; catheterization, visual fields and acuity, and audiometry. The time is divided between lecture and demonstration with laboratory and bedside participation by the student. Each lecture demonstration and participation phase is conducted by a specialist in that area being studied. To achieve the most complete effect from each topic or procedure presented, each is correlated with practical experience.

Animal Surgery
PA 147

Hours: 16 Lecture
32 Lab

An eight-week laboratory course allowing students to apply the knowledge of aseptic and surgical technique, as well as the preparation of the operative site and draping of the sterile field. Students accomplish this through the performance of minor and major procedures to include pre- and post-surgical management of experimental animals for the purpose of developing a knowledge of the systems' behavior to surgery and infection. The necessity of correlating laboratory data with patient behavior is also presented.

Growth and Development
PA 195

Hours: 54 Lecture

Introduces the student to current theories of knowledge, particularly as they relate to the special complex problems of empirical meaning, objectivity, measurement, and the mind-body problem. Changes in personality due to biologic maturation and the influence of life roles are presented with emphasis on early childhood development, adolescence, and adulthood. The lecture material is correlated with the development of patient interview techniques, integrating both psychodynamic techniques and psychophysiological methods for handling psychosomatic diagnostic problems.

Fundamentals of Electrocardiography
PA 181

Hours: 24 Lecture

Is designed to teach the student the principles of electrocardiograph and use of the necessary equipment and to develop the student's ability to detect and diagnose abnormalities in the twelve lead electrocardiogram, and to recognize cardiac arrhythmia from a rhythm strip and/or on a monitoring cardiac oscilloscope. Through the use of audiovisual aids, slides, EKG tracings, bedside monitor readings, cardiac pacemaker units, and practical experience in the resuscitation of induced cardiac arrest in animals, the student develops the ability to rapidly detect (via early warning signs with a complementary clinical picture) impending cardiac difficulty with the emphasis on precaution against complications.

Introduction to Radiology
PA 183

Hours: 24 Lecture

Introduces the student to modern radiology and its many procedures as they pertain to the diagnosis and treatment of certain illnesses. Students are exposed to various radiologic diagnostic techniques including procedural indications, patient preparation, procedural accomplishment, interpretation, limitations, and possible side effects. Simultaneously the student receives an in-depth exposure to the radiologic interpretation of roentgen examinations of the chest.

Patient Evaluation
PA 189

Hours: 12 Lecture

For the student with a background in anatomy, physiology, and pathology, the course provides an understanding of the historical development of a disease process through the proper methods and techniques of eliciting a patient history and accomplishing a physical examination. The relationship of patient historical and physical data is presented by repeated exposure to in-hospital patients upon whom a complete history and physical examination is accomplished with the complete work-up presented and evaluated by the physician in charge.

Basic Principles of Data Processing
PA 187

Hours: 18 Lecture
12 Lab

An introduction for the student with no previous exposure to the field of data processing. It presents the impact and future involvement of computers and data processing in medicine. Exposure to various hardware (computers and auxiliary machines) facilitates his learning the fundamentals of digital computers, the basic mathematical and numerical systems needed to utilize the computer, and the principles of flow charting and programming so as to enable students to develop simple programs at the completion of the course.

FORMAL CURRICULUM
UNIVERSITY OF WASHINGTON
MEDEX PROGRAM

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:30 a.m.					
8:15	Pre test: Records			Pre test: G & D	
8:30	Records (1) Onion	Physical Exam (1) Above the diaphragm	complete HX & PE using other medex	Pediatrics G & D (1) Sells	Pediatrics HX & PE by 2 medex using medex kids
9:30					
10:30	Records (2) Onion			Pediatrics G & D (2) Sells	case presentations and Video tape of above
11:30					
1:00 p.m.	History Onion	Physical Exam (2) Below the diaphragm Onion	case presenta- tions of medex by medex	Pediatrics HX & PE (1) Sells	Pediatrics HX & PE by all medex using medex kids
2:00					
3:00				Pediatrics HX & PE (2) Demonstration Sells	
4:30					

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:50 a.m.		case presentations	group conference		case presentations
8:30	Psych (1) HX & PE Vath & Otteson	Psych (1) HX & PE Vath & Otteson	(8:00) Pediatrics HX & PE (newborn) Hodson - AT UNIV. <u>HOSPITAL RR-445</u>	(8:00) Pediatrics HX & PE (newborn) Hodson - AT UNIV. <u>HOSPITAL RR-445</u>	Emergencies (1) Onion
9:50					
10:30	Psych (2) HX & PE Vath & Otteson	Psych (2) HX & PE Vath & Otteson	Emergencies (1) Onion	Emergencies (2) Ploeg	Emergencies (2) Ploeg
11:30					
1:00 p.m.	Pediatrics (3) G & D Wenner	Pediatrics (3) G & D Wenner	case presenta- tions by medex not assigned to do HX & PE	Respir. Emerg. (1) Amori	Respir. Emerg. (1) Amori
2:00					
3:00	Pediatrics (4) G & D Wenner	Pediatrics (4) G & D Wenner		Pediatrics (1) Nutrition Pipes, Peggy	Pediatrics (1) Nutrition Pipes, Peggy
4:50	group conference				

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:50 a.m.		case presentations	group conference		case presentations
8:15	H				
8:30	O	Gastroenterology (3) Leinbach	Dermatology (2) Milner	Arthritis (1) Gilliland	Surgery (2)
9:30	L				
10:50	I	Gastroenterology (4) Leinbach	Dermatology (2) Milner	Arthritis (2) Gilliland	Surgery (3) Okimoto
11:50	D				
	A				
1:00 p.m.	Y	Pre test: Oral Surgery	Pre test: Eye	Eye (2) Mills	Eye (3) Mills
1:15		Oral Surgery (1) Bolin	Eye (1) Mills		
2:00	LABOR DAY				
5:00		Pre test: Surgery	Chest x-ray (1) Miller	Arthritis (3) Gilliland	Pre test: Neurology
5:15		Surgery (1) Johnson			Neurology (1) Lemire

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:30 a.m.	Exit tests: Arthritis & Eye	case presentations	group conference		case presentations
8:15					
8:30	Psych (3) Pathology Vath & Otteson	Surgery (4 - 5) Okimoto	Dermatology (3) Milner	Neurology (3) Coatsworth	Neurology (5) Coatsworth
9:30					
10:30	Psych (4) Pathology Vath & Otteson	Dog Lab	Dermatology (4) Milner	Neurology (4) Coatsworth	Neurology (6) Coatsworth
11:30					
1:00 p.m.	Pre test: Urology	Oral Surgery (2) Belin	Neurology (2) Coatsworth	Dermatology (5) Peds Jerenberg	Pre test: Ortho Coatsworth
1:15	Urology (1) Skoglund				
2:00					
3:00	Urology (2) Skoglund	Surgery (6) Johnson	Urology (3) Skoglund	GI (5) Pediatrics Jerenberg	Orthopedics (2) Fry
4:30	group conference				

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:30 a.m.		case presentations	group conference		case presentations
8:15					
8:30	Psych (3) Pathology Vath & Otteson	Surgery (4 - 5) Okimoto	Dermatology (3) Milner	Neurology (3) Coatsworth	Neurology (5) Coatsworth
9:30					
10:30	Psych (4) Pathology Vath & Otteson	Dog Lab	Dermatology (4) Milner	Neurology (4) Coatsworth	Neurology (6) Coatsworth
11:30					
1:00 p.m.	Pre test: Urology	Oral Surgery (2) Bolin	Neurology (2) Coatsworth	Dermatology (5) Peds Jerenberg	Pre test: Ortho
1:15	Urology (1) Skoglund				Orthopedics (1) Fry
2:00					
3:00	Urology (2) Skoglund	Surgery (6) Johnson	Urology (3) Skoglund	GI (5) Pediatrics Jerenberg	Orthopedics (2) Fry
4:30	group conference				

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:30 a.m.	Exit tests: Urology, Psych, GI & Neurology	case presentations	group conference		case presentations
8:15				Pre test: Respir. Diseases	
8:50	Pre test: Infect Dis lecture 1 Wallace		Infect Dis (3) Wallace	Res Dis (1) Clark	Infect Dis (6) Wallace
9:50				seminar - case pre- sentation by medex Chandler	
10:50	Pre test: PM & R	Surgery (7) Johnson	PM & R (2) Silverman	Respir Dis (2) Clark	PM & R (3) Silverman
10:45	PM & R (1) Silverman			seminar & case pre- sentation by medex Dike	
11:50					
1:00 p.m.	Orthopedics (3) Fry	Pre test: Allergy	Orthopedics (4) Fry	Inf Dis (4) Peds Jerenberg	Orthopedics (6) Fry
1:15		Allergy (1) Pierson			
2:00					

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
5:00 p.m.	Infect Dis (2) Wallace	Allergy (2) Pierson	Orthopedics (5) Fry	Infect Dis (5) Peds Jerenberg	Orthopedics (7) Fry
4:50	group conference				

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:30 a.m.		case presentations	group conference		case presentations
8:15	Pre test: Inf Dis			Pre test: Respir. Diseases	
8:30	Inf Dis (1) Wallace		Infect Dis (3) Wallace	Res Dis (1) Clark	Infec Dis (6) Wallace
9:30				seminar & case presentation by medex Rogers	
10:30	Pre test: PM & R	Surgery (7) Johnson	PM & R (2) Silverman	Respir. Dis (2) Clark	PM & R (3) Silverman
10:45	PM & R (1) Silverman				
11:00				seminar & case presentation by medex Schumaker	
11:30					
1:00 p.m.	Orthopedics (3) Fry	Pre test: Allergy	Orthopedics (4) Fry	Infect Dis (4) Peds Jerenberg	Orthopedics (6) Fry
1:15		Allergy (1) Pierson			
2:00					

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
5:00 p.m.	Infect Dis (2) Wallace	Allergy (2) Pierson	Orthopedics (5) Fry	Infect Dis (5) Peds Jerenberg	Orthopedics (7) Fry
4:30	group conference				

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:30 a.m.	Exit tests: Orthopedics & Infect Dis	case presentations	group conference		case presentations
8:15	Pre test: Pharmacology	Pre test: Hematology			Pre test: ENT
8:50	Pharmacology (1) Aagaard	Hematology (1) Funk	Respir Dis (3) Clark	Cardiology (3) Petersen	ENT (1) Struthers
9:50			seminar & case presentation by medex Belau	seminar	
10:50	Pharmacology (2) Holconberg et al.	Surgery (8) Johnson	Respir Dis (4) Clark	Cardiology (4) Petersen	ENT (2) Struthers
11:50			seminar & case presentation by medex Clark		
1:00 p.m.	PM & R (4) Silverman	Allergy (3) Pierson	Pre test: Cardiology	Respir Dis (5) Peds Jerenberg	Hematology (2) Funk
1:15			Cardiology (1) Petersen		
2:00					
5:00	Pre test: Obgyn	Allergy (4) Pierson	Cardiology (2) Petersen	Respir Dis (6) Peds Jerenberg	Dermatology (5) Milner

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
5:15 p.m.	Obgyn (1) Hess				
4:30	group conference				

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:50 a.m.		case presentations	group conference		case presentations
8:15		Pre test: Hematology			Pre test: ENT
8:50	Pediatrics (7) G & D Wagner	Hematology (1) Funk	Respir Dis (3) Clark	Cardiology (3) Petersen	ENT (1) Struthers
9:50			seminar & case presentation by medex Turner		
10:50	Pediatrics (8) G & D Keck	Surgery (8) Johnson	Respir Dis (4) Clark	Cardiology (4) Clark	ENT (2) Struthers
11:50			seminar & case presentation by medex Van		
1:00 p.m.	PM & R (4) Silverman	Allergy (3) Pierson	Pre test: Cardiology	Respir Dis (5) Peds Jerenberg	Hematology (2) Funk
1:15			Cardiology (1) Petersen		
2:00					
3:00	Pre test: Obgyn	Allergy (3) Pierson	Cardiology (2) Petersen	Respir Dis (6) Peds Jerenberg	Dermatology (5) Milner

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
3:15 p.m.	Obgyn (1) Hess				
4:30	group conference				

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:50 a.m.		Exit tests: Cardiology, Derm, Heme, Respir Dis, Allergy, PM & R, Surgery & Pharm			
8:15					
8:50					
9:00	Gyn (2) Pediatrics Hayden				
10:30	ENT (5) Struthers	Pediatrics (10) G & D Shurtleff			
11:30					
1:00 p.m.	ENT (6) Struthers	ENT (7) Pediatrics Jerenberg			
2:00					
3:00	(3)	ENT (8) Peds Jerenberg	Chest x-ray (2) Miller		
4:50	group conference				

FORMAL CURRICULUM (Cont'd)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:50 a.m.			group conference		
8:15			Exit tests: ENT, Obgyn		
8:50	Pediatrics (10) G & D Shurtleff				
9:00			Problem & Task List * GRADUATION**		
10:30	ENT (5) Struthers	Gyn (2) Pediatrics Hayden			
11:50			-----		
1:00 p.m.	ENT (6) Struthers	ENT (7) Pediatrics Jerenberg			
2:00					
3:00	Obgyn (3) Hess	ENT (8) Peds Jerenberg			
4:30	group conference				

APPENDIX B

MILITARY MEDICAL TRAINING PROGRAMS

ARMY

Medical Corpsman MOS 91A10

Length: 7 weeks-Female
10 weeks-Male

Source: Advanced Individual
Training Program (MOS 91A10) and
the U.S. Army Medical Occupational
Specialty Training pamphlets.
Course Lesson Plans.

Objectives: To train qualified enlisted personnel to perform routine patient care and treatment duties in combat areas, hospital units, dispensaries, clinics, and other medical facilities.

Character Guidance

Hours: 2

To influence the trainee in quality of character development through adherence to high moral standards and principles in his personal life. Duty and the Soldier. Heritage and the Soldier.

Command Information

Hours: 5

To inform the trainee of his responsibilities of citizenship and the history and technique of Communism. Citizenship--Our Government. Communism--International Communism. Communism--Communism in the United States. Communism--Defense against Enemy Propaganda. U.S. Army World-Wide Roles and Missions.

Internal Defense and/or Internal
Development

Hours: 1

To review internal defense and/or internal development activities as related to MOSC 91A10. Internal Defense and/or Development.

Drills and Ceremonies

Hours: 12

To enable trainee to further develop the basic exercise of teamwork and leadership. Drills and Ceremonies.

Graduation Exercise

Hours: 1

To honor the trainees who successfully complete MOSC 91A10 training.

Inspections

Hours: 10

To teach maintenance, display, and care of individual and organizational equipment.

Map Reading

Hours: 2

To provide a general knowledge of the basic principles of map reading.

Physical Training

Hours: 22

To continue the physical fitness program begun in basic combat training and to further develop the trainees' physical endurance for performance of duties in MOSC 91A10 under combat conditions.

Commander's Orientation

Hours: 1

To provide a general knowledge of the program and facilities available to the trainee.

Military Courtesy

Hours: 1

To instill discipline of military courtesy and to foster continuance of military traditions.

Preventive Dentistry

Hours: 1

To enable trainee to develop understanding of importance and scope of preventive dentistry.

Medical Intelligence

Hours: 1

To provide trainee with general knowledge of importance and scope of medical intelligence. Trains the individual to observe and collect information on the different aspects of the enemy's medical services.

Introduction to Organization and Functions of AMEDD

Hours: 4

To provide a general knowledge of the organization and functions of the Field Medical Service. Covers details on the organization of the Medical Service and the duties of Medical personnel within the division.

Field Exercise

Hours: 8

To provide opportunity to participate in simulated medical treatment and evacuation exercise orientation.

The U.S. Field Medical Card

Hours: 2

To provide a working knowledge in the preparation and use of the U.S. Field Medical Card (DD Form 1380).

Care of Supplies and Equipment

Hours: 1

To provide trainee with general knowledge of medical supplies. Classes of supply, item identification, supply categories, property exchange, care of supplies and equipment.

Transportation of the Sick and Wounded

Hours: 18

To provide trainee with working knowledge of procedures for transporting casualties. Introduction to Aeromedical Evacuation. Manual transportation: one and two-man carries. Litter, litter squad, litter post and litter carries. Improvised litters and blanket dressings to include use of the patient securing strap, and proper methods of storing blankets. Discussion and demonstration of the various types of vehicles used by the Army which can be converted to patient carriers. Discussion and demonstration of safety procedures, loading and unloading, etc., of helicopters used in evacuation of patients. Discussion and practical exercise of moving casualties around obstacles; combat evacuation exercise. Practical exercise in negotiating obstacles under cover of darkness and simulated combat conditions.

