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A STUDY TO DETERMINE
A METHODOLOGY FOR ESTABLISHING
A CENTER OF EXCELLENCE PROGRAM
AT FITZSIMONS ARMY MEDICAL CENTER

A Graduate Management Project
Submitted to the Faculty of
Baylor University
In Partial Fulfillment of the
Requirements for the Degree
of
Master of Healthcare Administration
by Major Donald E. Henderson, MS
January 1992

ABSTRACT

The anticipated force reductions in the United States Army have resulted in an increasing awareness of cost efficient behavior in the Army Medical Department. The establishment of a center of excellence program in cardiovascular disease is one method that Fitzsimons Army Medical Center can pursue to accomplish the goal of delivering quality patient care within a resource limited environment. A center of excellence program is defined as a regional referral or consultation center that performs a specialized procedure with enough frequency to be designated as the leading expert in that particular medical specialty. The purpose of a center of excellence program is to provide an unexcelled level of quality patient care, usually at a competitive price and to arrive at a favorable outcome which reduces morbidity and mortality. This study developed a methodology for establishing a center of excellence program in cardiovascular disease. The development of specific criteria required for implementation of a cardiovascular center of excellence was accomplished with input provided by medical subject matter experts. The integration of a reliable patient referral process and aeromedical evacuation system are essential to provide the vital linkage between

the smaller military community hospitals and the more advanced diagnostic and treatment capabilities at the Army medical centers. A center of excellence program is designed to optimize the patient referral process to ensure that expert specialty care is available and accessible to the beneficiary population, as well as to ensure that minimal patient mix and volume are achieved for providers to maintain their expert status. Integration of medical education opportunities and research activities are also essential to the center of excellence concept to attract and retain high caliber medical professionals.

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A Study to Determine a Methodology for Establishing a Center
of Excellence Program at Fitzsimons Army Medical Center

I. Introduction

The distribution of available resources in the Army Medical Department (AMEDD) is being critically reviewed as part of the United States Army's attempts to reduce the size of the fighting forces. Fitzsimons Army Medical Center (FAMC) is actively involved in this endeavor with many on-going studies on how to effectively conserve scarce resources in a cost efficient manner, while maintaining a high degree of quality patient care. These studies are especially important since the demand for health care services is not anticipated to shrink proportionally with the planned force reductions, but rather the demand will steadily increase as our beneficiary population of retirees, their dependents, and survivors increases. Establishing a center of excellence (COE) program in a designated medical specialty is one possible method of accomplishing the objective of delivering quality health care within a resource limited environment.

A COE program in a particular medical specialty is recognized as being separate and distinct from other medical specialties at a medical treatment facility. The facility

that has a COE program makes a commitment to support the designated program with significant resources to include highly skilled medical and clinical support staff, state-of-the-art medical equipment, on-going clinical research activities, medical educational opportunities, and an administrative staff that effectively integrates the COE concept into the overall operation of the hospital.

Conditions Which Prompted the Study

FAMC currently does not have a designated COE program in a particular medical specialty. The only medical treatment facility in the AMEDD that currently has a recognized COE program is Walter Reed Army Medical Center (WRAMC). The COE program at WRAMC, however, focuses on academic programs as opposed to specific medical specialties. There exists no methodology in the AMEDD for establishing COE programs in specific medical specialties at either the Army medical centers or medical activities.

The FAMC Strategic Plan specifically addresses the need to investigate the development of a COE program to demonstrate FAMC's capability to provide high quality health care for the patients in our region of responsibility. In the absence of any definitive guidance from the AMEDD, the focus of this research effort is to develop a methodology

for establishing a COE program at FAMC in a specific medical specialty.

Statement of the Management Problem

The problem is that there is no methodology or implementation directive in the AMEDD for establishing a COE program in a specific medical specialty at either the Army medical centers or medical activities.

Review of the Literature

The COE concept is well documented in the research literature. A medical COE is defined by Traska (1989) as a "facility that has performed a specialized procedure with enough frequency to become expert, thereby reducing morbidity and mortality." A COE program is often recognized as being on the cutting edge and the leading expert in a particular medical specialty. Humana Incorporated defines COE's as regional referral and consultation centers that provide the highest quality of care in a given clinical specialty (Humana, 1990). Humana's COE programs are chosen due to their potential for high patient volumes and because the programs serve as an effective marketing tool for their hospitals. The Office of the Assistant Secretary of Defense for Health Affairs (OASD-HA) is currently studying the feasibility of

establishing "specialized treatment facilities" (military COE equivalent) for the purpose of consolidating low-volume, expensive, and problem-prone medical procedures to reduce overall costs (Interview, 1991). A COE is often referred to as a "national medical excellence program," "an institute of quality," and a "designated specialty center." Whatever the name, a COE program is intended to provide an unexcelled level of quality patient care, usually at a very competitive price, to ultimately arrive at a favorable outcome which reduces morbidity and mortality.

This review of the literature will focus on the criteria used for developing COE programs in the civilian medical sector and discuss how the same criteria can be applied to the military medical sector. A methodology for establishing COE programs will then be proposed based on the civilian and military criteria outlined. An examination will be made of the patient referral process that exists within the military health services system and which directs patients to designated tertiary care centers for specialized medical services. Graduate medical education (GME) and research requirements will then be examined to demonstrate how the entire system can be integrated to successfully plan for and implement a COE program at FAMC.

Civilian COE Programs

The prevalence of designating priority programs in the civilian medical sector is significant. According to a 1988 study of 663 chief executive officers (CEO), 57% of the CEO's reported that they had designated one or more medical services as priority programs at their medical treatment facilities. The consensus of the CEO's was that in a resource limited environment, the focus should be on prioritizing existing resources and concentrating on medical services which they do best. (Droste, 1989)

A study conducted jointly by the Agency for Health Care Policy and Research and the Physician Payment Review Commission discovered that many hospitals that designated priority programs experienced significant utilization growth in those specific prioritized medical specialties. Community hospitals were becoming more specialized as a way to increase patient volumes and efficiency. The current trend in the health care industry is a movement towards specialization and a more efficient distribution of services across hospitals. (Green, 1991)

Specialization in one area often results in creating a halo effect by drawing patients to other medical services because the reputation for high quality care "rubs off" into

other areas in the hospital. Focusing efforts on specific, high quality products helps to differentiate hospitals from one another. Specialization also helps to ensure that COE programs are able to achieve the patient volumes needed to maintain clinical expertise. (Green, 1991)

Statistics gathered by the Prospective Payment Assessment Commission (ProPac) show a direct relationship between volume and cost per case. ProPac data show that in 1987, hospitals that performed fewer than 50 coronary artery bypass graft procedures per year spent \$2,000 more per case than those hospitals that performed 170 or more. Large volume is critical because it usually allows the hospital's physicians to gain the experience that produces better outcomes and shorter lengths of stay. Large volume also allows hospitals to buy supplies in bulk demonstrating economies of scale and also permits hospitals to spread out their investment over more cases. (Wagner, 1990)

The availability of a large volume of patients was the deciding criterion in many of the COE programs sponsored by the Kaiser Foundation Health Plans. The issue of patient volume often determined whether a particular medical service was contracted out or remained an internal program. For example, Kaiser's northern California region initiated a COE

program in cardiovascular disease when the high number of coronary artery bypass patients in its region warranted an internal program. (Traska, 1989)

The Prudential insurance company maintains a COE program that focuses on organ transplants. Prudential policyholders who need heart, liver, or kidney transplants are directed to one of eight regional medical treatment centers depending on their location and their condition. Since 1988, Prudential has referred over 60 organ transplant and 15 kidney-stone treatment candidates to designated COE programs at a cost savings of over \$2 million resulting from a combination of discounts and reduced morbidity. (Traska, 1989)

Honeywell Incorporated began using designated COE organ transplant centers for heart, heart-lung, liver, and pancreas in 1986. The corporation receives fixed prices for each separate phase of the transplant process. Honeywell selects its participating COE organ transplant centers based on the hospital's established track record of procedures performed each year, as well as competitive prices. (Traska, 1989)

The existence of COE programs are usually limited to large, metropolitan treatment facilities or medical centers

because of the requirement to have a sufficiently large enough patient base to support the programs. To encourage the patient case mix and volume needed to maintain their expert status, COE programs often offer economic incentives in the form of discounted prices or free patient airline travel for employers to send their insured employees great distances to receive their care at a designated medical center. Because COE programs are especially adept at particular procedures, the general perception is that patients will receive better care at the designated medical center than at the local community hospital, and usually at a much lower cost. Patients that get channelled to designated treatment facilities with COE programs additionally have demonstrated more favorable patient outcomes. (Traska, 1989)

Group health insurance agencies usually offer policyholder riders which select a predesignated treatment facility for beneficiaries requiring specialized care. If the patient uses the designated treatment facility, the rider policy covers the patients' medical expenses for the specialized treatment, as well as travel, lodging, and other related expenses for the patient and usually one significant other. (Wallace, 1988)

Tenneco Incorporated contracts directly with providers nationally recognized as being on the cutting edge in their area of expertise. Tenneco's "select provider program" focuses on catastrophic and high cost care in the medical specialties of oncology, neurosurgery, cardiovascular disease, and mental health services for children and adolescents. As is the case in most COE programs, deductibles and copayments are waived for employees and dependents who use designated medical centers for catastrophic procedures. Tenneco claims savings of \$100,000 to \$125,000 a year using this program. (Traska, 1989)

According to Droste (1989), the first step in establishing a COE program is to recruit high quality physicians, preferably those who can bring a large referral base with them, and a highly competent ancillary support staff to include nurses, imaging technicians, laboratory specialists, and administrative personnel. The next step is to ensure that the available medical equipment is state-of-the-art to ensure that quality care is being delivered. The last step is to ensure that the COE program is committed to research and continuing medical education. A hospital that has a COE program must, therefore, be prepared to devote sufficient resources to the program and

be prepared to defend its claim of high quality patient care to governmental regulators, third party payers, and consumers.

The chain of hospitals managed by Humana Incorporated created COE programs in an attempt to enhance its image and increase its inpatient market share (Wallace, 1988). These regional referral centers combined three elements: a physician group with exceptional diagnostic and treatment skills, an experienced ancillary support staff, and a corporate approved plan for clinical research and medical education (Roessing and Patterson, 1990). Humana's initial goal with its COE concept was to create a number of high technology specialty nursing units and medical programs that would attract the best and most prestigious physicians to its facilities. Since its inception in 1982, Humana has opened 25 COE programs at 18 of its hospitals in various medical specialties to include cardiovascular disease, neuroscience, orthopedics, spinal injuries, burn victims, arthritis, perinatal care, obstetrics and gynecology, pulmonary disease, diabetes, urology, ophthalmology, and digestive diseases (Humana, 1990). Some of these programs were deliberately chosen because of their potential for high patient volumes as in diagnoses of diabetes, neuroscience,

and cardiovascular disease (Shahoda, 1984). The COE programs at Humana serve to ultimately strengthen physician loyalty to the hospital, increase the hospital's and physician's referral base, enhance the hospital's reputation, and attract an increasing number of private pay patients. Humana is committed to the belief that COE programs contribute significantly to increased admissions, patient days, and operating revenues (Wallace, 1988).