Basic Anatomy and Physiology

Hours: 17

To provide trainee with general knowledge of basic anatomy and physiology. Introduction of anatomy and physiology to include the definition of terms and a discussion of surface anatomy. Discussion of the cells of the body and the manner in which they work together. Skeletal system. Types and functions of the joints and muscles. Circulatory system discussion to include structure and physiology of the heart, arteries and vessels, blood pressure, pulse, neurovascular bundle, etc. Discussion on blood composition and components and the lymphatic system. Discussion on structure and components of the respiratory system. Structure and function of the digestive system to include the ingestion of food, the digestive tract, and the elimination of waste material. Genito-Urinary system. Discussion of the sensory system and the functions and components of the senses including sight, taste, smell and hearing. Skin and endocrine system. Nervous system.

Military Sanitation and Prevention
of Disease

Hours: 10

To provide trainee with knowledge to enable him to appreciate scope and importance of military sanitation and prevention of disease. Introduction to military sanitation and disease prevention techniques to include classification of communicable diseases, the chain of infection and the importance of military sanitation. Control of respiratory diseases-colds, influenza, smallpox, pneumonia, meningitis. Control of intestinal diseases such as typhoid fever, paratyphoid fever, and amebic dysentery. Fly control program. Water purification in the field. Waste disposal - classification and proper disposal methods. Control of venereal diseases. Control of mosquito and louse-borne diseases.

Basic Emergency Medical Treatment

Hours: 53

To provide trainee with working knowledge of emergency medical treatment procedures and application of bandages and splints. Principles in treatment of casualties. Classification of wounds according to type, location, cause. Discussion in the control of hemorrhages to include a review of the circulatory system, complication of hemorrhage, natural methods of controlling hemorrhage and the five artificial methods of controlling hemorrhage. Factors causing infections and the methods for controlling it, classification of pathogens, infected wounds, four lines of body defenses. Discussion and demonstration of the various equipment found in the Medical Aid Bag to include its function and use. Discussion and demonstration of the types, uses and proper application of field dressings. Causes, symptoms, and treatment of various forms of unconsciousness. Discussion and demonstration of artificial respiration and external cardiac compression to include causes, recognition and the treatment for asphyxia and cardiac arrest. Discussion of the methods of providing an effective emergency airway (cricothyroidotomy). Further discussion and practice of external cardiac compression and artificial respiration. Control and treatment of pain and the use of the morphine syrette. Types of shock and their causes, treatment, and recognition. Causes, symptoms and emergency treatment of fractures. Fractures of specific areas. Discussion and uses of rollerbandages, demonstration and application; rollerbandages used with dressings and for support. Discussion and application of triangular and cravat bandages. Application of the Army Leg Splint. Discussion, demonstration and application of the basswood and wire ladder splints. Wire fabric splints. Demonstration and application of various improvised and anatomical splints for fractures of the femur, humerus, and clavicle. Common emergencies to include foreign bodies in the eye, ear and nose, poisoning, blisters, poison ivy, oak and sumac, and snake, animal and insect bites. Practical exercise on anatomical and improvised splints. Heat and cold injuries. Recognition and treatment of combat exhaustion.

Common Drugs and Their Uses

Hours: 7

To provide trainee with general knowledge of drugs commonly used in treatment of diseases. Discussion of common drug terms, sources of drugs, methods of administration, factors influencing the dose and action of drugs, and the precautions to be taken when handling drugs. Instruction on the metric system in dispensing basic medication, interpreting doctors orders and abbreviations in prescriptions. Drug actions. Types of drugs, uses, antibiotics, antiseptics, topical drugs, antifungals, hemorrhoidal.

Medical Symptomatology

Hours: 10

To provide trainee with knowledge to enable him to recognize frequently recurring disease conditions he will see during "sick call." Role of the medic in the conduct of sick call in the combat zone, the battalion aid station, and the fixed garrison type dispensary. Signs and symptoms relating to the back and extremities. Symptom recognition, skin. Symptoms encountered in diseases of the head and neck. Recognition of common disorders of the eye, ear, nose and throat - cause and treatment. Disease symptoms of the respiratory system and conditions that arise in the heart and great vessels. Symptoms and treatments of some of the more common abnormal conditions of the male urogenital system. Symptom recognition - abdomen. Practical exercise in symptom recognition.

Field Surgery

Hours: 12

To provide trainee with knowledge to enable him to realize his responsibilities in treating combat casualties. Discussion of the different types of head injuries, their effects on the body, the emergency medical treatment, and the special measures necessary to treat head, face, and neck injuries. Causes, signs, symptoms, and emergency medical treatment of chest and abdominal wounds. Familiarization with the emergency, life-saving treatment of burn casualties. Causes and general treatment for massive tissue wounds and debridement of wounds. Discussion of chemical agents to include types of agents, effects of these agents on the human body, treatment of chemical agent casualties, and protective measure against chemical agents. Closed wounds of the extremities. Discussion of the aspects of separating casualties into different categories for medical treatment.

Basic Nursing Procedures

Hours: 95

To provide essential instruction which will qualify the trainee to perform basic nursing procedures. Composition and function of the Army Medical Department. Introduction to the activities of a hospital ward and the duties and responsibilities of the MOS 91A10. Environmental hygiene and safety in medical treatment facilities.

Demonstration and practical exercise on the procedures of making a bed and cleaning a patient unit. Discussion and demonstration of taking temperature, pulse, respiration, and blood pressure. Explanation and demonstration of patient comfort and protective measures. Demonstration of the principles of comfort and safety for the patient when his position is being changed. Basic ward orientation. Principles of observation, developing skill in observing patients, and how to describe and record common observations. Discussion and demonstration of the major procedures of personal cleanliness that are performed routinely on or by hospitalized patients to include bedbath, care of teeth, care of hair, care of finger and toe nails, back care, making an occupied bed. Explanation and demonstration of the steps of the procedure for safe, effective administration of a cleansing and retention enema. Methods of disinfection and sterilization. Discussion and demonstration of the general principles of preparing and cleaning equipment for sterilization or disinfection. Discussion of surgical asepsis, its purposes, basic principles and uses in patient care. Surgical dressings technique. Introduction to communicable disease nursing. Introduction to some techniques in the care of patients with communicable disease and isolation techniques. Principles and techniques used in hot and cold applications. Principles and a practice exercise involved of surgical aseptic technique. Discussion of diagnostic tests, preparation of the patient, demonstration of the clintest and lumbar puncture. Maintaining fluid balance records. Gastrointestinal intubation and suction. Discussion and demonstration of oro-nasal suction and tracheostomy care to include definition and explanation, types of patients and/or conditions requiring oro-nasal suction, the equipment used in oro-nasal suction. Principles of the administration of oral medications, subcutaneous injections, intramuscular injections, intradermal injections. Techniques involved in wearing and using sterile gloves. Procedures used in the catheterization of the male urinary bladder. Discussion of the care of a patient requiring closed chest drainage, to include the definition and purposes of a thoracotomy and thoracotomy tube, the mechanisms of underwater seal drainage, and the nursing care involved when working with underwater seal drainage systems. Principles and procedures used in the Armed Forces Immunization Program. Smallpox vaccination procedure. Demonstration of the knowledge and procedures of the physical care, and the psychological approach to patients suffering from eye, ear, nose, and throat disorders. Principles and procedures of oxygen therapy including the symptoms and signs the patient will present when in need of oxygen. Principles of nursing care of a patient receiving oxygen therapy and familiarization with the methods of administering oxygen. Basic technique of venipuncture. Discussion of the purpose, demonstration of the procedure and participation in the techniques of intravenous infusion. Procedures of blood transfusion. Use and methods of giving care to the patient on a turning frame. Principles of nursing care of the orthopedic patient in casts, in traction or with all amputation. Principles of pre- and post-operative nursing care. Basic knowledge necessary to care for the mother before, during, and after emergency child birth.

Proficiency Testing

Hours: 31

Administrative Time

Hours: 16

Commanders Time

Hours: 47

ARMY

Clinical Specialist MOS 91C20

Length: 40 Weeks

Source: POL for 300-91C20 Clinical Specialist Course and the U.S. Army Medical Occupational Specialty Training pamphlet.

Objectives: To provide enlisted personnel with a working knowledge to supervise and perform patient-care duties appropriate to hospital and field medical assistants.

Orientation to Course 300-91C20

Hours: 12

Conduct and Survey of Course: Purpose of course; historical background; survey of content of Program of Instruction; method of instruction to be used; clinical experience rotation; tour of school facilities; introduction. Grading system.

Enlisted MOS Structure and Duties: Discussion of the related MOS structure areas of assignment.

On Being a Student: Discussion of principles of learning; effective study habits; notetaking; purpose and types of examinations; test taking; use of library; value of outside reading; sources of information; current literature.

Educational Development Testing: Written examination to evaluate the educational level of the students.

Medical Records and Reports

Hours: 12

Introduction to Medical and Clinical Records and Reports: Discussion of purposes, importance and need for medical records and reports; pertinent regulations and directives; confidential nature, restriction, dissemination, disposal of records.

Line of Duty Determinations: Definition; purpose and significance of Line of Duty Determinations. Conduct of investigation and interpretation of findings.

Recurring Medical Reports: Introduction to preparation and purpose of Patient Status Report, Beds and Patient Report, Morbidity Report and Report of Specialized Treatment, Outpatient Medical Record; Outpatient Report, Information required, time of submission, disposition of each.

Individual Medical Records: Preparation, use and disposition Field Medical Card, Clinical Record Cover Sheet. Discussion of Carded-for-Record-Only cases. Practical exercise of individual medical records stressing accuracy of recording factual information carefully and legibly.

Army Health Records-Medical, Dental: Purpose, preparation, maintenance, disposition of Army Health Records; filing for military personnel; outpatient records and files for non-military patients examined and treated in military medical treatment facilities; pertinent regulations and directives.

Casualty Reporting: Discussion of methods of inter-hospital transfer of patients; records and reports; reporting seriously ill patients; reporting deaths.

Examination and Reteaching Session: Written examination on medical records and reports and reteaching as necessary.

Medical Legal Relationships

Hours: 15

Understanding Human Behavior: Principles of human behavior underlying causes; achieving relations.

On Seeing the Patient as a Person: Discussion of current philosophies of treating the whole patient; stresses; common feeling; illness as a threat to survival; impact of hospitalization upon the patient, his family; illness as a threat to ambitions, goals, life, particularly chronic or disability illnesses.

Effective Communications: Methods of communication; implications of clearly understood communications; possibilities and outcome of misinterpretation; techniques of establishing satisfactory interpersonal relationships.

Team Concept of Medical Services: Discussion of interrelations interdependence, contributions of the various health disciplines of the care, treatment and rehabilitation of the patient.

Ethical Responsibilities of the Clinical Specialist: Discussion of ethical responsibilities of technically trained individual to patient, to peers, to professional members of health team. Confidential nature of communication, of health records. Value of membership in national, local health organizations.

Medico-legal Responsibilities: Discussion of the medical legal responsibilities of patient care; level of performance expected of technically trained specialists compared with professionally trained doctors and nurses. Implications of Federal Tort Claims Act for Clinical Specialist.

Parallels of Clinical Specialist and Licensed Practical Nurse: Comparison of Clinical Specialist Training with comparable civilian

training. Discussion of State laws of licensed practical nurses; State licensing examinations, who is eligible, procedure, benefits to general public, to individual.

Examination and Reteaching Session: Written examination of concepts of patient care and reteaching as required.

Techniques of Instruction

Hours: 28

The Instructional Situation: Fundamental elements of the instructional situation; characteristics and qualifications of good instructor; characteristics common to most students.

The Teaching Process: Review principles of learning, planning, presentation, training aids, to include simulation in Medical Training-Moulage, oral instruction, group techniques; preparation of lesson plans; application; review and critique.

Practical Examination and Reteaching Session: Practical examination on preparation and presentation of instruction by individual class members. Reteaching as required.

Techniques of Management

Hours: 26

Introduction to Aspects of Management and Principles of Administration: Discussion of basic administrative functions; principles of organization, administration, leadership, evaluation, coordination; management principles applied to patient care activities; organizational charts; responsibility, authority and delegation.

Principles of Administration and Management Applied to Patient Care Units: Team concept. Basic principles and functions of administration applied to patient care units. Discussion of standard operating procedures, ward procedure manual, ward administrative manual.

Assignment of Patient Care Duties: Discussion of categorization of patients according to medical and nursing needs; personnel requirements to meet needs of patients; use of nursing care cards; methods of assignment of duties, advantages and disadvantages. Practical exercise, preparation of nursing care cards.

Staffing: Discussion of personnel authorization for TD units; personnel requirements for various types of wards and other treatment areas, factors to be considered when estimating requirements; principles of staffing. Practical exercise, planning time schedule for one month for selected patient care unit.

Supervision and Orientation: Principles and functions of supervision; characteristics of a good supervisor; relationship of supervisor position to other positions within hospital. Principles of orientation;

purposes, benefits; students to prepare orientation program for worker assigned to a selected ward unit.

Personnel Development: First line supervisor's responsibilities for encouraging and assisting individual to develop skills and to advance in rank; procedure for recommending for promotion; for award of higher skill digit; for attendance at advanced service schools. Other educational opportunities available; USAFI courses, extension courses, etc.

Supply: Principles of Supply management; supply levels, responsibilities, maintenance; linen exchange; Federal Supply Catalogue, requisition procedures. Practical exercise, preparation of 10 day supply level for 10 bed dispensary; for 30 bed active surgical ward; prepare a supply requisition.

Philosophy of Preventive Maintenance: Discussion of problems and principles of preventive maintenance to include basic considerations, actions, necessary to maintain effective equipment. Emphasis directed toward NCOIC responsibilities.

Department of the Army Publications: Discussion of the various types of military publications which the clinical specialist uses in his areas of assignment; Army regulations, circulars, pamphlets, bulletins, periods of effectiveness, purposes, maintenance, filing, posting.

Military Correspondence: Discussion of and practical exercise in preparation of selected types of military correspondence; Disposition Form, Memo for the Record, Intra-Office forms, Subject To Letters; Personal Actions; Military Channels.

Examination and Reteaching: Written examination on techniques of management and reteaching as required.

Army Medical Field Service

Hours: 18

Principles of Field Medical Service: Discussion of the 6 Principles of Field Medical Service. Continuity, control, proximity, flexibility, mobility, conformity.

The Army Medical Service in a Theater of Operations Unit and Division Level Medical Service: Review of common division base to include: the organic medical units; platoons and/or sections; the support command-unit level medical service; mission and function; battalion aid station site selection; and division level medical service, organization, mission and function; clearing station organization; and mission.

Field Army Medical Service: The medical brigade, mission and function. Organic units, Hospitals-Evacuation and Surgical Hospital.

Communication Zone Medical Service: Mission and function; field TOE's station, and general hospitals.

Army Medical Service Cellular Units TO&E 8-500 Units: Discussion of TO&E 8-500 mission, assignment, and capabilities of the various units.

Concepts of the Medical Unit Self Contained Transportable: Discussion of the MUST unit; the three elements; equipment and capabilities; and importance of the Army Medical Service.

Field Medical Supply Procedures: The use of TOE's for field hospitals. Discussion of the procedure, forms involved in requesting, receiving, and accounting for supplies and equipment issued to TO&E units.

Field Medical Equipment and Patient Care Procedures: Packing, marking, and storage of supplies and equipment. Types of field equipment; discussion; and demonstration. Sets, kits.

Field Ward Organization: Discussion of the principles of organization as applied to a ward, including admission, pre-operative, post-operative, holding.

Army Aeromedical Evacuation: Discussion of the Army Medical Service role in Aeromedical evacuation. Evacuation units. Requests for Aeromedical evacuation.

Examination and Reteaching Session: Written examinations on Army Medical Field Service, and reteaching as required.

Emergency Medical Care and Management
of Mass Disaster Casualties

Hours : 31

Introduction to Emergency Medical Care: Definitions; review principles of emergency medical care, emergency dental care stressing the importance of limiting amount of treatment given; effective casualty observation and wound inspection stressing importance of suspecting concomitant injuries.

Resuscitative Measures - Prevention and Treatment of Shock; Control of Hemorrhage: Review definitions, causes, symptoms, pathology and prevention and treatment of shock, definition, types, methods of control including current concept of use of tourniquet; fluid replacement therapy; supportive measures.