The criteria identified for establishing COE programs in the civilian medical sector include primarily the requirement for high patient volume in a particular medical specialty, maintaining a high quality of care with demonstrated favorable outcomes, competitive prices, clinical research and medical education opportunities, and an emphasis on marketing.

Military COE Programs

Within the AMEDD, only WRAMC has a recognized COE program. Instead of concentrating on a specific medical specialty, however, WRAMC focuses on four academic areas as their COE program. These four areas include the Institute of Clinical Sciences and Technology, Clinical Investigation, Textbook of Military Medicine, and Combat Readiness Continuing Medical Education (WRAMC, 1989). The AMEDD

currently does not have an equivalent counterpart to the clinical COE programs experienced in the civilian medical sector.

According to the Assistant Secretary of Defense for Health Affairs, Dr. Enrique Mendez, there are currently studies being conducted on establishing specialized treatment facilities (COE equivalents) in the Department of Defense (DOD). Dr. Mendez sees a continuing trend towards specialized treatment facilities due to its potential cost savings and potential for more favorable outcomes by having a staff thoroughly experienced in selected specialized procedures. A major problem identified at many military hospitals was the lack of sufficient patient mix and patient volume to support and maintain the skills of some medical specialists. The establishment of specialized treatment facilities can potentially solve this problem by recapturing patient work load, reducing costs associated with the Office of the Civilian Health and Medical Program of the Uniformed Services (OCHAMPUS), consolidating low volume, high cost procedures, increasing research and educational opportunities for the hospital staff, and continuing to provide a high level of quality medical care. (Interview, 1991)

The criteria identified by Dr. Mendez for establishing military COE programs compare favorably with the civilian medical sector. Criteria include primarily a requirement for a sufficient patient mix and volume, quality care with favorable outcomes, cost containment, and an emphasis on research and continuing medical education.

Proposed Methodology

The following methodology involves a series of steps that should be addressed when a medical treatment facility decides to establish a COE program. Criteria identified in the civilian and military medical sectors for COE programs form the basis of the rationale used in this methodology.

The first step in this methodology is to ensure that cost containment measures are demonstrated for the COE program. In the military medical sector, becoming more cost efficient and reducing OCHAMPUS costs are the two primary measures used to contain costs. The selection of a particular medical specialty for a COE program should demonstrate cost savings. The OCHAMPUS recapture efforts currently underway in the AMEDD offer the most objective demonstration of how medical care costs can effectively be contained.

The second step in this methodology is to ensure that the medical health care in the COE program is measurable to demonstrate the level of quality care provided. Outcome studies are used in the civilian medical sector to achieve this purpose. Developing specific clinical indicators in a particular medical specialty objectively demonstrates whether favorable outcomes are being achieved.

The third step is to ensure that the COE program will have a sufficiently large enough patient volume and mix for providers to maintain their expert status. A minimum number of patients should be determined based on the resources available to the medical treatment facility. Dr. Mendez mentions the need to consolidate low volume, high cost medical procedures (Interview, 1991). This intensive case management ensures that medical treatment facilities that provide this particular type of service have access to as many cases possible to maintain their professional expertise. The patient referral process and the military aeromedical evacuation system are the two primary mechanisms available for ensuring that patient volume and mix are achieved for COE programs.

The fourth step in this methodology is to ensure that medical education and research opportunities are available

in the COE program for providers to maintain their expertise and to stay abreast of the continuing changes in a particular medical specialty. In the military medical sector, the GME programs serve as the foundation for medical education, training, and research. The establishment of a COE program in a military medical treatment facility should have a corresponding GME program in that particular medical specialty to meet the medical education and research requirements.

The last step in this proposed methodology is a marketing plan to "sell" the COE program to hospital staff and potential patients. Marketing in the civilian medical sector is a vital component of their overall operation. In the military medical sector, marketing is gaining more prominence as military hospitals become more involved in managed care initiatives. Due to the limited scope of this study, marketing criteria will not be included as part of the methodology for establishing a COE program at FAMC.

Patient Referral Process

The patient referral process constitutes an important aspect of health care services. The term referral represents a "request for the services of another person, physician or otherwise, and includes a temporary or

permanent transfer or sharing of responsibility for part or all of a patient's care to another physician or health care institution" (Ludke, 1982). Consultations, which are requests for an opinion or special study from another health care provider are included under the term of referral.

Patients who require specialized treatment are usually referred by their primary physician to a local community hospital for an initial evaluation. If the local community hospital is unable to provide the necessary services, a determination is then made as to where the patient can go to receive more definitive treatment. Referrals may be made for diagnosis, confirmation of a diagnosis, treatment, or confirmation of the medical management of a patient. The decision to refer may also depend upon the diagnostic and treatment facilities available to the physician, the referring physician's scope of practice, medical legal reasons, patient requests, time constraints, and other related health care factors. (Ludke, 1982)

The process of patient referral is often applied to the regionalization concept which links the primary and secondary levels of health care to the tertiary level of specialized care. Regionalization results in an expansion

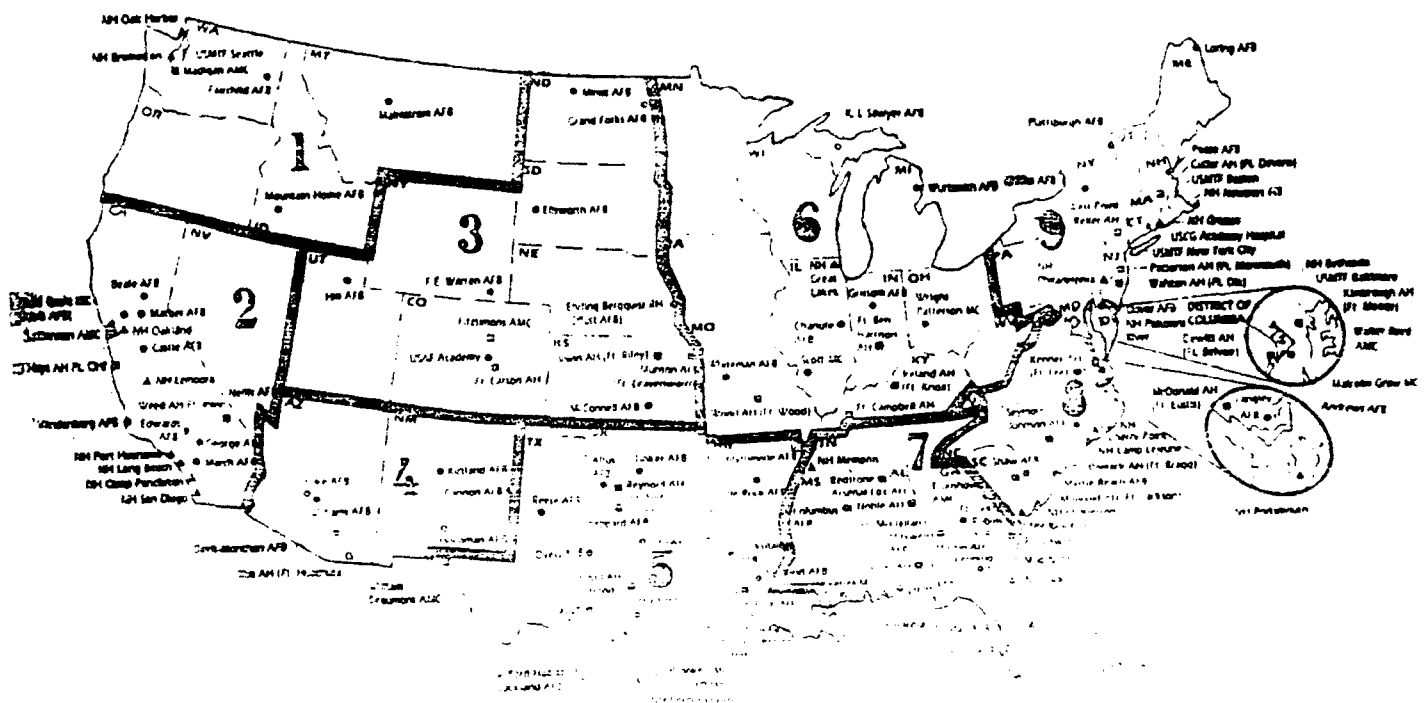
of the service area for inpatient referrals and offers a broader market for specialized services which the smaller community hospital usually cannot perform or afford. Community hospitals, therefore, have a mechanism for patient referrals to specialized care, continuity of care, and improved quality of care. (Sussman & Gonzales, 1983)

Civilian hospitals that have COE programs have demonstrated an expansion of their patient referral networks. The 25 bed freestanding burn center at Humana Hospital in Augusta, Georgia developed an expanded patient referral base through its outreach program which educated the general public about burns and burn management. The in-vitro fertilization program at Humana's Women's Center in New Orleans attracted a large number of patients to the hospital's obstetrical services, demonstrating that COE programs may be potential referral sources for associated services. (Wallace, 1988)

At the DOD level, it was neither economically nor medically feasible for each medical treatment facility to provide comprehensive health care services to the numerous, widely dispersed military communities. The Armed Forces Regional Health Care System was created and divided into

nine DOD Military Medical Regions (Figure 1) to provide a patient referral system that would assure availability and access to specialized care for all appropriate beneficiaries (DOD Directive, no date).

Figure 1. DOD Military Medical Regions



The Army supported the DOD initiative and formalized a regionalization plan within Health Services Command (HSC), which created eight Army Health Service Regions (Figure 2) centering around the existing Army medical centers at Walter Reed (Washington DC), William Beaumont (El Paso, TX),

Madigan (Tacoma, WA), Tripler (Hawaii), Dwight D. Eisenhower (Columbus, GA), Letterman (Presidio, CA), Brooke (San Antonio, TX), and Fitzsimons (Denver, CO). Specific regionalization responsibilities were outlined for the eight medical center commanders with emphasis on increased coordination and assistance between the regional medical activities (Baker, 1984).