Resuscitative Measures; Maintenance of Airway Closed Cardiac Massage: Discussion of importance of maintenance of airway; causes, symptoms, and pathology of obstructed airway; tracheotomy. Explanation, demonstration and practical exercises, approved techniques. Discussion of causes of cardiac failure; circumstances when closed cardiac massage is applicable, discussion and demonstration of the procedure with emphasis on precautions which must be observed to

prevent fractured ribs, ruptured liver, ruptured diaphragm, requirement of mouth-to-mouth resuscitation as adjunct therapy.

Emergency Medical Treatment Injuries of Head, Face, and Chest: Discussion of wounds of head, face and chest including care of wound, possible complications; special precautions for treating, positioning and evacuating casualty.

Emergency Medical Treatment - Injuries of Abdomen, Rectum, Genito-urinary Organs: Discussion of wounds of abdomen, rectum and genito-urinary organs, including care of wound, possible complications, special precautions for treating, positioning and evacuating the casualty.

Emergency Medical Treatment - Spinal Cord and Back Injuries: Discussion of wounds of the spinal cord and back including care of wound, possible complications, special precautions for treating, positioning and evacuating casualty.

Injuries Due to Extremes of Heat and Cold: Management and disposition of patient suffering from heat stroke, heat exhaustion, heat cramps including a review of causes, symptoms and preventive measures. Discussion of causes, symptoms and preventive treatment and therapeutic treatment of trench foot, frost bite.

Review - Principles of Bandaging and Splinting: Review principles and use of field dressings, triangular bandage, and splints. Demonstration and practical exercise, bandaging and splinting to include the Army leg splint.

Transportation of Sick and Wounded: Principles and techniques of transporting a patient by manual methods, practice of one and two man carries and special manual techniques; litter, ground vehicle and air transportation.

Common Dental Emergencies: Discussion of more common dental emergency conditions to include toothache, abscess, post-extraction bleeding. Discussion of dental diseases with emphasis on degree of seriousness and importance of early recognition.

Introduction to Medical Management of Mass Casualties: Historical background; Hiroshima, recent earthquakes; trends of mass casualty management. Bomb phenomenology; effects of released energy; magnitude of expected casualties; types.

Individual Protective Measures: Preventive measures against CBR injuries; military and Civil Defense programs; individual and family plans for evacuation and survival. Protective measures against blast, thermal, ionizing radiation effects.

Sorting (Triage): Definition, philosophy; implication; categorization of casualties resulting from overwhelming disaster, natural or man-made.

Psychological Effects of Mass Disaster: Types of mental and physical reactions to disaster; basic principles of psychiatric first aid; basic principles of care of emotionally ill applied to mass casualty situation.

Emergency Medical Treatment Units; Phase I and II: Purpose, use, contents, distribution, and security maintenance of EMT Units, Phase I and Phase II.

Written Examination and Reteaching Session: Written examinations on the medical management of mass disaster casualties and emergency medical care and reteaching as required.

Military Preventive Medicine

Hours: 24

Introduction to Military Preventive Medicine: Scope of preventive medicine program in the Army Medical Service; nature and classification of communicable diseases; modes of transmission, organization and functions of Preventive Medicine Section.

Army Immunization Program: Review of Army Immunization Program; pertinent regulations, directives; mechanisms and types of biologicals; discussion of procedures for typhus, tetanus, and diphtheria, typhoid fever, and other immunizations; review pediatric immunization; serum reactions and anaphylactic shock; Tine test for tuberculosis. Skin testing; demonstration of smallpox vaccination and Tine test.

Control of Communicable Diseases - Respiratory: Discuss importance of respiratory diseases to the military services; nature of respiratory diseases and modes of transmission; public health factors, treatment and control measures.

Control of Communicable Diseases - Intestinal: Discuss the importance of intestinal diseases to the military services; nature and mode of transmission; nature of intestinal diseases; prevention and control of intestinal diseases.

Control of Insect-borne Diseases: Review basic epidemiological features of insect-borne diseases of major military importance including individual and unit protective measures. Discussion of new repellents, insecticides, rodenticides, including use, precautions; insecticides resistance; human toxicity factors and hazards. Discuss Clinical Specialists role in prevention of these diseases.

Venereal Disease Control Program: Nature, military importance, epidemiology and control of venereal diseases; pertinent regulations; joint cooperation military and civilian health agencies; forms used and the contract interview.

Field Waste Disposal: Review types of waste: aims of disposal of human excreta, garbage, refuse, infected waste. Problems of disposing waste in arctic areas, marshy lands impervious soil, Clinical Specialist's role. Principles of operation and use of "sump drainage systems."

Water Purification: Review of individual and unit water purification procedures including discussion of increasing importance related to modern divisions. Army chlorination policies and methods at fixed installations and in field; chlorine residuals required to inactivate resistant organisms. Demonstration and practical exercise, use of chlorine comparators.

Occupational Health and Safety: Administration of occupational health services of the Army; concepts of industrial hygiene engineering; occupational vision and hearing conversation; philosophy and psychology of injury and accident prevention. Carbon monoxide poisoning preventive measures.

Army Health Nursing and Community Health Services: Discuss the cooperative relationship between the hospital nursing service and the Army Health Nurse in participating in, and providing for continuity of care before, during, and after hospitalization; methods used; advantages; military and civilian community resources, referral of cases; health education; interrelations between organizations; Health services available to citizens of a community.

Sanitary Inspections and Reports: Discuss sanitary inspections; types, characteristics of good inspector, how to conduct an objective inspection; evaluation of findings; preparation of report; follow-up; Command Health Report; difference between Preventive Medicine Inspection and Veterinary Inspection.

Examination and Reteaching Session: Written examination on military preventive medicine and reteaching as required.

Introduction to Medical Sciences

Hours: 23

Medical Terminology: Discussion of importance of understanding and rapid comprehension of "medical language" roots, prefixes and suffixes of medical words. Practical exercise, "building medical words"; analyzing medical words. Discussion of signs and symptoms, and responsibilities of accurate reporting.

Body Defenses Against Disease: Discussion of disease processes; classification of diseases; defenses against invasion by pathogenic organisms.

Introduction to Microbiology: Definition, discussion and microscopic demonstration of classification and pathogenic characteristics of microorganisms; application of knowledge to areas of assignment of advanced clinical specialist preparation of culture media and culture plates.

The Human Body as a Unit: Discussion of the composition function, structural units, organs and systems of the human body to include definitions of terminology used to describe the body; explanation of structural and functional unification of the human body.

Introduction to Nutrition: Discussion of the relationship to health and the importance of nutrition; energy and weight control; food elements to include carbohydrates, fats, proteins, minerals and vitamins.

Examination and Reteaching Session: Written examination on instructional material related to the Introduction of Medical Sciences and reteaching as required.

Pharmacology in Patient Care

Hours: 40

Actions and Functions of Drugs: Types of preparations, uses; standards; legal and professional controls. Factors influencing action, dose; untoward reactions to drugs.

Pharmaceutical Mathematics: Explanation, demonstration, and practical exercise of mathematical problems required for determination of correct medicinal dosage and solution.

Pharmaceutical Weights and Measures: Discussion of the apothecaries metric and household systems of weights and measures. Demonstration and practical exercise, conversion of dosage within and between the systems.

Fractional Doses: Discussion, demonstration and practical exercise in calculation and preparation of fractional doses.

Anti-infectives, Antibiotics and Sulfonamides: Discussion of common antibiotics and sulfonamides to include: uses, preparations, dosage, administration and toxic effects.

Controlled Drugs: Discussion of use; dose, preparation, administration, side and toxic effects of common controlled drugs to include narcotic hypnotics and sedatives; narcotic register.

Written Examination and Reteaching Session: Written examination on pharmacology; reteach as necessary.

Advanced Principles and Practice of Patient Care

Hours: 87

The Patient's Unit: Discussion and demonstration of the principles and procedures, and equipment required to prepare and maintain the patient's unit to include: environmental considerations, body mechanics, and making the unoccupied bed.

Hygienic and Activity Needs of the Patient: Discussion and demonstration of principles and procedures required to meet hygienic and activity needs of the ambulatory, self-care, bed, and bed rest patient to include body mechanics, lifting and turning, bed exercise, feeding and hygienic modifications. Practical exercise in care of the bed rest patient.

Vital Signs: Discussion and demonstration of principles, procedures, and recording vital signs. Practical exercise in temperature, pulse, respiration and blood pressure.

Hypodermic Intramuscular and Intradermal Injections: Definition, purpose, principles, procedures, sites, precautions, equipment needed, care of equipment; control testing, reading reaction. Demonstrate each procedure: practical exercise.

Administration of Parenteral Solutions Venipuncture: Definition, purposes of venipuncture and infusion; equipment; solutions; sites of administration; principles and procedures of preparing and assisting with administration of fluids intravenously; blood transfusions; purpose, indications, equipment, precautions, hemolytic reactions. Practical exercise, assisting with intravenous infusion, to include assembling apparatus. Practical exercise, venipuncture.

Enemata: Physiology of defecation; types of enemas ordered for therapeutic or diagnostic purposes; solutions; principles of safe administration.

Application of Heat and Cold: Physiological effects of heat and cold; methods of applying; principles of application of sterile and clean hot and cold compresses, purpose of treatments, equipment, precautions to observe. Application of sterile compresses, stressing precautions to observe.

Medical Aseptic Technique: Theory of medical aseptic technique; modes of transmission of communicable diseases; measures of prevention. Demonstration; gown and mask technique, handwashing. Practical exercise in gowning.

Control of Hospital Infections-Staphylococcus: Discussion in incidence, public health importance and techniques of prevention of cross-infections in hospitals and the patient-care unit.

Principles of Surgical Asepsis: Discussion of principles of asepsis, clarification of terms; importance to safe patient care. Application of principles through applying and changing sterile dressings, use and care of dressing carriage.

Maintenance of Fluid Balance: Discussion of body needs for water, electrolytes; physiology of fluid balance; measuring intake and output, importance, methods recording. P.E. in measuring and recording intake and output.

Admission, Transfer, and Discharge Procedures: Discussion of regulations and directives governing admission, transfer and discharge of patients in military medical installations: Specialists duties of reception, observation and orientation of patient being admitted to ward. Care of patient being admitted to ward, care of clothing, valuables, routine procedures including physical examination. Ward

administrative procedure of discharge patient from the hospital; transferring to another hospital, preparing the patient for air evacuation.

Clinical Charting: Purpose of clinical charts; importance of accurate observation, reporting; procedure of good clinical charting. Purpose and uses of Standard Forms used on clinical charts, safeguarding, preparing for forwarding through channels to registrar. Purpose and use of Kardex. Introduction to nursing care plan: purpose, use, ward personnel responsibilities. Practical exercises in clinical charting.

Administration of Medications: Discussion of doctors orders; review of abbreviations commonly used; preparation and care of medicine cards; medicine cabinets, care, security; procedure of pouring medicines, rules to be observed; charting. Practical exercises - pouring, dispensing and charting medicines.

Pre-operative Care: Physical and mental preparation of patients; operative permit, legal requirements; diet and fluid restrictions, enema, sedation; purpose and procedure of skin preparation; immediate pre-operative care, vital signs, elimination, care of dentures, other prosthesis, administration of pre-operative sedative hypodermic, charting. Practical exercise, pre-operative skin preparation.

Principles and Procedures of Immediate Post-operative Care: Discussion and demonstration; post-operative unit; receiving patient from operating room; proper positioning; observations to be made; reporting and recording; organization and function of recovery ward; physical plan; staffing; special equipment used in recovery room to include the recovery bed; suction, post-operative unit, etc., recovery stretcher.

Care of Seriously Ill: Physical, mental and spiritual care given to seriously ill, acutely ill; consideration of patients of different faiths; administrative procedures placing on and removing from seriously ill list. Signs and symptoms of impending death; providing suitable environment for dying patient; attitudes toward dying patient, and patient's relatives; legal aspects.

Care of the Dead: Care of the body after death; public health regulations; pertinent Army regulations. Registrar responsibility.

Practical Written Examination, Reteaching Session: Practical and written examination on principles and practice of advanced patient care. Reteaching as required.

Medical Surgical Nursing

Hours: 244

Care of Patients with Disorders of the Musculo-Skeletal System

Advanced Anatomy and Physiology Musculo-Skeletal System: Skeletal system to include function, types, markings, composition, growth, and

movement of bones; axial and appendicular skeleton. Muscular system to include functions, characteristics, classification, and identification of main muscles.

Orthopedic Diseases: Etiology, symptoms, treatment, and nursing care of conditions of musculo-skeletal system to include: infections of bones and joints; metabolic disorders; arthritis, common painful afflictions in adults.

Injuries and Fractures: Symptoms, treatment and nursing care of injuries to musculo-skeletal system to include fractures, dislocations, sprains, strains, tenosynovitis.

Crutch Walking Techniques: Preparation of patient for crutch walking; measuring for crutches; crutch walking gaits to include 2, 3, 4, point gaits and swinging gaits. Use of prosthetic appliances. Practical exercise - crutch walking.

Cast Care Including Application: Purpose and types, uses of casts; application of cast; handling wet cast; drying cast; trimming cast; bivalving in combat situations; removing cast. Care of patient in a cast, including care of skin, turning, personal hygiene, observations to make; practical exercise - applying cylinder cast.

Care of Patient in Traction: Physiological needs of patient in traction, diet, elimination, maintenance of circulation, care of skin, principles of traction; types. Adaptation of procedures: bathing, bed-making, care of weights, ropes, pulleys, conditions requiring frequent observation.

Care of Amputees: Types of amputations; physical and mental care; stump molding bandaging; physical and occupational adjunct therapy.

Orthopedic Surgery: Discussion of types of surgery, purpose and procedure; pre-operative skin preparation; post-operative skin, late and convalescent; physical therapy support; dietary require-

Drug Therapy Musculo-skeletal: Use, average dosage, methods of administration, toxic effects, contraindications of drugs which affect the musculo-skeletal system to include: muscle relaxants and their antagonists.

Written Examination and Reteaching Session: Written examination on care of patients with disorders of the musculo-skeletal system and reteaching as required.

Care of Patients With Disorders of the Nervous System

Advanced Anatomy and Physiology of the Nervous System: Structure and function of central nervous system; cranial and spinal nerves, structure and function of the autonomic nervous system; control of nervous system over body activities.

Injuries of the Brain: Causes, symptoms, treatment, nursing care of the patient with increased intracranial pressure, cerebral hemorrhage; concussion; basal skull fractures; convulsions; nursing care and treatment of unconscious patient. Patient rehabilitation.

Organic Disorders of the Brain: Symptoms, causes and treatment of patient, brain tumors; multiple sclerosis; Parkinson's disease; Bell's palsy; contagious diseases, meningitis; epilepsy, surgical procedures; craniotomy, pre-operative care, rehabilitation.

Organic Disorders and Injuries of the Spinal Cord: Symptoms, causes, treatment of patient with cord injuries, including ruptured intervertebral disc, fracture, dislocation of vertebrae with or without spinal cord injury; spinal cord tumors; surgical procedures; pre-operative and post-operative care of patient with cervical tons; patient rehabilitation.

Nervous System Disorders Diagnostic Procedures: Diagnostic procedures for nervous system disorder; myelogram, arteriogram, ventriculogram; pneumoencephalogram, EEG, spinal puncture; mental and physical preparation and post-procedural care.

Care of Patient on Turning Frame: Principles and procedures for care of patient on turning frames; parts; demonstration, practical exercise, turning patient on frame.

Drug Therapy Nervous System: Use, average dose, method of administration, and toxic effects of common drug groups which affect the central and autonomic nervous system.

Written Examination and Reteaching Session: Written examination on care of patients with disorders of the nervous system and reteaching as required.

Care of Patients With Disorders of the Respiratory System

Advanced Anatomy and Physiology of the Respiratory System: Structure and function of the upper and lower respiratory tracts; physiology and mechanical aspects of breathing.

Respiratory System Diseases: Etiology, symptoms, diagnostic procedures, medical and surgical treatments, complications and nursing care of disorders of the respiratory tract, to include: sinusitis, common cold, tonsillitis, pharyngitis, tumors of larynx, influenza, bronchitis, pneumonia, pleurisy, empyema, lung abscess, bronchiectasis, atelectasis, pneumothorax communicable diseases which affect the respiratory tract, and injuries. Chest surgery and chest suction apparatus. Aerosol therapy.

Respiratory System - Diagnostic Procedures: Bronchoscopy, pulmonary function: purpose, preparation of patient, post-procedural care, observation to be made and recorded. Collection and care of sputum specimen.

Inhalation Therapy and Care of Patient with Tracheotomy: Physiological requirements for oxygen; indications for oxygen therapy; methods of administration; precautions in storing oxygen. Demonstrate insertion of nasal catheter, setting up oxygen tent. Care of equipment; electric tent, croupette. Principles and procedures required for utilizing IPPB equipment. Indications for, procedures for, and preparation of patient for tracheostomy; nursing care; psychological factors of tracheostomized patient.

Drug Therapy Respiratory System: Use average dosage, method of administrations, and toxic effects of common drugs which affect the respiratory system.

Written Examination and Reteaching: Written examination on care of patients with disorders of the respiratory system and reteaching as required.

Care of Patients With Disorders of the Circulatory System

Advanced Anatomy and Physiology Circulatory System: Structure and function of the circulatory system: to include the heart, blood vessels, blood and blood forming elements, and lymphatic system.

Diagnostic Procedures: EKG, angiograms, CVP, cardiac catheterization, bone marrow biopsy; lab tests, hematology, chemistry, enzyme tests, coagulation tests; purpose, preparation, nursing care involved.

Disease Conditions, Circulatory Conditions: Etiology, symptoms, diagnostic procedures, medical and surgical treatments; dietary restrictions and nursing care of disorders of circulatory system to include hypertension, coronary heart disease; congestive heart failure; arteriosclerosis. Peripheral vascular disorders; aneurysms, anemias, leukemia, inadequate cardiac blood supply. Rehabilitation of patient, patient teaching.

Diet Therapy Circulatory Conditions: Discussion of reasons for and limitations of foods and special diets required for the treatment of patients with circulatory conditions.

Drug Therapy Circulatory Conditions: Action of drugs on heart, blood vessels, and blood. Use, dosages and toxic effects of common cardiac stimulants, depressants, vasoconstrictors, vasodilators, coagulants, diuretics, and anti-diuretics, hemopoietics and hematinics.

Written Examination and Reteaching Session: Written examination on care of patients with disorders of the circulatory system and reteaching as required.

Care of Patients With Disorders of the Digestive System

Advanced Anatomy and Physiology Digestive System: Definitions, structures, and functions of the main and accessory organs of digestion; metabolism, catabolism, and nutrition.

Diseases of the Digestive System and Nursing Care: Etiology, symptoms, prevention and treatment as a basis for nursing care of diseases of the digestive system, namely: stomatitis, Vincent's Angina, carcinoma, peptic ulcer, gastritis, constipation, colitis, dysentery, peritonitis, appendicitis, etc. Medical and surgical aspects of these conditions.

Colostomy and Ileostomy Care: Discussion of special care of patient with colostomy, including aspects and instructing patient to care for his own needs; dressings, colostomy bags, fitting, care. Practical exercise, changing colostomy dressing, irrigation colostomy training device.

Suction-Siphonage: Definitions, purposes, indications for gavage, lavage, suction siphonage; 2 hour equipment including tubes, phalan-Wangesteen, Gomco and improvised Wangensteen apparatus; procedure of intubation precautions to be observed, care of equipment, charting.

Diseases of the Liver and Biliary Tract: Etiology, symptoms, diagnostic procedures, medical and surgical treatment, including drug therapy, nursing care of disorders of liver and biliary tract, namely: hepatitis, cirrhosis, tumors, cholecystitis, cholelithiasis.

Diagnostic Procedures for Digestive Conditions: Preparation and assisting with special diagnostic procedures to include: G.I. Series, barium enema, gastric analysis, proctoscopy, gastroscopy, esophagoscopy, liver biopsy.

Diet Therapy Digestive System: Discussion of reasons for and limitations of foods and special diets used in the treatment of gastrointestinal diseases.

Drug Therapy Digestive System: Use, average dose, method of administration, and toxic effects of drugs which affect the digestive system.

Written Examination and Reteaching Session: Written examination on patients with disorders of the digestive system and reteaching as required.

Care of Patients With Disorders of the Genito-Urinary System

Advanced Anatomy and Physiology Genito-Urinary System: Definitions, structures and functions of the organs of the urinary system and the male reproductive system.

The Genito-Urinary System Diagnostic Tests and Procedures: Introduction to diagnostic procedures, namely: I.V. pyelogram, cystoscopic examination, kidney function tests to include P.S.P. specific gravity, B.U., N.N.P.N., etc.

Diseases and Conditions Affecting the Genito-Urinary System: Causes, symptoms, treatment, medical and surgical nursing care of selected disorders, namely: calcareous disease, tumors, nephritis, pyelitis, cystitis, prostatic and testicular disorders; malignancies, cystotomy.

Catheterization, Bladder Irrigation and Instillation: Types of catheters, purpose and procedure of catheterization; importance and frequency of irrigations, intermittent and continuous irrigation; solutions commonly used; demonstration of procedures. Practical exercise, catheterization.

Drug Therapy Genito-Urinary System: Uses, average dosage, methods of administration, toxic effects, contraindications, of common drugs which affect the genito-urinary system to include: urinary antiseptics, and bladder stimulants and sedatives.

Dialysis: Indications, procedures, psychology, patient teaching, support, rehabilitation.

Written Examination and Reteaching Session: Written examination on care of patients with disorders of the genito-urinary system and reteaching as required.

Care of Patients With Disorders of the Endocrine System

Advanced Anatomy and Physiology Endocrine System: Structure and function of the endocrine system.

Disease Conditions of Endocrine System: Etiology, symptoms, diagnostic procedures, medical and surgical treatment, and nursing care of disorders, myxedema, hyperthyroidism, parathyroidism disorders, Addison's disease, diabetes mellitus. Action and uses of insulin; types; define "unit"; calculating dosages with various types of syringes; symptoms of insulin shock, emergency treatment; instructing the patient. Practical exercise calculating dosage.

Endocrinology Diagnostic Tests: Sleeping pulse rate; assisting with laboratory tests: glucose tolerance tests, insulin tolerance; fasting blood sugar; radio-iodine uptake; B.M.R.; tests to determine adrenal malfunction.

Diet Therapy Endocrine System: Discussion of reasons for and limitations of foods and special diets required in the treatment of patients with endocrine disease.

Drug Therapy Endocrine System: Use, average dosage, methods of administration, toxic effects, contraindications of drugs which affect the endocrine system to include: hormones, minerals and vitamins.

Written Examination and Reteaching Session: Written examination on care of patients with disorders of the endocrine system and reteaching as required.

Care of Patients With Disorders of the Skin or Allergies

Advanced Anatomy and Physiology of the Skin: Discussion of the structures and functions of the skin and accessory organs.

Treatment and Nursing Care of Patients with Skin Disorders: Principles of treatment; attitudes toward the patient's condition; procedures.

Common Types of Skin Disorders: Etiology, symptoms and treatment of the erythemas, e.g.: urticaria, pruritis, non-specific infections, e.g.: eczemas, psoriasis; fungus infections, e.g.: athlete's foot and other bacterial infections, e.g.: boils, carbuncles, erysipelas, pediculosis, scabies.

Management of Burns: Sunburn, thermal burns, e.g.: degree of burn and extent of burn, exposure and occlusive dressing method of treatment, principles and procedures of replacement of electrolytes; accurate intake and output records; medical specialist's responsibility for observations, recognition, reporting and recording signs and symptoms of applications and progress of recovery. Emergency treatment check.

Allergies: Etiology, symptoms, emergency and definitive care of allergic conditions. Theory of sensitization. Methods of skin testing; path, scratch intraderma, indications, actions, precautions - selected histamines.

Drug Therapy Skin and Allergies: Use, average dosage, methods of administration, contraindications, and toxic effects of common dermatologic agents, histamines, antihistamines.

Written Examination and Reteaching Session: Written examination on patients with disorders of the skin or allergies and reteaching session.

Care of the Patient With Disorders of the Eyes and Ears

Advanced Anatomy and Physiology Eye and Ear: Discussion of the structure and function of the eye and ear.

Nursing Care of Disease Conditions of the Eye: Etiology, symptoms, treatment and nursing care of disease conditions of the eye; hordeolum, conjunctivitis, glaucoma, foreign bodies, corneal ulcer.

Pre-operative and Post-operative Care of Patient With Eye Surgery: Pre-operative and post-operative nursing care of intraocular and extraocular surgery with emphasis on principles.

Nursing Care of Disease Conditions of the Ear: Etiology, symptoms, treatment and nursing care of disease conditions of the ear; otitis media, mastoiditis; deafness. Military implications.

Assisting with Examination of the Eye: Purposes, procedures and care of Snellen charts, otoscope, ophthalmoscope. Other diagnostic procedures.

Eye, Ear, Nose and Throat Procedures: Principles, procedures and application of nose drops, eye drops, eye ointments, ear drops, throat irrigations, steam inhalations.

Drug Therapy - Eye and Ear: Action, average dosage, methods of administration, contraindications of common drugs used in the treatment of patients with eye and ear diseases.

Written Examination and Reteaching Session: Written examination on patients with disorders of the eyes and ears, and reteaching session.

Remedial Teaching and Retesting, Medical-Surgical Nursing

Remedial Teaching and Retesting: Remedial teaching in selected areas as required. Retesting of students as required.

Mental Health and Mental Illness

Hours: 27

Introduction to Understanding Mental Illness: Purpose of instruction; importance of knowledge to the Clinical Specialist; functions and areas of assignment and responsibilities of MOS 91F, 91G. Historical background of modern psychiatry.

Personality-Development and Defense Mechanisms: Factors contributing to development of personality; Id, Ego, Superego; instinctual components; body builds. Significance and reasons for utilization of the more common defense mechanisms.

Causes, Classification of Mental Diseases: Factors causing symptomatic behavior; heredity, age, drugs, diseases, stress; classification, individual's role in group.

ARMED Psychiatric Services: Neuropsychiatry service in the Army; clinic; psychology service; social work service; mental hygiene clinics.

Preventive Psychiatry: Philosophy of preventive psychiatry; principles of consultation with command; use of preventive techniques in solving problems of soldierly adjustment; the soldier as a functioning member of a group.

Combat Psychiatry: Causes of emotional breakdown in combat; symptoms of conditions; recognizing "warning signs" of imminent breakdown; prevention. Management and treatment of combat psychiatric casualty.

Alcoholism: Causes, treatment of alcoholism. Alcoholism in the Army. Management and treatment of delirium tremens. Administrative responsibilities.

Drug Abuse: Incidence, causes, treatment of addiction; recognition and rehabilitation.

Psychiatric Complications Associated with Diseases and Trauma: Acute and residual psychiatric aspects of infections; delirium; coma, drug and poison intoxication; cerebral infections, tumors, trauma and vascular accidents. Care, supportive care, diet, drugs.

Evacuation of Psychiatric Patient: Administrative and nursing procedures to prepare psychiatric patient for transfer to neuropsychiatric center.

Nursing Care of Overactive and Underactive Patient: Assessing the mental status of the patient, appearance, mood, speech thinking and behavior; protection of the patient and personnel during overactive status; drawing out of underactive patient.

Examination and Reteaching Session: Written examination on mental health and illness. Reteaching as required.

Care of the Obstetrical Patient and the Newborn

Hours: 24

Anatomy and Physiology of Female Reproductive System and Embryonic Development: Discussion and descriptions of female pelvic anatomy; process of ovulation and fertilization; fetal development.

Prenatal Care: Definition and importance of prenatal care, initial prenatal visit, subsequent visits. Symptoms of pregnancy, mother's reaction to the abnormal symptoms; tests for pregnancy. Diet during pregnancy. Complications.

Labor and Delivery: Discussion and demonstration of care of patient during labor, delivery. Management of complications.

The Emergency Delivery: Discussion of the emergency delivery with emphasis on cleanliness and asepsis, reassurance of patient and support of presenting part, duties in regard to cord, establishing respirations.

Puerperium: Discussion of postpartum care of mother to include changes occurring post-delivery; early ambulation and its importance; perineal and breast care; rooming-in plans; complications; patient teaching: self care at home; postpartum clinic visits.

Care of Newborn: Discussion of mortality rates; fontanels, legal identification; care of newborn in establishing respirations, cord care, eye care, feedings, observation; bathing, weighing, lifting, diapering, artificial respirations, abnormalities.

Army Health Nurse's Role in Maternal and Child Health: Maternal and child health services; changes in maternal and infant death rates; Army health nurses as a functioning member of obstetrical team.

Gynecological Conditions: Etiology, symptoms, diagnostic procedures, medical and surgical treatment, complications, nursing care of disorders of female reproductive system to include: venereal infections, non-venereal infection and discharges, benign and malignant tumors and lesions of vulva, vagina, uterus and ovaries.

Drug Therapy Female Reproductive System: Discussion of action, use, preparation, dosage, administration, and reactions of female reproductive drugs to include common oxytocic, uterine relaxants and hormones.

Family Planning: Agencies for referral; types and methods of contraception; needs for teaching.

Examination and Reteaching Session: Written examination on care of the obstetrical patient and newborn. Reteaching as required.

Care of the Pediatric Patient

Hours: 24

Introduction to Current Concepts of Growth and Development: The historical background and current concepts of child growth and development and various factors which influence growth and development with emphasis on heredity versus environment.

Growth and Development - Infancy Through Pre-School Child: The general physical and mental growth of the normal infant from birth through twenty-four months of life. A brief comparison of growth and development of the body; physical characteristics of children at the age periods; infancy through pre-school; emotional, social and intellectual growth of these ages. Normal growth and development of the pre-school child; how he learns new skills and establishes good health and behavior habits; importance of regular medical and dental examinations and immunizations.

Growth and Development - School Child and Adolescent: Normal growth and development of the school child; his health and play needs; adjustment to school life. Physical and psychological changes that occur at puberty and during adolescence of boys and girls; problems arising at this age.

Disease Conditions of Children: Discussion and demonstration of care and treatment of children with congenital anomalies or acquired organic or functional diseases of various anatomical systems; communicable diseases. Instruction to include symptoms, treatment, nursing care, psychological support patient and parent education.

Care of the Sick Child and Pediatric Nursing Procedures: Basis of recognizing warning signs of illness in a child; emergency treatment; principles of nursing the sick child in the hospital and the home. Care for sick child contrasted to that of the sick adult; administration of medications, safety devices and restraint, nutritional problems; pre-operative care.

Concepts of Child Health: Preventive Medicine Program for Child Health; functions and activities of well baby clinic; pre-school examinations child guidance centers; day nursery. Accident prevention. Battered child syndrome. Cooperation with civilian health agencies. Activities of the Army Health Nurse.

Examination and Reteaching Session: Written examination on the care of the pediatric patient. Reteaching as required.

Dispensary Procedures

Hours: 19

Introduction to Dispensary Duty: Discussion of history and trends of outpatient service; types and purposes of Army dispensaries; staffing; organization; distinguishing aspects of dispensary duty.

Assisting with Physical Examinations: Discussion, demonstration and practice of the role of the specialist in preparing the patient for physical examinations; preparation of equipment; records. Types of physical examinations, annual medical evaluation, discharge, etc., including purpose. Physical profile determinations.

Conduct of Sick Call: Functions of dispensaries as first echelon medical care; responsibilities of specialist in assisting with sick call; screening and establishing priorities, proper handling of female and child patients; intoxicated; contagious disease suspects; teaching the patient. Pertinent regulations. Malingering. Reportable diseases. Maintenance of records and files.

Common Emergencies: Causes, emergency treatment and preventive measures including foreign bodies in ears, eyes, impacted cerumen, poison plants, superficial cuts and abrasions, carbon monoxide poisoning.

Maintenance of Safe Environment in the Dispensary: Concept of safe environment; consideration of factors influencing dispensary environment; ventilation; housekeeping; waste disposal; health and safety hazards; inspection and preventive maintenance of equipment; security of drugs, poisons and oxygen; fire prevention.

Collection and Storage of Specimens - Routine Laboratory Procedures: Definition, purpose, clinical significance, procedures for collection of specimens for laboratory examination: urine, sputum, blood smears, and cultures; proper handling and storages; procedures for forwarding specimens to area laboratories; preparation and disposition of various laboratory report forms; practical exercise, collection of specimens and preparation of laboratory forms.

Poisoning: Symptoms, causes and treatment of selected types of poisoning; precautions to prevent poisoning; classification, action, methods of administration and contraindications of common antidotes, including the "Universal Antidote." Discussion of "Toxicological Information Center."