Figure 2. Army Health Service Regions



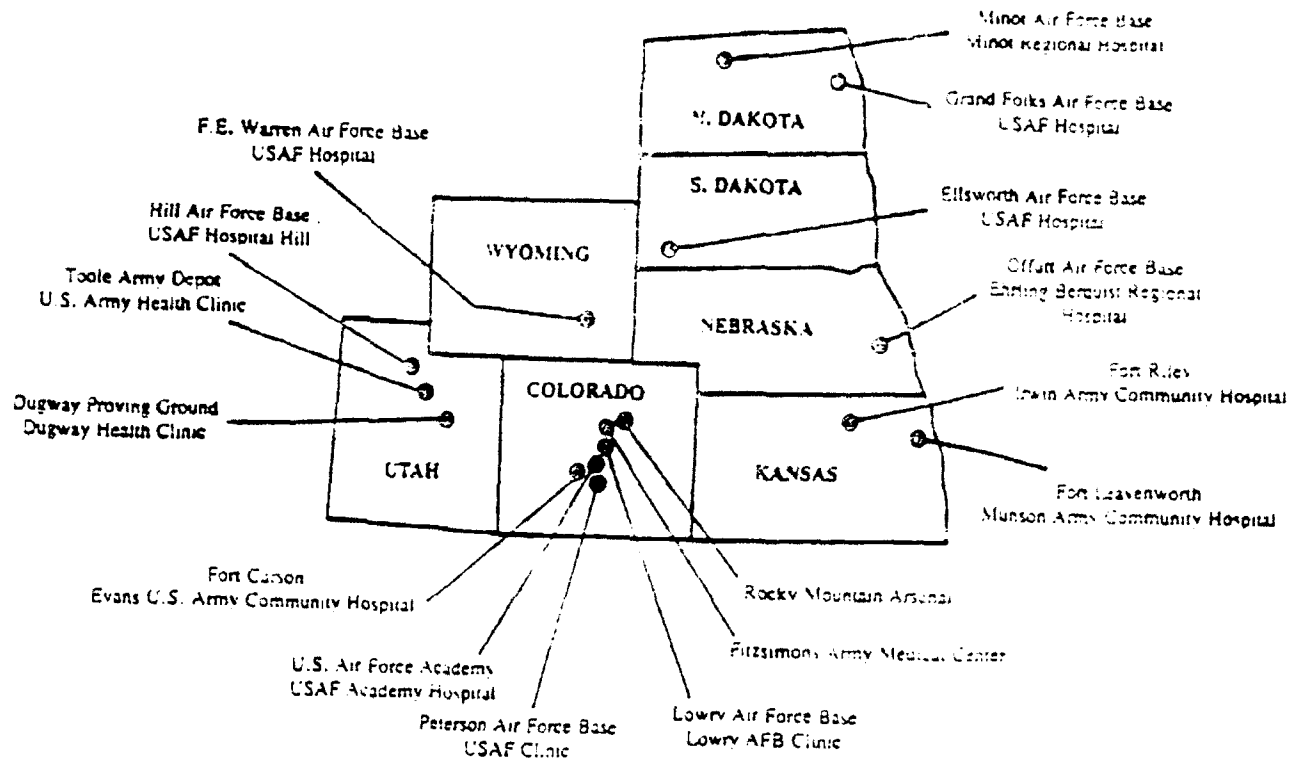
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The organizational boundaries of the nine DOD Military Medical Regions and the eight Army Health Service Regions are separate and distinct, but they do overlap in many areas. The FAMC Commander functions as the Regional Commander for the geographical area defined as DOD Military Medical Region III (Figure 3), which includes the seven states of Utah, Wyoming, Colorado, North Dakota, South Dakota, Nebraska, and Kansas. The FAMC Commander is additionally designated as the Regional Commander for the Fitzsimons Army Health Service Region (Figure 4), which includes the seven states in the DOD Military Medical Region III and eight additional states to include Oklahoma, Arkansas, Missouri, Illinois, Iowa, Minnesota, Wisconsin, and Michigan. Since the Fitzsimons Army Health Service Region includes the DOD Military Region III, all further regional issues will be referred to singularly under the Fitzsimons Army Health Service Region.

Graduate Medical Education Program

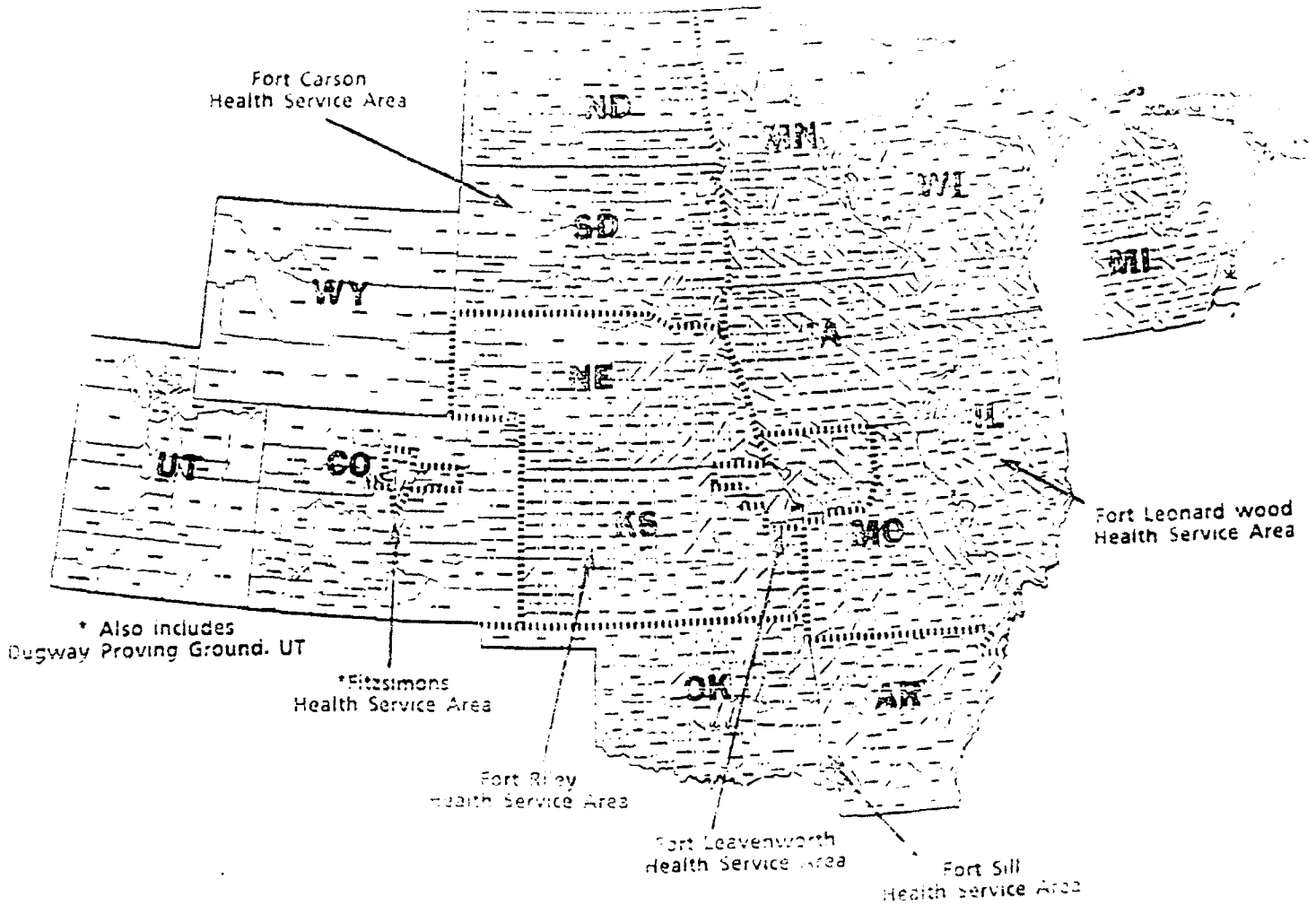
A successful COE program needs to make multiple interactive educational and research opportunities available to the hospital staff. In the area of medical education, the Army medical centers all have accredited graduate medical education (GME) programs in various medical