Examination and Reteaching Session: Written examination on dispensary procedures and reteaching as required.

Surgery in the Army Health Facility

Hours: 30

Orientation to Operating Room Technique: Discussion of organization, function and physical plan of the operating room suite; operating team members responsibilities and relationships; ethical and professional standards of surgery; qualifications of personnel. Discussion of history of surgery; chain of asepsis; terms peculiar to operating room technique.

Principles of Sterilization and Disinfection: Discussion and demonstration of principles of sterilization and disinfection: methods, advantages, and disadvantages; sterilization controls, preparation of supplies for sterilization; storage and handling sterile supplies, loading the autoclave.

Central Materiel Section Activities: Purpose, function and physical plan of central materiel section; flow plan; duties and responsibilities of personnel; CMS-OR and CMS-Ward relationships.

Surgical Instrument Identification: Classification of surgical instruments; basic instrument sets; picking instruments for surgical procedures; dispensary methods of sterilizing surgical instruments.

Anesthetics: Discussion of types, techniques, and effects of anesthetics, to include: general, regional, spinal and local. Common agents used; factors affecting selection of method and agent. Safety precautions when using explosive agents. Aspects of recovery following surgical procedures.

Sutures and Sutures Technique: Discussion of use, dosage, preparation, administration and effects of local anesthesia. Types of suture material and surgical needles; factors affecting selection of suture and type of needle; sterilization procedures. Suture technique; types of stitches; knots; removal of stitches. Practical exercise - minor wound closure.

Scrub, and Glove Technique: Principles of scrub, and glove technique; modifications of procedure depending upon situation. Demonstration and practical exercise of procedures including pre-scrub preparation, as used in dispensaries and field situations.

Hazards in the Operating Room: Discussion of potential explosion and fire hazards; care of the unconscious or sedated patient; sterility of materials; factors of safety and accident prevention to patient and personnel to include use of litter and table straps, handling sharp instruments, proper positioning.

Duties of the Circulator and Scrub Specialist Assisting with Minor Surgical Procedure: Characteristics; preparation of the operating room; assisting with positioning patient; manipulation of the OR light and table; care of surgical specimens; reports; preparation of local anesthetic equipment; specific duties of scrub specialist to include setting up sterile tables; assisting with skin preparation; draping technique. Practice exercise.

Examination and Reteaching Session: Written examination on Surgery in the Army Health Facility and reteaching as required.

Special Medical and Nursing Considerations

Hours: 16

Cancer Nursing: Discussion of the classification of tumors; methods of spread; treatment; seven danger signals; care of patient receiving radioisotope therapy.

Radioisotope Therapy: Discussion of nursing care of patient receiving radioisotope therapy.

Geriatric Nursing: Discussion of the emotional and physical changes of aging, nutrition, clothing, diseases, hospital and home care.

Rehabilitation Nursing: Discussion of the philosophy of rehabilitation; principles and practices of rehabilitation nursing to include prevention of deformities and complications.

Examination and Reteaching Session: Written examination and reteaching sessions.

Clinical Experience

Hours: 768

Clinic and Dispensary Patient Care: Perform duties in selected clinics, dispensary, emergency room, and centralized materiel section to include: preparation, processing and storage of sterile supplies for surgical, therapeutic and diagnostic procedures; scheduling and reception of the patients; assisting medical officer with physical examinations and treatments; performing patient care procedures; instructing patients as directed; performing and assisting with preventive medicine procedures and health education; assisting with administrative duties; preparation of medical records and reports.

Elective: This time should be utilized for specialized experience available in the organizations where the school is located, e.g.: neurosurgery, neuropsychiatry, GU, Gyn, etc.

Immediate Post-operative Patient Care: Perform total patient care for the immediate post-operative patient to include: preparation of the patient unit; reception of the patient from the operating room, observation recording, and reporting signs, symptoms; operation of special equipment used in the recovery room.

Medical Patient Care: Perform total patient care for all types of medical patients to include: routine care and treatment; special medical nursing procedures; assisting with medical diagnostic and therapeutic procedures; preparation of patient records and reports; preparation and presentation of ward conference.

Obstetrical and Newborn Patient Care: Perform total patient care for the obstetrical and newborn patient to include: routine and special nursing care and procedures during the labor, delivery and postnatal periods; operation of special equipment used in the delivery and labor room and nursery; adaptation of routine patient care procedures for the newborn, special nursery procedures, and therapeutic preparation of patient records and reports.

Orthopedic Patient Care: Perform total patient care for orthopedic patients to include: adaptation of routine care and treatment for the orthopedic patient; special orthopedic nursing procedures; assist with diagnostic and therapeutic procedures; assist with cast room rehabilitative procedures; prepare patient records and reports.

Pediatric Patient Care: Perform total patient care for the pediatric patient to include: adaptation of routine patient care procedures for the pediatric patient; special pediatric nursing care procedures; assisting with pediatric diagnostic and therapeutic procedures, preparation of patient records and reports.

Surgical Aseptic Technique: Perform duties and procedures required to prepare for and assist with minor surgical procedures.

Surgical Patient Care: Perform total patient care for general and special surgical patients to include: routine care and treatment, special surgical nursing procedures; assisting with surgical diagnostic

and therapeutic procedures; preparation of patient records and reports; preparation and presentation of a ward conference.

NAVY

Class A Hospital Corpsman

Length: 16 Weeks

Source: BUMEDINST 1510.9A

Objectives: To train enlisted personnel in the basic principles and techniques of direct patient care and first aid procedures.

Anatomy and Physiology

Hours: 80

Introduction to basic biologic processes, and to the structure and function of cells and tissues. Introduction to the major anatomic systems, including musculo-skeletal, circulatory, respiratory, gastro-intestinal, genitourinary, nervous and endocrine.

Principles and Techniques of Patient Care

Hours: 240

Principles and practice of skills and procedures used in providing care to the sick and injured, including team care concepts, admission and discharge procedures, charting, medication, diet, vital signs, baths and bed making, oxygen and suction apparatus, selected diagnostic tests; and application of these skills in the care and treatment of patient. Interpersonal, telephone, patient and staff relationships.

First Aid and Emergency Procedures

Hours: 120

Didactic and practical training in recognition and management of hemorrhage, asphyxia, shock, inflammation, heat and cold injuries, wounds, burns, fractures, and other injuries; nuclear, chemical, biological and mass casualties. Training is provided in artificial respiration, transfusion, relief of pain, dressings, splints, transportation of the injured, suturing, triage, and management of medical emergencies.

Preventive Medicine

Hours: 40

Disease agents, methods of transmission, physiological defenses and immunology. Personal hygiene and habits in relation to disease. Environmental sanitation. Food and vector-borne diseases and their control.

Medical Mathematics

Hours: 35

Review of basic arithmetical operations, including fractions, decimals and percentage; avoirdupois, apothecary, and metric systems, and conversion; dosage calculations.

Materia Medica and Toxicology

Hours: 65

Basic pharmacy and Materia Medica. Sources and classes of drugs, and their therapeutic uses; methods of preparation and administration; dosage; reference sources; Defense Supply Catalog; prescriptions. Toxicology: classes of poisons; symptoms, antidotes, and treatment.

Military Requirements

Hours: 60

Naval and Medical Department organization, ashore and afloat. Naval customs and traditions; Naval discipline and guidance. Rank and rate structures, pay and allowance. Advancement and Career Programs. Inspections; security; combat procedures.

Note: Female students receive six hours practical instruction in pre- and postnatal care, female catheterization, gynecologic clinic duties in lieu of field and combat medicine.

NAVY

Class B Hospital Corpsman

Length: 20 Weeks

Source: BUMEDINST 1510.9B

Objectives: To provide instruction in advanced principles and techniques of patient care with emphasis on tentative diagnosis and on acquiring skills necessary for assignment to duty independent of direct medical officer supervision.

Administration

Hours: 60

Naval customs, traditions and usage. Organization and responsibilities of the operating forces, the Navy Department and the Shore establishments; management and technical control by Bureaus, offices and commands of the Navy Department; functions and organization of the Medical Department. Personnel of the Medical Department and their duties. Maintenance of manuals, current directives and notices of the Navy Directive System. Personnel organization of a naval vessel; major command departments, staff departments, their heads, organization and responsibilities. Divisions of a department. Functional organization of a naval vessel. The duties of Medical Department personnel afloat. General administrative responsibilities, duties, procedures of a Medical Department representative. Administrative procedures concerned with the naval decedent affairs program; the applicability, the policies and program responsibilities.

Education/Instructor Training

Hours: 20

How to study and the laws of learning. Instructor training. Preparation and presentation of lesson plans and utilization of various training aids.

Anatomy and Physiology

Hours: 60

Introduction to anatomy, physiology and classification of matter. The cell, body tissues and anatomical terms; the skeletal system, joints and joint movement; myology; special membranes and glands; blood and its composition, the arterial and venous system; the lymph and lymphatic system; the respiratory system; digestion and the digestive system; the nervous system; the reproductive system, male and female; special sensory organs.

Atomic, Biological and Chemical Warfare

Hours: 35

Radiation; the atomic explosion phenomenon. Biological effects of atomic warfare. Radiac instruments, monitoring technic; decontamination; individual protective measure; shipboard instructions and programming. Evolution of chemical warfare agents, characteristic physiological action, symptoms of exposure, biological effects, self aid, first aid, detection and decontamination; history and evolution of biological warfare; biological agents; tactical uses of 'B/W' agents; dissemination of the agent; detection-protection-decontamination.

Pharmacy and Chemistry

Hours: 50

Definitions of pharmacy and related sciences. Pharmaceutical arithmetic, specific gravity and alligation; solutions; stock and ratio; Young's rule of dosage; conversion of weight and temperature; pharmacy regulations; labeling; general introduction to organic and inorganic chemistry.

Clerical Forms and Procedures

Hours: 75

Forms and reports. Typing, Naval Correspondence Manual, the Navy Directives System; records management and disposition; maintenance of health and dental records; statistical reporting; recurring Medical Department reports; preparation of quarantine reports; preparation of NavMed Form N related dispatches; situational Medical Department forms and reports; treatment of Naval Personnel in other than government hospitals; introductions to the enlisted service record.

Embalming

Hours: 10

Definition, purpose and responsibilities of embalming; embalming fluids, their constituents and action upon tissues; phases and methods of injection; signs and tests of death; instruments contained in the Navy Embalming Kit; preparation of the body before injection; selection of the vessels of the body for embalming; identification and raising of the vessels for embalming.

Finance

Hours: 30

Fiscal accounting, allotments, budgets, funds under appropriation O & M for ships and fleet operating units; procurement, Navy Stock Fund. Requisitioning of Cog L material, preparation and submission of requisition forms DD 1145 and DD 1150; EAM care requisitioning; receipts and property accountability; stock records; equipment supplies, surveys, transfers, stock levels; storage, bulk issue, special purpose, security.

First Aid and Emergency Procedures

Hours: 80

Hemorrhage and its control; asphyxia, shock; the morphine syrette; blood volume expanders; inflammation, types, causes and treatments; wounds general and specific; suturing, wound dressings; injuries of joints, muscles and bones; fractures, splints, bandages and bandaging; transportation of the wounded; foreign bodies; heat stroke and exhaustion; cold weather injuries; emergency dental treatment; survival first aid; diving diseases.

Leadership

Hours: 30

Introduction to leadership principles and technic; leadership background and definition; moral obligations of leadership; military position of the petty officer; human relationships; petty officer responsibility; problem solving.

Materia Medica and Pharmacology

Hours: 80

The introduction to the responsibilities of safe administration of drugs; nomenclature of drugs; administration of medicine; dosage factors; classes of drugs and their sources; therapeutics and toxicology of essential drugs.

Laboratory Technic and Procedures

Hours: 30

Laboratory conduct, microscopy; complete blood count; urinalysis; serology; bleeding and coagulation time estimations; blood grouping and typing; water chlorination.

Advanced Medical and Surgical Conditions

Hours: 70

The taking of medical histories and sending of messages at sea; rheumatic fever; angina pectoris; myocardial infarction; cerebral accident; diabetes mellitus; infectious hepatitis, hypertension; diet in health and disease; catheterization; enemas; oxygen therapy; medical and surgical asepsis; upper respiratory infections; diseases of the eye and ear; parenteral fluid therapy; anesthesia; minor surgical conditions including appendicitis, cholecystitis, intestinal obstruction, hernias, gastritis, peptic ulcer and hemorrhoids; Wangenstein Suction; Lavage and Gavage; conditions of the G.U. tract; neuropsychiatric conditions; diseases of the skin; emergency care in a normal delivery.

Preventive Medicine

Hours: 70

Administration of preventive medicine program. Specific micro-organisms and common diseases; immunity, antitoxins and immunization; personal hygiene; venereal disease contact reporting and investigation;

the role of food in preventive medicine; galley sanitation; dishwashing; inspection of provisions; food storage; preparation of food; milk and milk products; food borne diseases; essentials of healthful living ashore and afloat; shipboard water and ventilation; control of insects and rodent carriers of diseases; field sanitation; safety measures aboard ship.

Military Requirements and Practical Sanitation

Hours: 100

Uniform regulation; personnel and material inspections; advancements; decorations and awards; re-enlistments; pay and allowances; military etiquette and naval customs; emergency drills and survival methods; character guidance by chaplains; Hospital corps training and career programs; field days.

AIR FORCE

Medical Service Specialist (AFSC 90230)

Length: 12 Weeks

Source: POL 3ABR90230

Objectives: Train airmen to perform duties as prescribed in AFM 39-1 for Medical Service Specialist. This includes training to assist professional personnel in the care and treatment of patients in the medical wards, dispensaries, clinics and related U.S. Air Force medical activities.

Medical Service Fundamentals
(3AQR90010)

Hours: 128

Material is presented in the first three weeks and three days of all basic medical/dental technical training. The following subjects are presented: Course Orientation and Administration (5 hours); Medical Terminology (4 hours); Anatomy and Physiology (21 hours); Measurement and Critique (2 hours); Bandages and Field Dressings (5 hours); Security and Medical Ethics (2 hours); Hospital Safety Practices (5 hours); Vital Signs (6 hours); Supplies and Equipment (1 hour); Historical Highlights of the USAF Medical Service (1 hour); Mission, Organization and Functions of the USAF Medical Service (1 hour); USAF Medical Facilities (2 hours); Geneva Conventions (1 hour); Measurement and Critique (2 hours); Military Sanitation Procedures (1 hour); Emergency Medical Treatment for Hemorrhage (1 hour); Emergency Medical Treatment for Shock (1 hour); Toxic Agents (1 hour); Emergency Medical Treatment for Wounds (2 hours); Head and Back Injuries (2 hours); Chest and Abdominal Injuries (2 hours); Thermal Injuries and Heat Disorders (2 hours); Fractures and Dislocations (2 hours); Splint Application (2 hours); Resuscitation (4 hours); Medical Aspects of Disaster Medicine (2 hours); Field Casualty Care (Medical Field Exercise, 41 hours); Measurement and Critique (3 hours); Educational Opportunities (2 hours); Course Administration (1 hour); End of Course Critique (1 hour); Graduation (2 hours).

Fundamental of Nursing Care I

Hours: 30

Introduction. Course orientation. Course administration. Effective study habits. Types and uses of instructional materials.

Communications. Identify methods of communication: verbal; non-verbal; written. Identify selected principles of communication.

Public Relations and Communications Security. Identify selected principles of public relations: co-workers; patients and public; administration; medical ethics. Select appropriate care of classified or sensitive information by the Medical Service Specialist.

Ward Records, Admissions and Dispositions of Patients. Identify selected administrative procedures: admission and orientation; assembling and maintaining records; leaves, passes and interward transfer; discharge. Given the necessary equipment and supervision, prepare an admission chart for a simulated patient.

Hospital Tour. Given definition of the terms "route," "functional areas" and "supportive services," the student will be able to list: two routes of admission to the hospital; three functional areas of a hospital nursing unit; six specialty services which support patient treatment.

Physical Examinations. Identify the responsibilities of the Medical Service Specialist in assisting with a physical examination: area, equipment; patient; physician.

Lifting and Moving. Using principles of good body mechanics, perform with supervision selected procedures of lifting; moving and positioning a patient: good posture and body alignment; principles of body mechanics; use of wheelchair and litter.

Comfort and Hygiene. Given the necessary equipment and supervision, perform selected procedures relating to maintaining patient comfort and hygiene: oral hygiene; bed bath; backrub; administration of bedpan and urinal; making an occupied bed. Identify other procedures related to comfort and hygiene: morning care; evening care; measuring and recording intake and output; collecting specimens. Given the necessary equipment and supervision, make an unoccupied bed.

Common Disease Causing Organisms. Identify selected disease causing organisms. Identify methods of disease control.

Medical Aseptic Technique. Identify selected procedures used to maintain medical aseptic technique: isolation; barrier; disinfection; disposal of contaminated wastes; housekeeping; direction of personnel in maintaining high standards of personal hygiene; inspection and evaluation of adherence to established standards of sanitation. Identify selected steps used to investigate outbreaks of hospital sepsis.

Care of Patients with Contagious Disorders. Given the necessary equipment and supervision, perform selected procedures for a patient in isolation: identify selected terms; identify selected care principles pertaining to patients with contagious diseases; differentiate between selected types of isolation precautions; identify procedures for handling specimens.

Measurement and Critique. Written; Critique.

Fundamentals of Nursing Care II

Hours: 30

Principles of Sterilization. Identify the basic principles of sterilization: purpose; methods; preparation and sterilization; storage.

Surgical Aseptic Technique. Identify basic principles of surgical aseptic technique.

Application of Dressings. Identify basic principles of applying a sterile dressing.

Surgical Aseptic Technique Laboratory. Given the necessary equipment and supervision, apply a dry sterile dressing to a fellow student: open a surgical pack and assemble equipment; don surgical gloves; apply a sterile dressing.

Application of Heat and Cold. Identify selected principles pertaining to heat and cold: purposes; methods and equipment; precautions. Given the necessary equipment and supervision, apply selected heat and cold treatments.

Pharmacology. Identify basic principles of pharmacology: selected terms; sources of information; purposes of administration; properties of drugs; factors affecting drug action; desired action according to body system - laxatives, cathartics, analgesics and narcotics, sedatives and local anesthetics. Identify procedures for handling controlled drugs.

Therapeutics. Identify safety precautions related to anaphylactic reaction. Identify indications and complications of selected drugs: antibiotics, antihistamines; tranquilizers, antidiarrheal agents; local anesthesia.

Metric and Household Systems of Measurement. Using the metric system, select correct measure of medication where multiple or split unit dose is ordered.

Medications - Oral, Sublingual and Rectal. Identify basic principles of the administration of medications: safety factors; legal aspects; standard abbreviations; preparation; administration. Given the necessary equipment and supervision, administer selected medications to a simulated patient: oral; sublingual; rectal.

Parenteral Medications. Identify basic principles for the administration of parenteral medications: purposes; precautions; equipment; preparation; administration procedures - intradermal, subcutaneous, intramuscular. Given the necessary equipment and supervision: prepare and administer a subcutaneous injection into a rubber ball; using sterile aseptic technique, prepare and administer an intramuscular injection into a mannikin; using sterile aseptic techniques, prepare and administer an intradermal injection to a fellow student.

Immunizations and Skin Tests. Identify basic facts and procedures related to immunizations and skin testing: types of immunity; dosage; storage of vaccines; intervals between immunizations; precautions; reactions and treatment; overseas requirements.

Assisting With Intravenous Administration of Fluids, Drugs and Blood (IVs). Identify basic principles of intravenous therapy: types; purpose; equipment. Identify the responsibilities of the Medical Service Specialist related to intravenous therapy: assisting with procedures; observing the patient during therapy; reporting; recording. Identify the procedure for obtaining and giving blood to a patient: requesting type and cross match; obtaining blood from blood bank; assisting with transfusion.

Diets. Identify basic principles of diet therapy. Identify selected facts related to the function of dietary services in Air Force hospital facilities.

Measurement and Critique. Written; Critique.

Specialized Nursing Care -
The Respiratory Patient

Hours: 30

Nursing Care of Patients with Respiratory Disorders. Respiratory disorders: identify nursing approaches for the patient with respiratory disorders - anatomy and physiology, terminology; basic care principles. Inhalation therapy: oxygen therapy - identify basic principles of nursing care for the patient receiving therapeutic oxygen, given the necessary equipment and supervision set up the equipment and administer oxygen by a selected method to a fellow student; intermittent positive pressure breathing - identify basic principles of nursing care for the patient receiving IPPB treatments, given the necessary equipment and supervision perform selected procedures. The patient with a tracheostomy: identify basic principles of nursing care for the patient with a tracheostomy - purpose, equipment, supportive care procedures; given the necessary equipment and supervision perform selected procedures on simulated patients with tracheostomies - tracheal suction, clean inner cannula, change dressing.

Post Mortem Care. Identify selected human responses to dying. Identify responsibilities of the Medical Service Specialist when death occurs.

Clinical Experience - Phase I. Under the direction of a clinical instructor perform selected procedures for hospital patients such as: temperature, pulse, respiration and blood pressure; assist patients with trays; pass fresh drinking water; Am or Pm care as indicated. Use basic communicative tools: verbal; non-verbal; written.

Nursing Care Plans. Identify selected facts related to preparing a nursing care plan: definition and purpose; gathering the information; preparing the plan. Given the necessary equipment, information and supervision, prepare and discuss a sample nursing care plan

Measurement and Critique. Written; Performance; Critique.

Specialized Nursing Care -
The Circulatory and the Surgical Patient

Hours: 30

Nursing Care of Patients with Cardiovascular, Lymphatic and Blood Disorders. Cardiovascular disorders: identify basic care approaches for a patient with a cardiovascular disorder - anatomy and physiology, terminology, basic care principles. Peripheral vascular disorders: identify care approaches for the patient with a peripheral vascular disorder - terminology, disorders, basic principles. Blood disorders: identify basic care approaches for the patient with blood disorders - blood elements, disorders, basic care principles. Electrocardiograph laboratory: given the necessary equipment and supervision, take an ECG tracing on a fellow student; identify selected parts of the ECG machine and their function; given the necessary equipment and supervision, take the apical pulse of fellow student. Cardiovascular laboratory: given the necessary equipment and supervision, perform selected procedures for cardiovascular patients - apply bandages to one lower extremity using a fellow student as a patient, select a sodium restricted diet with the aid of blank diet forms and dietary display.

Nursing Care of the Surgical Patient. Pre-operative care: identify basic approaches for the pre-operative patient - description, procedures and preparation. Post-operative care: identify basic approaches for the post-operative patient - description, needs and approaches, complications; given the necessary equipment and supervision and using a fellow student as a patient perform selected post-operative procedures such as - prepare a post-op unit, complete a post-op observation checklist, assist a patient with coughing and deep breathing, assist a patient with early ambulation.

Interpersonal Relationships. Identify selected elements of interpersonal relationships. Select approaches to problems of interpersonal relationships.

Measurement and Critique. Written; Performance; Critique.

Specialized Nursing Care - Patients with
EENT, Maxillo-Facial, and Orthopedic Disorders

Hours: 30

Nursing Care of Patients with EENT and Maxillo-Facial Disorders. Identify basic nursing approaches for patients with disorders of structures related to the head: anatomy and physiology; terminology; general nursing approaches for patients with selected disorders of - eye, ear, nose and throat, and Maxillo-facial injuries. Given necessary equipment and supervision, perform selected nursing procedures: throat culture; eye compresses; eye dressing; assemble an otoscope; examine the ear.

Nursing Care of Orthopedic Patients. Identify basic nursing approaches for patients with disorders of the musculo-skeletal system: anatomy and physiology; terminology; related procedures; care of the patient in a cast; care of the patient in traction; general nursing approaches. Given necessary equipment and supervision, perform selected nursing procedures: plaster cast application; plaster cast removal; skin traction; measurement for crutches.

Measurement and Critique. Performance test; written test; Critique.

Clinical Experience. Under instructor supervision in the hospital, perform selected basic nursing procedures for patients assigned by the instructional staff: bed bath; partial bed bath; make a bed; post-operative bed; oral hygiene; back rub; take and record vital signs; pass diet trays; assist patients with diets; assist in performing care to meet problems and needs.

Specialized Nursing Care - Patients with Dermatological, Endocrine and Gastrointestinal Disorders

Hours: 30

Nursing Care of the Dermatology Patient. Identify basic nursing approaches for patients with disorders of the skin: anatomy and physiology; terminology; general nursing approaches.

Nursing Care of the Burn Patient. Identify basic nursing approaches for patients with burns: burn categories; general nursing approaches; dressing application.

Nursing Care of the Terminally Ill Patient. Identify basic nursing approaches for the seriously ill and dying patient: terminology; administrative procedures; general nursing approaches; signs and symptoms of approaching death.

Nursing Care of Patients with Endocrine Disorders. Select basic nursing approaches for patients with disorders of the endocrine glands: anatomy and physiology; care of the patient with diabetes mellitus; care of the patient with thyroid disorders. Given necessary equipment and supervision, perform urine tests: sugar; acetone.

Nursing Care of Patients with Gastrointestinal Disorders. Identify basic nursing approaches for patients with disorders of the gastrointestinal system: anatomy and physiology; terminology; related procedures - diagnostic, therapeutic; general nursing approaches. Given necessary equipment and supervision, perform selected nursing procedures under simulated conditions: gastric gavage; gastric analysis; gastric suctioning with Levin tube irrigation; mouth care; colostomy dressing; cleansing enema.

Measurement and Critique. Performance test; written test; Critique.

Specialized Nursing Care - Patients
with Psychiatric, Neurological and
Genito-Urinary Disorders

Hours: 30

Nursing Care of the Psychiatric Patient. Identify basic nursing approaches for patients with mental disorders: terminology, general nursing measure; protective measures.

Nursing Care of Patients with Neurological Disorders. Identify basic nursing approaches for patients with disorders of the nervous system: anatomy and physiology; head injuries; spinal cord injuries; terminology; epilepsy; general nursing approaches. Given necessary equipment and supervision, operate a turning frame: position and support the patient; observe safety precautions.

Nursing Care of Patients with Genito-Urinary Disorders. Identify basic nursing approaches for patients with disorders of the genito-urinary system: anatomy and physiology; terminology; related procedures; general nursing approaches. Given necessary equipment and supervision, perform catheterization under simulated conditions: prepare the patient; maintain sterile aseptic technique; record results.

Nursing Practice Laboratory. Given necessary equipment and supervision, perform selected nursing procedures under simulated conditions: admit a patient; attach a drainage unit to an indwelling catheter; irrigate an indwelling catheter; obtain a urine specimen from an indwelling catheter; perform a routine urinalysis with test tape; complete a urinalysis request form; position, support and protect a neurological patient.

Measurement and Critique. Written; Critique.

Specialized Nursing Care - Obstetrical,
Newborn and Pediatric Patients

Hours: 30

Nursing Care of the Obstetrical and Newborn Patient. Identify basic nursing approaches for the obstetrical patient: anatomy and physiology; terminology; prenatal care; labor and delivery room care; postpartum care. Identify basic nursing approaches for the newborn: delivery; newborn nursery.

Nursing Care of the Pediatric Patient. Identify basic nursing approaches for pediatric patients: terminology; growth and development; selected categories of illness; general nursing approaches. Given necessary equipment and supervision, perform selected nursing procedures under simulated conditions: infant carries; infant weighing; diapering; application of restraints; infant urine specimen collection.

Nursing Care of the Geriatric Patient with Chronic Illness. Identify basic nursing approaches for the geriatric patient with chronic illness: terminology; general nursing approaches.

Outpatient Emergency Services. Identify selected measures to be carried out at the scene of an accident: supplies and equipment; patient movement; aid to families. Given necessary equipment and supervision, each student will perform cardio-pulmonary resuscitation on a mannikin; signs and symptoms of cardiac arrest; mouth to mouth resuscitation; external cardiac massage.

Nursing Care of the Patient for Aeromedical Evacuation. Identify basic nursing approaches for patients scheduled for aeromedical evacuation: terminology; patient classification; administrative procedures; general nursing approaches. Given necessary equipment and supervision, perform selected nursing procedures: prepare a litter; apply restraints to a simulated psychiatric patient.

Comprehensive Nursing Laboratory. Given necessary equipment and supervision, each student will perform selected nursing procedures in a role playing situation such as: admit a patient; take and record vital signs; set up and operate an oxygen tent; transfer patient from litter to bed; connect indwelling catheter to drainage unit; obtain sterile urine specimen from indwelling catheter; apply an armboard; administer a subcutaneous injection; change a dressing using sterile aseptic technique; turn a patient on a stryker frame; position and support a simulated neurological patient; administer cardio-pulmonary resuscitation under simulated conditions; take an electrocardiogram; identify problems and needs. Orientation to clinical experience: objectives; ward assignments.

Measurement and Critique. Performance test; written test; Critique.

Clinical Nursing Experience

Hours: 30

Clinical Experience - Phase III. Give basic nursing care under direction of a clinical instructor in the clinical setting such as: take and record vital signs; admit and orient new patients; prepare and assist with physical examinations; provide comfort and hygiene measures for assigned patients - make bed, give bath, give oral hygiene, give back rub, administer bedpan and urinal, maintain good posture and body alignment, assist with patient exercises; maintain and record intake and output; serve diets and feed patients; observe hospital safety standards; assist in maintenance and cleansing of diagnostic and therapeutic equipment. Identify problems and needs, physical, social, emotional, and rehabilitational, of assigned patients, such as: make and report observations; assist in giving nursing care to meet problems and needs of assigned patients; participate in planning care conference; construct a nursing care plan on an assigned patient. Establish interpersonal relationships: practice acceptable standards of conduct; use principles of good public relations.

Graduation.

AIR FORCE

Medical Service Technician

Independent Duty (AFSC 90270)

Length: 9 Weeks

Source: Training Plan 3AZR90270

Objective: To prepare students to conduct a medical clinic in the absence of a physician at a small, isolated station.

INTRODUCTION TO SITE MEDICINE

Welcome and Course Orientation

Hours: 1

Medical Administration

Hours: 10

The instructor will discuss and demonstrate the organizational contents and disposition of military health records. The instructor will discuss and demonstrate, and the student will complete AF Form 348 (Line of Duty Determination). The instructor will discuss and demonstrate and the student will complete AF Form 255 (Report of Patients). The instructor will discuss the basic aspects of medicare. The instructor will discuss the coordination and consultation necessary with civilian physicians. The instructor will discuss AFM 35-99, Human Reliability Program.

Pharmacy and Therapeutics

Hours: 14

The instructor will discuss and identify the following: definition of controlled drugs; use of AF Form 582 (Pharmacy Stock Records); method of inventory; action, routes of administration, complications and contraindications of (1) anti-infective agents, (2) analgesics, (3) sedatives and (4) antihistamines. The student will complete programmed text on pharmacy.

Medical Laboratory

Hours: 18

The instructor will discuss and demonstrate, and the student will perform the following: use a microscope, white blood cell count; urinalysis (macroscopic and microscopic); collect bacterial specimen; gram stain.

Post Mortem Care

Hours: 1

The instructor will identify and discuss the procedures to be followed in preparing the remains of the deceased. He will also discuss the administrative procedures and the legal problems relative to the disposition of deceased personnel.

Lecture Techniques

Hours: 10

The instructor will discuss and the student will accomplish the following: prepare a lecture outline and present a "buddy-care" first aid lecture.

Measurement and Critique

Hours: 6

MANAGEMENT OF COMMON DISORDERS

Dental

Hours: 5

The instructor will utilize the first portion of the hours to discuss related dental anatomy. The instructor will discuss and identify the signs and symptoms and management of the following common dental disorders/conditions: pain, abscess, cellulitis, lacerations, broken and loose teeth, ulcerations, bleeding and dry sockets. One hour will be utilized for a student-dentist discussion.

Respiratory

Hours: 15

The instructor will utilize the first portion of the hours to discuss anatomy of the bony thorax and related anatomy and physiology of the respiratory system. The instructor will discuss and identify the signs and symptoms and management of the more common respiratory disorders/conditions to include: airway obstruction; asthma; pneumothorax; flail chest; sucking chest wound; respiratory arrest; pulmonary embolism; pneumonia. Lectures will emphasize the management rather than the cause of disorders. A film will be shown on respiratory emergencies. Two hours will be utilized for a physician-student discussion period.

Eye, Ear, Nose and Throat

Hours: 14

The instructor will utilize the first portion of the hours to discuss related anatomy and physiology of the eye and ear. The instructor will identify and discuss the management of common EENT disorders to include: laryngitis, pharyngitis, tonsillitis, rhinitis, nosebleeds, sinusitis, sty, conjunctivitis, otitis, removal of foreign body for the eye and ear, lacerations of the eye. A film will be shown

on eye injuries. Two hours will be utilized for a physician-student discussion period on EENT disorders. The instructor will discuss and demonstrate and the student will perform the manufacture and insertion of a nasal pack for nosebleed.