Figure 3. DOD Military Medical Region III



specialties. GME is the name given to structured clinically based education by which physicians obtain those additional qualifications, beyond medical school graduation, required for certification in a medical or surgical specialty. GME is organized by medical specialty. Some institutions may offer programs in many specialties, while others may sponsor only a few, consistent with their clinical resources and

Figure 4. Fitzsimons Army Health Service Region



capabilities. Each residency training program is organized and headed by a program director who has a medical staff responsible for the education, training, and supervision of the residents. Each institution is additionally responsible for providing sufficient resources and assuring supervision

for the proper conduct of its programs. GME programs must comply with specified criteria to gain official accreditation. Training programs are accredited by the Accreditation Council for Graduate Medical Education (ACGME) upon recommendation by the appropriate Residency Review Committee (RRC), or by the RRC itself if accreditation authority has been delegated by the ACGME. Accreditation of a particular residency program indicates that it is judged to be in substantial compliance with the General and Special Requirements posted in the document, Essentials of Accredited Residencies in Graduate Medical Education (Crowley & Etzel, 1990).

The role of medical research in the COE concept and in GME is essential to gain experience in research techniques and to gain ACGME accreditation. In the Army medical centers there is a designated Clinical Investigation Department that assists the medical residents with research projects by providing specialized equipment, statistical analyses, audio-visual support, and computer medical software programs. The Clinical Investigation Department additionally supports the research efforts of the medical center's staff personnel and conducts its own separate research efforts usually with the help of federal grants.

Purpose of the Study

The purpose of this study is to determine a methodology for establishing a center of excellence program at FAMC.

II. Method and Procedures

An economic analysis of the OCHAMPUS Health Care Summary report for the Fitzsimons Army Health Service Region was accomplished to select the medical specialty candidate for a COE program. The economic analysis was then presented to clinical subject matter experts to solicit their professional judgement as to the ability of FAMC to adequately support the medical specialty candidate as the focus of the COE program. A clinical analysis was conducted to determine specific criteria needed to successfully operate the COE program and to address quality of care concerns. The clinical analysis was based on focused interviews with clinical professionals and hospital site visits to civilian COE programs. The integration of a responsive aeromedical evacuation system and patient referral process was then investigated to optimize the patient mix and volume required for a COE program. The unique strengths of the military GME programs and research opportunities were then investigated to fully integrate the COE program at FAMC.

Subjects

The subjects used in this study involved the medical beneficiary population in the Fitzsimons Army Health Service Region for the period July 1989 to June 1990. The military medical treatment facilities in this region included a total of six Army hospitals and eight Air Force hospitals. They included FAMC, Evans Army Community Hospital (ACH), Munson ACH, Irwin ACH, General Leonard Wood ACH, Reynolds ACH, Air Force Academy Hospital, F.E. Warren Air Force Base (AFB) Hospital, Grand Forks AFB Hospital, Minot AFB Hospital, Ellsworth AFB Hospital, Hill AFB Hospital, Offutt AFB Hospital, and McConnell AFB Hospital. Information was provided from OCHAMPUS on the beneficiaries at these military medical treatment facilities and did not make reference to any specific individual. Ethical considerations were not addressed in this study since only summations of numerical data were used in the data collection process.

Data Collection

The data collection methodology for this study was divided into four phases: (1) an economic analysis based on data provided from OCHAMPUS for selected medical specialties, (2) a clinical analysis based on input from

professional subject matter experts for establishing COE program criteria, (3) an analysis of the patient referral process and aeromedical evacuation system, and (4) an analysis of the GME and research requirements for a particular medical specialty. The separate phases are further discussed.