Genitourinary

Hours: 12

The instructor will utilize the first portion of the hours to discuss related anatomy of the reproductive and urinary systems. The instructor will identify and discuss the signs and symptoms and management of the following: cystitis; hemorrhage; renal stones; kidney infection; venereal diseases; renal insufficiency.

Integumentary

Hours: 6

The instructor will utilize the first portion of the hours to discuss the structures of the integumentary system. The instructor will discuss and identify the signs and symptoms and management of the following: cellulitis; furuncles; carbuncles; acne; impetigo; herpes simplex, scabies, fungal infection; allergic reactions.

Cardiovascular

Hours: 12

The instructor will utilize the first portion of the hours to discuss related anatomy and physiology of the cardiovascular system. The instructor will discuss and identify the signs and symptoms and management of the following: acute pulmonary edema; hypertension; thrombophlebitis; chest pain "cardiac arrest" peripheral vascular occlusion. A film will be shown on cardiac emergencies. A two hour period will be utilized for a physician-student discussion.

Abdominal and Gastrointestinal

Hours: 10

The instructor will utilize the first portion of the hours to discuss related anatomy of the gastrointestinal tract and abdominal tissues. The instructor will discuss and identify the signs and symptoms and management of the following: acute abdomen; hemorrhaging; obstruction; penetrating wound; evisceration; ingesting of toxic drugs, foods, etc.; ulcers; gastroenteritis. Two hours will be utilized for a physician-student discussion.

Neurological

Hours: 10

The instructor will discuss related anatomy and physiology of the nervous system. The instructor will discuss and identify the signs and symptoms and management of the following: coma; seizures; head injuries; spinal injuries and infection. One hour will be utilized for student-physician discussion period.

Psychiatric

Hours: 6

The instructor will discuss and identify the management of: acute anxiety; acute depression; gross stress reaction; alcoholic hallucinosis; D.T.'s; acute psychosis; character and behavior disorders.

Measurement and Critique

Hours: 9

EMERGENCY PROCEDURES AND EXAMINATIONS

Splinting

Hours: 13

The instructor will utilize the first portion of the hours to identify the anatomical structures of the upper extremities, vertebral column, skull and pelvis. The instructor will discuss and identify the signs and symptoms, complications and management of fractures of: upper extremities, lower extremities, pelvis, maxillo-facial, and vertebral column. The instructor will demonstrate and the student will apply the following splints: Thomas leg splint; basswood splints; wire ladder splint; pneumatic splint; universal splint; figure of eight bandage; velpeau bandage.

Mouth-to-Mouth Resuscitation
and External Cardiac Massage

Hours: 4

The instructor will discuss and identify the indications for "mouth-to-mouth resuscitation" and "external cardiac massage." The instructor will demonstrate and the student will perform "mouth-to-mouth resuscitation" and "external cardiac massage."

Cricothyroidotomy

Hours: 2

The instructor will discuss and identify the indications for a cricothyroidotomy. The instructor will demonstrate and the student will perform a cricothyroidotomy on a simulated patient.

Intravenous Infusion and Injections

Hours: 4

The instructor will discuss and identify the signs and symptoms and management of fluid deficiencies. The instructor will demonstrate and the student will perform an intravenous infusion.

Minor Surgical Procedures

Hours: 6

The instructor will identify and discuss the purposes, limitations and dangers of local anesthesia. The instructor will demonstrate and the student will perform the closing of a simulated wound using the

running and interrupted stitch. A film will be shown on suturing and suture material. The instructor will demonstrate and the student will perform ligation of vessels.

Temporary Dental Fillings

Hours: 1

The instructor will demonstrate and the student will perform a temporary dental filling.

Emergency Delivery

Hours: 3

The instructor will identify and discuss the management of "Emergency Deliveries." A film will be shown on "Emergency Deliveries." One hour will be utilized for a student-physician discussion.

Gastric Lavage and Gavage

Hours: 2

The instructor will discuss and identify the indications and contraindications of gastric lavage and gavage. The instructor will demonstrate and the student will perform a gastric lavage and gavage on a simulated patient.

History and Physical

Hours: 8

The instructor will discuss and demonstrate and the student will perform a history and physical to include: medical history - chief complaint, present history, past history, allergic history, review of symptoms, personal and social history; physical exam - examine all systems of the body using the following examining procedures/techniques: inspection, palpation, auscultation and percussion.

Heat and Cold Injuries

Hours: 2

The instructor will discuss the recognition and treatment of thermal injuries such as: immersion, phenomena, frostbite, heat stroke and heat exhaustion.

Measurement and Critique

Hours: 6

MILITARY PUBLIC HEALTH

Water Purification

Hours: 4

The instructor will discuss and identify the four methods of monitoring and improving water purification: collect water samples;

determine chlorine residual; perform bacteriological analysis through the use of a millipore water testing kit and chlorinate water supply.

Sewage and Waste Disposal

Hours: 4

The instructor will discuss and identify the methods of treatment and disposal of sewage and waste at small installations. Two films will be shown on sewage and waste disposal methods.

Insect and Rodent Control

Hours: 2

The instructor will discuss and identify the two methods of controlling insects and rodents: use of insecticides and pesticides, including safety concepts; correct specimen collecting procedures for mosquitos, cockroaches and rats.

Subsistence Procurement and Inspection

Hours: 5

The instructor will discuss and identify eleven factors relative to subsistence procurement, inspection and storage to include: food service sanitation, responsibilities of medical service to the food handler program, and inspection, sanitation for meat cutting facilities; types of subsistence; approved sources; inspection prior to receipt; inspection at time of receipt; inspection of canned goods, fresh fruits, vegetables, meat and meat products, canned meats, cereal products and dairy products; inspection at time of issue; inspection of stored subsistence; inspection of non-appropriated fund activities; laboratory examination of foods, laboratories to be used, and preparing and forwarding samples; cold storage items, temperature, dunnage, walls, and ceiling; dry storage items, stock rotation, dunnage, and temperature.

Rabies Control

Hours: 1

The instructor will discuss and identify the following three essential steps in the control of rabies: control of rabies suspects, immunization of animals and post exposure treatment of patients. A film will be shown on the hazards of rabies.

Medical Health Standards and
Inspection of Public Facilities

Hours: 2

The instructor will identify and discuss the health standards for barber/beauty shops, barracks, and laundries.

Poisonous Plants and Animals

Hours: 2

The instructor will discuss and identify the signs, symptoms and management of poisonous plants and animal bites to include: snake bite, spider bites and the following plants: poison oak, poison ivy, and poison sumac. Transparencies and selected 35mm slides will be utilized to identify various animals and plants.

Occupational Health Control Measures

Hours: 1

The instructor will identify and discuss the health hazards of the following: painting; degreasing and welding; noise production; chemical and solvents.

Sanitation Policies and Inspection
of Food Handling Facilities

Hours: 6

The instructor will identify and discuss the policies pertaining to sanitation and inspection of food handling facilities to include the food handler's program. The instructor will furnish inspection guides and the student will perform an inspection of a dining hall, club (NCO or Officer) and commissary to include the warehouse.

CLINICAL APPLICATION

Physician's Assistant

Hours: 39

Throughout this block of instruction, the student will utilize the knowledge and practical experience he has gained in the laboratory and classroom during the first six weeks to actually perform as a physician's assistant. As coordinated with the USAF Hospital Sheppard, Sheppard AFB, Texas, the student will perform, under the supervision of a physician, in the following sections: dispensary; emergency room; cast room; eye clinic; mental health clinic and O.B. ward. This will include identification and management of medical disorders. To assure maximum exposure to emergency and practical medical situations, the student will be required to work during other than normal duty hours.

AIR FORCE

Physician Assistant (AFSC 91730)

Length: Phase I - 41 Weeks

Source: Training Plan 3ALR91730

Objectives: Provides training to qualify selected NCOs for assignment as a Physician Assistant to perform duties in the Physician Assistant Ladder of the Airman Medical Career Field.

Orientation for the USAF Physician Assistant

Hours: 13

Description: A discussion of the physician assistant career ladder in the Air Force; duties of the AFSC; communications security; environmental safety, including hospital, clinic and laboratory safety; practices; Medical service publications; medical material; medical administration and mission of the USAF Medical Service, Measurement.

Course Material : Physician Assistant Career Ladder (1/2 hour); Communications Security (1 1/2 hours); Environmental Safety (4 hours); Medical Service Publications (1 hour); Medical Materiel (2 hours); Medical Administration (3 hours); Measurement (1 hour).

Medical Terminology

Hours: 21

Description: A discussion of medical terminology, formulating a working knowledge of medical etymology through the study of Greek and Latin word roots. Instruction will be oriented toward the terminology of various system disorders as required to develop an understanding of accurately recording historical, physical and clinical data. Emphasis is placed on the necessity of proper spelling, punctuation and legible penmanship in the maintenance of medical records and other forms and records. Measurement.

Course Material: Orientation to Medical Terminology (1 hour); Disorders of Skin and Breast (1 hour); Musculo-skeletal Disorders (1 hour); Neurological and Psychiatric Disorders (1 hour); Cardiovascular Disorders (1 hour); Disorders of Blood and Blood-Forming Organs (1 hour); Measurement (1 hour); Respiratory Disorders (1 hour); Digestive Disorders (1 hour); Urogenital Disorders (1 hour); Gynecological Disorders (1 hour); Obstetrical and Neonatal Conditions (1 hour); Endocrine and Metabolic Disorders (1 hour); Measurement (1 hour); The Sense Organ of Vision (1 hour); The Sense Organ of Hearing (1 hour); Diseases of the Body as a Whole (1 hour); Terminology of Oncology (1 hour); Anaesthesiology (1 hour); Physical Medicine and Nuclear Medicine (1 hour); Measurement (1 hour).

History, Philosophy and Ethics of Medicine

Hours: 18

Description: Provides a basic knowledge and understanding of current ethical standards and historical development of these standards into the current framework of the health team structure. Provides students with the knowledge to observe and apply these standards in various settings and relationships in which they function. Emphasis is placed on historical reviews of medical facts in the development and use of non-physician members of the medical team, including an analysis and application of medical and paramedical roles toward the fulfillment of current and future medical needs. Measurement.

Course Material: Introduction: Man and Disease (1 hour); Medicine and Public Health in Antiquity (2 hours); Medieval Medicine (1 hour); The Rise of Anatomy (The Renaissance) (1 hour); The Rise of Physiology (17th Century) (1 hour); The Modern Concept of Pathology (18th Century) (1 hour); Medicine in the 19th Century (2 hours); The Germ Theory (2 hours); Anesthesia and Antisepsis (1 hour); Medicine in the 20th Century (3 hours); Medical Ethics and the Hippocratic Oath Today (2 hours); Measurement (1 hour).

Epidemiology and Public Health

Hours: 38

Description: A study of public health delivery systems, disease control methodology and diseases of importance to community health arising from zoonotic and food sources and inadequate environmental hygiene. Field trips will be conducted to provide practical learning experiences where possible.

Course Material: History and Current Status of Public Health Efforts (2 hours); Public Health Delivery Systems - Local, State, National, International (2 hours); Disease Control Methodology (2 hours); Zoonotic Diseases and Human Health (9 hours); Measurement (2 hours); Environmental Hygiene and Epidemiology (4 hours); Food Hygiene and Food-Borne Diseases (9 hours); Epidemiology of Snake and Arachnid Bites (2 hours); Population Epidemiology and Studies in Reproductive Biology (1 hour); Venereal Disease Control (3 hours); Measurement (2 hours).

Anatomy I

Hours: 52

Description: An introduction to the types of epithelium, connective tissues, muscles, and skull, including the central nervous system, gross anatomy of the eye, ear, nose, throat and head. As applicable various teaching media such as anatomical models, slides, charts, video tapes, and films will be used. Measurement.

Course Material: Introduction (1 hour); Types of Epithelium, Connective Tissue, and Muscle (2 hours); Integument (1 hour); The Skull (2 hours); The Central Nervous System, a. The Cerebrum (8 hours); b. The Cerebellum (4 hours); Measurement (1 hour); c. The Brainstem (3 hours); The Cranial Nerves (4 hours); The Spine and Spinal Cord (4

hours); The Autonomic Nervous System (4 hours); Measurement (1 hour); The Eye (4 hours); The Ear (3 hours); The Nose, Throat, and Head (4 hours); The Neck and Thyroid (4 hours); Measurement (2 hours).

Physiology I

Hours: 39

Description: Introduction to physiology including theory of metabolic systems, cellular and neuromuscular physiology, the motor and sensory functions of the nervous system and special senses. Further instruction includes the reticular activation system, cerebral cortex and limbic system factors. These subjects are integrated with anatomy, pathology and clinical medicine in other blocks. Measurement.

Course Material: Introduction to Physiology (1 hour); Cellular Physiology (4 hours); Neuromuscular Physiology (2 hours); Blood and Immunity (5 hours); Measurement (1 hour); The Sensory Functions of the Nervous System and the Special Senses (9 hours); The Central Nervous System and its Motor Functions (4 hours); Measurement (1 hour); The Autonomic Nervous System (2 hours); The Reticular Activation System, Cerebral Cortex and Limbic System (4 hours); Metabolism and Body Temperature Regulation (4 hours); Measurement (2 hours).

Principles of Human Development

Hours: 39

Description: Introduction includes the growth and development through childhood and adolescence into adulthood, with emphasis on intrafamilial problems and their impact on subsequent functioning of the individual. Specific subjects to be presented are: Psychology of Pregnancy and Birth, The First Year of Life, Principles of Psychosexual Development, Latency (Schooling and Socialization), Preadolescence, Puberty, Adolescent Development, Young Adulthood, and the Family System. Measurement.

Course Material: Psychology of Pregnancy and Birth (2 hours); The First Year of Life (3 hours); Principles of Psychosexual Development (8 hours); Measurement (1 hour); Latency (Schooling and Socialization) (4 hours); Preadolescence (2 hours); Puberty (2 hours); Measurement (1 hour); Adolescent Development (8 hours); Young Adulthood (4 hours); The Family System (2 hours); Measurement (2 hours).

Basic Clinical Laboratory

Hours: 65

Description: This block of instruction introduces the use of laboratory equipment; obtaining and processing of various specimens; illustrates procedures for performing complete blood count, urinalysis, and gram stain; includes performance of venipuncture procedures and techniques; diagnostic tests; includes blood groups, compatibility testing and bleeding problems. It also includes bone marrow aspiration and examination. Measurement.

Course Material: Laboratory Orientation (2 hours); Venipuncture Procedures and Techniques (4 hours); Examination of Peripheral Blood - The Complete Blood Count (15 hours); Measurement (1 hour); Bleeding Problems and Diagnostic Tests (10 hours); Blood Groups and Compatibility Testing (10 hours); Measurement (1 hour); Bone Marrow Aspiration and Examination (2 hours); Routine Urinalysis (10 hours); Serology (8 hours); Measurement (2 hours).

Microbiology

Hours: 52

Description: Instruction includes an introduction to clinical applications of bacteriology and microbiology. A study is made of the common fungi, bacteria and viruses that cause disease in man. The methods and procedures employed in skin examination, fungal examination and antibiotic susceptibility tests are performed. The study is designed to give a clear concept of general colony characteristics, clinical correlation of common pathogens, viruses and rickettsia and common parasites. Measurement.

Course Material: Introduction to Bacteriology (3 hours); Development of Bacteriologic Techniques (2 hours); General Colony Characteristics (1 hour); Staining Procedures and Skin Examination (8 hours); Measurement (1 hour); Antibiotic Susceptibility Tests (1 hour); Clinical Correlation of Common Pathogens (22 hours); Measurement (1 hour); Fungal Examination Procedures (5 hours); Virus and Rickettsia (2 hours); Common Parasites (4 hours); Measurement (2 hours).

Inorganic Chemistry

Hours: 52

Description: Instruction includes fundamental concepts, measurements and problem solving; matter and its classification and periodic classification of the elements; chemical bonds; development of chemical, empirical and molecular formulas; equations and mass relationships. Further instruction, including laboratory performance, will consist of a study of gas laws; the mole and volume relationships of gases; solutions; particles; acids and bases; pH and salts; standard solution and titration and chemical equilibrium. This instructional block accomplishes a fundamental systematic study of the nature of matter and its properties, combining theoretical and applied chemistry.

Course Material: Introduction (2 hours); Structure of Matter (2 hours); The Periodic Chart (2 hours); Chemical Interaction (3 hours); The Metric System (2 hours); Radioactivity and Nuclear Chemistry (3 hours); Measurement (1 hour); Oxygen and Oxidation (4 hours); Water (2 hours); Solutions, Molar (4 hours); Solutions, Normal (4 hours); Solutions, Standard (4 hours); Measurement (1 hour); Ionization (4 hours); Acids and Bases (3 hours); Hydrolysis and pH (2 hours); Inorganic Salts (3 hours); Non-Metals and Metals (4 hours); Measurement (2 hours).

Biochemistry

Hours: 52

Description: A presentation of fundamentals, basic theories and laws of biochemistry as applied to the structure and function of living cells, tissue and organic systems of the human body. This includes lectures, demonstrations and discussions regarding the chemical and biological nature of organic agents such as hydrocarbons, alcohols, aldehydes and ketones, acids, esters, amines and amides, carbohydrates, lipids, proteins, porphyrins and bile pigments, vitamins, enzymes and hormones. The role of these substances in metabolism and, specifically, the maintenance of body fluid and electrolyte balance, constitutes the primary objectives of this block. Measurement.

Course Material: Introduction to Biochemistry (2 hours); Classification of Organic Compounds (2 hours); The Hydrocarbons (3 hours); The Alcohols (2 hours); Aldehydes and Ketones (1 hour); Organic Acids (1 hour); Esters and Ethers (1 hour); Amines and Amides (1 hour); Cyclic Organic Compounds (2 hours); Measurement (1 hour); The Carbohydrates (2 hours); Carbohydrate Metabolism (3 hours); Lipids (2 hours); Lipid Metabolism (2 hours); Proteins (2 hours); Protein Metabolism (2 hours); Measurement (1 hour); Nucleo Proteins and Nucleic Acids (2 hours); Porphyrins and Bile Pigments (2 hours); Vitamins (1 hour); Enzymes (1 hour); The Hormones (1 hour); Measurement (1 hour); Fluid and Electrolyte Balance (8 hours); Acid-Base Balance (4 hours); Measurement (2 hours).

Anatomy II

Hours: 52

Description: This phase of anatomy includes the study of the thorax, mediostimium, pleura diaphragm, lungs, heart and circulation, the abdomen, gastrointestinal tract, kidneys, adrenals, liver, spleen, pancreas, posterior abdomen and extremities. Emphasis will be placed on the major characteristics of each body system, function and relationship of each system in that region. Measurement.

Course Material: Thorax, Mediastinum, Plura and Diaphragm (2 hours); The Lungs (4 hours); The Heart and Circulation (10 hours); Measurement (1 hour); The Abdomen (3 hours); The Gastrointestinal Tract (4 hours); The Kidney and Adrenals (3 hours); The Liver, Spleen and Pancreas (4 hours); The Posterior Abdomen (3 hours); Measurement (1 hour); Sexual Organs (4 hours); The Perineum (3 hours); Extremities (8 hours); Measurement (2 hours).

Physiology II

Hours: 52

Description: A study of respiratory, cardiac, circulatory, digestive, endocrine, renal, fetal and neonatal physiology and the body fluids. These subjects are integrated with anatomy and clinical medicine in appropriate phases. Measurement.

Course Material: Respiratory Physiology (6 hours); Cardiac Physiology (6 hours); Measurement (1 hour); Circulatory Physiology (11

hours); Measurement (1 hour); Body Fluids and the Kidneys (7 hours); Physiology of the Digestive System (5 hours); Measurement (1 hour); Endocrine Physiology (6 hours); Reproduction (4 hours); Fetal and Neonatal Physiology (2 hours); Measurement (2 hours).

Clinical Medicine I

Hours: 156

Description: Introduction to Clinical Medicine, including Dermatology, Allergy, Neurology, Ophthalmology, Pulmonary Diseases, Diseases of the Ear, Nose and Throat and Cardiovascular Diseases. Covers common pathologic and psychosomatic disorders. Includes techniques for planning total patient care based on knowledge and understanding of a disease's etiology, pathology, signs and symptoms, clinical course, complications, prognosis and prophylaxis as well as the personal circumstances surrounding the patient.

Course Material: Introduction to Clinical Medicine (4 hours); Dermatology (18 hours); Measurement (2 hours); Allergy (5 hours); Neurology (19 hours); Measurement (2 hours); Ophthalmology (22 hours); Measurement (2 hours); Pulmonary Diseases (21 hours); Diseases of the Ear, Nose and Throat (16 hours); Measurement (2 hours); Cardiovascular Diseases (43 hours); Measurement (2 hours).

Introduction to Electrocardiography

Hours: 26

Description: Principles of electrocardiography and use of the necessary equipment. Develops the ability to detect and diagnose abnormalities in the readings. Specific subjects to be presented are: the EKG machines - function, hazards, precautions, the EKG Tracing, Normal EKG, Vector-cardiograms, the Mean Electrical Axis and Its Relationships, Clinical Pattern with Cardiac Disease, EKG changes due to Medication and/or Electrolyte Imbalance, Arrhythmias, Principles of Defibrillation and Cardioversion, Cardiopulmonary Resuscitation and Artificial Cardiac Pacemakers. Measurement.

Course Material: The EKG Machine - Function, Hazards and Precautions (2 hours); Introduction to the EKG Tracing - Normal EKG (2 hours); Vectorcardiograms (2 hours); The Mean Electrical Axis and Its Relationships (2 hours); Clinical Patterns with Cardiac Disease (4 hours); Measurement (1 hour); EKG Changes Due to Medications and/or Electrolyte Imbalance (2 hours); Arrhythmias (4 hours); Principles of Defibrillation and Cardioversion (2 hours); Cardiopulmonary Resuscitation (Practical Application) (2 hours); Artificial Cardiac Pacemakers (2 hours); Measurement (1 hour).

Pharmacology I

Hours: 39

Description: Fundamental concepts of Pharmacology and its relation to other sciences; develops an analytical approach to drugs, i.e., indications for actions, side effects, precautions, contraindications, usual dosage, toxic effects, and related treatment.

Stresses the need to relate each drug with the patients need.

Instructional hours will include, Principles of Pharmacology, Response of Skin and Mucous Membranes to Drugs, Histamine and Antihistamines, Response of the Central Nervous System to Drugs, Response of the Autonomic Nervous System to Drugs, Systemic Anti-infective Agents, Local Use of Drugs in the Eye, Ear, Nose and Throat, and Pharmacologic Response of the Heart and Circulation. Measurement.

Course Material: Principles of Pharmacology (3 hours); Response of Skin and Mucous Membranes to Drugs (3 hours); Histamine and Antihistamines (1 hour); Response of the Central Nervous System to Drugs (4 hours); Measurement (1 hour); Response of the Autonomic Nervous System to Drugs (6 hours); Systemic Anti-Infective Agents (6 hours); Measurement (1 hour); Local Use of Drugs in the Eye, Ear, Nose and Throat (2 hours); Pharmacologic Response of the Heart and Circulation (10 hours); Measurement (2 hours).

Patient Evaluation I

Hours: 78

Description: Provides an understanding of the historical development of a disease process through the proper methods and techniques of eliciting a patient history and accomplishing a physical examination. The relationship of patient historical and physical data is presented by repeated exposure to in-hospital patients upon whom a complete history and physical examination is accomplished with the completed work-up presented to and evaluated by the physician in charge. Instructional subjects to be presented include, The Medical History, Examination of the Skin, The Neurologic Examination, Physical Examination of the Eyes, Physical Examination of the Ears, Nose, Throat and Neck, Physical Examination of the Respiratory System, Physical Examination of the Heart and Circulatory System, Examination of the Abdomen and External Genitalia, Examination of the Musculo-Skeletal System, and Total Patient Evaluation. Measurement.

Course Material: The Medical History (12 hours); Examination of the Skin (3 hours); The Neurologic Examination (6 hours); Physical Examination of the Eyes (3 hours); Physical Examination of the Ears, Nose, Throat and Neck (3 hours); Physical Examination of the Respiratory System (6 hours); Physical Examination of the Heart and Circulatory System (6 hours); Examination of the Abdomen and External Genitalia (6 hours); Examination of the Musculo-Skeletal System (3 hours); Total Patient Evaluation (27 hours); Measurement (3 hours).

Physician Assistant in the USAF

Hours: 12

Description: An introduction to the medical and dental problems associated with flight, aeromedical evacuation, processing and disposition of patients, physical standards, medical reporting systems and assignments, and the various special medically-related programs in the USAF. Measurement.

Course Material: Medical and Dental Problems Associated with Flight (2 hours); Aeromedical Evacuation (2 hours); Processing and Disposition of Patients (2 hours); Physical Standards (2 hours); Medical Reporting Systems (1 hour); Medical Aspects of Personnel Assignments (1 hour); Special Medical Programs in USAF (1 hour); Measurement (1 hour).

Introduction to Radiology

Hours: 36

Description: Principles of modern radiology and radiographic diagnostic procedures. This study includes, preparation of the patient, interpretation of various x-rays with emphasis on the chest, radiographic limitations, special radiographic techniques and equipment and possible side effects. Measurement.

Course Material: Introduction to Radiology (2 hours); Special Diagnostic Procedures (4 hours); Special Radiographic Techniques and Equipment (2 hours); Radioactive Isotopes (1 hour); Radiation Therapy (1 hour); Interpretation of Chest X-rays (10 hours); Interpretation of Abdominal X-rays (2 hours); Interpretation of Extremity X-rays (8 hours); Interpretation of Pelvic and Spine X-rays (2 hours); Interpretation of Skull X-rays (2 hours); Measurement (2 hours).

Clinical Chemistry

Hours: 48

Description: Provides a basic knowledge of the equipment, reagents, values, and implications of various clinical tests of endocrine, hepatic, renal and gastrointestinal function as well as tests for pregnancy and rheumatoid - collagen diseases. This study provides a basis for understanding procedures employed in clinical chemistry and interpretation of results of these procedures. Measurement.

Course Material: Chemistry in Cardiology (2 hours); Thyroid and Parathyroid Function Tests (4 hours); Tests for Diabetes and Hypoglycemia (4 hours); Adrenal Function Tests (2 hours); Testing in Gastroenterology (4 hours); Measurement (2 hours); Liver Function Tests (6 hours); Renal Function Tests (8 hours); Measurement (2 hours); Pregnancy Testing (2 hours); Rheumatoid-Collagen Disease Testing (4 hours); Medical Parasitology (6 hours); Measurement (2 hours).

Pharmacology II

Hours: 36

Description: A continuation of the study in the area of Pharmacology and designed to provide specific information in the subject areas of Hormones, Response of the Gastrointestinal Tract to Drugs, Drugs Affecting Water Balance and Renal Threshold, Drug Abuse, Addiction and Poisoning, Gases and General and Local Anesthetics, Pharmacologic Response of the Reproductive System, Drugs Affecting the Blood and Blood-Forming Organs, Drugs Interactions, the Vitamins and Review of Prescription Writing. Measurement.

Course Material: Hormones (6 hours); Response of Gastrointestinal Tract to Drugs (3 hours); Drugs Affecting Water Balance and the Renal Threshold (3 hours); Measurement (1 hour); Drug Abuse, Addiction and Poisoning (5 hours); Gases and General and Local Anesthetics (3 hours); Pharmacologic Response of the Reproductive System (3 hours); Measurement (1 hour); Drugs Affecting the Blood and Blood-Forming Organs (3 hours); Drug Interactions (3 hours); The Vitamins (2 hours); Review of Prescription Writing (2 hours); Measurement (1 hour).

Clinical Psychiatry

Hours: 36

Description: This block of instruction is concerned with abnormal psychology with specific emphasis on the following subjects: Introduction to Abnormal Psychology, the Neuroses, the Psychoses, the Character and Behavior Disorders, Situational Stress Reactions, Psychosomatic Disorders, Sexual Dysfunction, Psychological Resting, Treatment of Psychiatric Illness, and the Psychiatric Social Work. Measurement.

Course Material: Introduction (1 hour); The Neuroses (2 hours); The Psychoses (4 hours); The Character and Behavior Disorders (5 hours); Measurement (1 hour); Situational Stress Reactions (1 hour); Psychosomatic Disorders (2 hours); Sexual Dysfunction (2 hours); Psychological Testing (3 hours); Measurement (1 hour); Treatment of Psychiatric Illness (7 hours); Psychiatric Social Work (5 hours); Measurement (2 hours).

Clinical Medicine II

Hours: 144

Description: Covers the subjects of Endocrinology, Gastroenterology, Nephrology, Urology, Obstetrics and Gynecology, Musculo-Skeletal Diseases, Hematology, Infectious Diseases, Nutrition, and Physical and Chemical Agents causing disease. Measurement.

Course Material: Endocrinology (25 hours); Measurement (2 hours); Gastroenterology (19 hours); Measurement (2 hours); Nephrology (16 hours); Measurement (2 hours); Urology (16 hours); Measurement (2 hours); Obstetrics and Gynecology (12 hours); Musculo-Skeletal Diseases (6 hours); Hematology (16 hours); Measurement (2 hours); Infectious Diseases (17 hours); Nutrition (3 hours); Physical and Chemical Agents Causing Disease (2 hours); Measurement (2 hours).

Surgical Principles and Procedures

Hours: 36

Description: This study consists of a two-hour discussion-demonstration period weekly for 12 weeks plus 12 hours of performance in animal surgery during a week at the Aeromedical Center, Brooks AFB, Texas. The student will learn sterile surgical technique; local and general anesthesia; pre- and post-operative patient care; and the management of wounds, hemorrhage, pain, respiratory obstruction, cardiac arrest and shock. At Brooks AFB, he will accomplish oral intubation on

a dog, assist in a tracheostomy, accomplish cut-downs and arterial catheterization and debride and closed grossly contaminated wounds. Films will be shown on sterile technique, cardiopulmonary resuscitation and shock. Measurement.

Course Material: Sterile Technique (2 hours); Local and General Anesthesia, Airways, and Respirators (4 hours); Resuscitative Measures (4 hours); Pre- and Post-Operative Care of Patients (1 hour); Measurement (1 hour); Pain in the Surgical Patient (1 hour); Drainage Equipment (2 hours); Control of Hemorrhage (1 hour); Shock (3 hours); Measurement (1 hour); Suture Use (4 hours); Debridement and Wound Drainage, Closure and Healing (4 hours); Oral Tracheostomy (4 hours); Cut-Downs and Arterial Catheterization (4 hours); Measurement (2 hours).

Patient Evaluation II

Hours: 72

Description: This block of instruction gives the student the opportunity to utilize and refine the skills in history-taking and physical examination which he learned in Patient Evaluation I. The relationship of patient historical and physical data is presented by repeated exposure to both inpatients and outpatients upon whom a complete history and physical examination is accomplished with the completed work-up presented to and evaluated by the physician in charge. The goal will be to have the student work-up at least 36 patients during the course with at least two of the total having significant problems in each of the following specialties: Dermatology, Neurology, Ophthalmology, Psychiatry, Otorhinolaryngology, Urology, Obstetrics, Gynecology, Pediatrics, Orthopedics, Surgery and Internal Medicine; Measurement.

Course Material: Total Patient Evaluation (18 hours); Neurology Clinic (4 hours); Dermatology Clinic (4 hours); Psychiatry Clinic (8 hours); Ophthalmology Clinic (4 hours); ENT Clinic (4 hours); Medicine Clinic (4 hours); Surgical Clinic (4 hours); Urology Clinic (4 hours); Obstetrics Prenatal Clinic (4 hours); Gynecology Clinic (4 hours); Pediatric Clinic (includes Well-Baby Clinic) (4 hours); Orthopedic Clinics (4 hours); Measurement (2 hours).

The Computer in Medicine

Hours: 12

Description: Introduces modern day computers and their application to the medical field. Specific subjects to be presented are: History of the Development of Computers, Essentials of Systems Analysis and Programming, Methods of Programming, Modern Computer Capabilities, Medical Application of Computers Today, Future Possibilities for Computer Use in Medicine. Measurement.

Course Material: History of the Development of Computers (1 hour); Essentials of Systems Analysis and Programming (2 hours); Methods of

Programming (2 hours); Modern Computer Capabilities (1 hour); Medical Applications of Computers Today (3 hours); Future Possibilities for Computer Use in Medicine (2 hours).

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