Phase 1- The average government cost per admission for selected medical specialties was derived from the OCHAMPUS Health Care Summary report for the period July 1989 to June 1990 for the Fitzsimons Army Health Service Region. Each payment record received by OCHAMPUS contained a primary diagnosis code which was assigned at the time of admission by the admitting physician. The diagnosis code used by OCHAMPUS was the International Classification of Disease-9th Revision- Clinical Modification (ICD-9-CM). The ICD-9-CM provided the coding information which simplified the classification of patients according to the initial admitting medical diagnosis. The information obtained was prioritized according to average government cost for 27 different diagnostic medical specialties to include adverse reaction, allergy, cardiology/vascular disease, dermatology, endocrinology, gastroenterology, hematology, infectious disease, nephrology, neurology, nutritional, rheumatology,

pulmonary/respiratory, other (remaining internal medicine categories), dental, obstetrics, gynecology, ophthalmology, psychiatric group 1 (adult patients), psychiatric group 2 (adolescent patients and substance abusers), general surgery, special pediatrics, ear, nose, and throat (ENT), urology, neurosurgery, orthopedics, and thoracic surgery. A prioritized listing was then developed based on average government cost per admission for the top ten medical specialties.

Phase 2- Once a determination was made as to the medical specialty candidate for the COE program, a clinical analysis was conducted to establish criteria needed to successfully operate the COE program. Nine specific criteria were identified and they include staffing requirements, space requirements, key support services, capital equipment procurements, special ancillary services, accreditation requirements, emerging technology concerns, identification of the patient population to be serviced, and clinical indicators for quality improvement and outcome assessment.

Phase 3- Applicable DOD, Departments of the Army and Air Force, Health Services Command, and FAMC regulations and directives were researched to determine how the aeromedical evacuation system and the patient referral process can

effectively be integrated into the COE concept to achieve the optimum patient mix and volume.

Phase 4- The 1990-1991 Directory of Graduate Medical Education Programs document was researched to determine the general and special requirements for a specific medical specialty GME program. GME program directors at FAMC were additionally interviewed for their comments. Research issues under GME and a COE program were addressed with subject matter experts and personnel at the FAMC Clinical Investigation Department.

Validity and Reliability

Problems with validity and reliability are always inherent in the OCHAMPUS database. Approximately 10% of all claims are usually not included in the database due to the variability in the timeliness of claims processing by the civilian hospitals in the region. Problems also exist in the ICD-9-CM diagnosis coding process where a single code was used as the admitting medical diagnosis for a particular patient. A patient may have multiple illnesses at the time of admission, but only one ICD-9-CM diagnosis code was recorded as the admitting diagnosis.

III. Results

Economic Analysis

Table 1 depicts a prioritized listing of the top ten diagnostic medical specialties based on average government cost per admission for beneficiaries in the Fitzsimons Army Health Service Region for the period July 1989 to June 1990 and was extracted from the OCHAMPUS Health Care Summary Report.

Table 1. Prioritized Listing of Medical Specialties by Government Cost per Admission.

<u>MEDICAL SPECIALTY</u>	<u>NUMBER OF ADMISSIONS</u>	<u>GOVERNMENT COST (\$)</u>	<u>AVERAGE COST PER ADMISSION (\$)</u>
1. Special Pediatrics	171	3,133,874	18,327
2. Cardiovascular Disease	350	4,113,274	11,752
3. Psych Group II	790	8,610,497	10,899
4. Psych Group I	1,112	11,398,302	10,250
5. Neurology	125	1,221,321	9,770
6. Orthopedics	158	1,427,060	9,032
7. Pulmonary Disease	292	1,927,723	6,601
8. General Surgery	589	3,629,281	6,162
9. Urology	118	617,454	5,233
10. Gynecology	267	1,127,230	4,222

The medical specialty of special pediatrics was first with an average government cost per admission of \$18,327. Special pediatric patients include primarily infants and adolescents with congenital anomalies and neonatology cases. A total of 171 special pediatric patients were admitted to civilian hospitals with hospitalization costs being paid through OCHAMPUS.

The medical specialty of cardiovascular disease was second in the prioritized listing with an average government cost per admission of \$11,752. Patients included in this medical specialty involve individuals with heart failure, cardiomyopathy, angina pectoris, cardiac dysrhythmias, and those patients undergoing cardiac catheterizations.

The medical specialties of psychiatric group II and psychiatric group I were listed as three and four in the prioritized listing with an average government cost per admission of \$10,899 and \$10,250 respectively. Psychiatric group I patients include primarily adults while psychiatric group II patients include primarily adolescents and substance abusers.

The candidates for the COE program at FAMC were limited to the top four medical specialties on the prioritized listing based on optimal savings per admission and optimal total savings. The four criteria established in the methodology address specifically cost containment, quality of care, patient volumes, and GME and research requirements. A medical specialty would have to meet all four of the criteria in order to be selected as the candidate for the COE program at FAMC.

Special pediatrics is clearly the COE program candidate

if FAMC wanted to maximize total savings per admission. However, information released at the November 1991 Teaching Chiefs Conference stated that FAMC would lose their pediatric GME program effective Fiscal Year 1993 due to a downsizing of all GME programs in the AMEDD. The loss of the pediatric GME program would also affect the ability to retain physicians with pediatric subspecialty skills at FAMC. Consequently, the requirement to maintain a sufficient patient volume in special pediatrics would be in jeopardy with the closure of the pediatric GME program. Special pediatrics was eliminated as the medical specialty for the COE program at FAMC due to the inability to meet the criteria of patient volume and GME requirements.

If the goal of FAMC was to maximize total overall savings, then the logical choice would be psychiatric group I (total cost of \$11,398,302) followed by psychiatric group II (total cost of \$8,610,497) for the COE program. The same problems arise with both psychiatry groups as they did with special pediatrics with regard to patient volume and GME requirements. FAMC does not have a GME program in psychiatry and many of the psychiatric subspecialties required for referrals are not available at FAMC. Both psychiatric medical specialties were eliminated as the

medical specialty for the COE program at FAMC due to the inability to meet the criteria of patient volume and GME requirements.

The medical specialty of cardiovascular disease is the best COE program candidate for maximizing savings per admission with the elimination of special pediatrics, and clearly the choice for maximizing total savings (total cost of \$4,113,274) with the elimination of both psychiatric groups. A fully accredited GME program in cardiovascular disease does exist at FAMC and is one of the stronger programs with major affiliations with the University of Colorado Health Sciences Center. Full accreditation by the ACGME is an indication that quality of care standards are being met. Maintaining sufficient patient volume and patient mix in the cardiology services are only limited by the physical plant constraints at FAMC. Based on the criteria developed for establishing a COE program at FAMC, cardiovascular disease was selected as the optimum medical specialty candidate for a COE program.

Clinical Analysis

Appendix A outlines the specific criteria for a cardiovascular COE program. The criteria were developed in concert with FAMC staff personnel and through site visits to

civilian COE programs. In the absence of guidance from the AMEDD, these criteria were developed with the intent of identifying manpower, equipment, and program resources required to sustain a COE program. It is anticipated that the criteria stated for a particular COE program would be used at either the Office of the Surgeon General or the OASD-HA level for acceptance or denial of a hospital's application for COE program designation.

Dr. Mendez identified the recapturing of CHAMPUS work load as one of the basic tenets of a military COE program (Interview, 1991). In the case of cardiovascular disease, a total of 350 cardiovascular patients were referred to civilian hospitals through CHAMPUS for the period July 1989 to June 1990. The cardiovascular COE program at FAMC would attempt to recapture this workload. A total of 556 inpatients were seen by the FAMC cardiology service for the same period July 1989 to June 1990. The following criteria were developed assuming a cardiology service workload baseline of 906 inpatients (556 plus 350 CHAMPUS patients) and are explained in detail at Appendix A.

COE Staffing Criteria

The staffing levels for a cardiovascular COE program focused on the required strength as opposed to the

authorized strength figures as stated in the FAMC Table of Distribution and Allowances (TDA). In addition to the required strength numbers, positions were identified that were deemed essential to the proper functioning of a cardiovascular COE program. These include requirements for a health care administrator, two cardiologists, eight cardiac catheterization technicians, six cardiac specialists, two echocardiography technicians, four electrocardiogram (EKG) technicians, one clerk typist, and two medical clerks.

COE Space Criteria

The space considerations for a cardiovascular COE program include the provisions for five expansion projects: (1) construction of a second cardiac catheterization laboratory, (2) construction of an adjoining operating room for interventional procedures, (3) construction of an electrophysiology laboratory, (4) renovation of the coronary care unit to include three additional critical care beds with a four bed step-down unit, and (5) a doubling of the current size of the cardiovascular outpatient clinic.

COE Key Support Services

The key support services for a cardiovascular COE program include the requirements for a second

catheterization laboratory, an upgrade of the coronary care unit to a total of 10 beds with a step down unit, and a dedicated electrophysiology laboratory.

COE Capital Equipment

The capital equipment procurements for a cardiovascular COE program include the complete outfitting of a second cardiac catheterization laboratory, an electrophysiology laboratory, and an adjoining operating room. Specific items of equipment include one heart-lung machine, three cardiac care monitors, six Holter monitors, one computer assisted EKG, two echocardiography machines, one Holter scanner, two intra-aortic balloon pumps, one positron emission tomography scanner, and one athrectomy system.

COE Special Services

The special ancillary services for a cardiovascular COE program include the addition of an ultra fast computed tomography scan service, nuclear medicine triple head scanner, digital subtraction angiography with edge detection, and percutaneous right femoral ablation angioplasty.

COE Accreditation

Accreditation concerns for a cardiovascular COE program depend largely on the accreditation status of the hospital.

FAMC is currently accredited with the Joint Commission on Accreditation of Healthcare Organizations, the College of American Pathologists, and the ACGME (cardiology program).

COE Technology

The emerging technology criterion for a cardiovascular COE program is included primarily to ensure that medical staff are kept abreast of the current and anticipated changes in the cardiovascular disease medical specialty. The nuclear stethoscope, non-invasive vascular testing, and artificial heart transplant were identified as being on the cutting edge of current technology.

COE Patient Population

The patient population for a cardiovascular COE program was identified into five categories: (1) patients undergoing coronary artery bypass grafts, (2) patients undergoing percutaneous transluminal coronary angioplasty, (3) patients with a diagnosis of acute myocardial infarction, (4) patients with a diagnosis of congestive heart failure, and (5) patients with a diagnosis of sudden cardiac death syndrome.

COE Clinical Indicators

Clinical indicators were identified for the patient population in the cardiovascular COE program. The clinical

indicators include intrahospital mortality, clinical events for assessing percutaneous transluminal coronary angioplasty, diagnostic accuracy and resource utilization, and monitoring of patient's responses to specific therapies.

Patient Referral Process
and Aeromedical Evacuation System

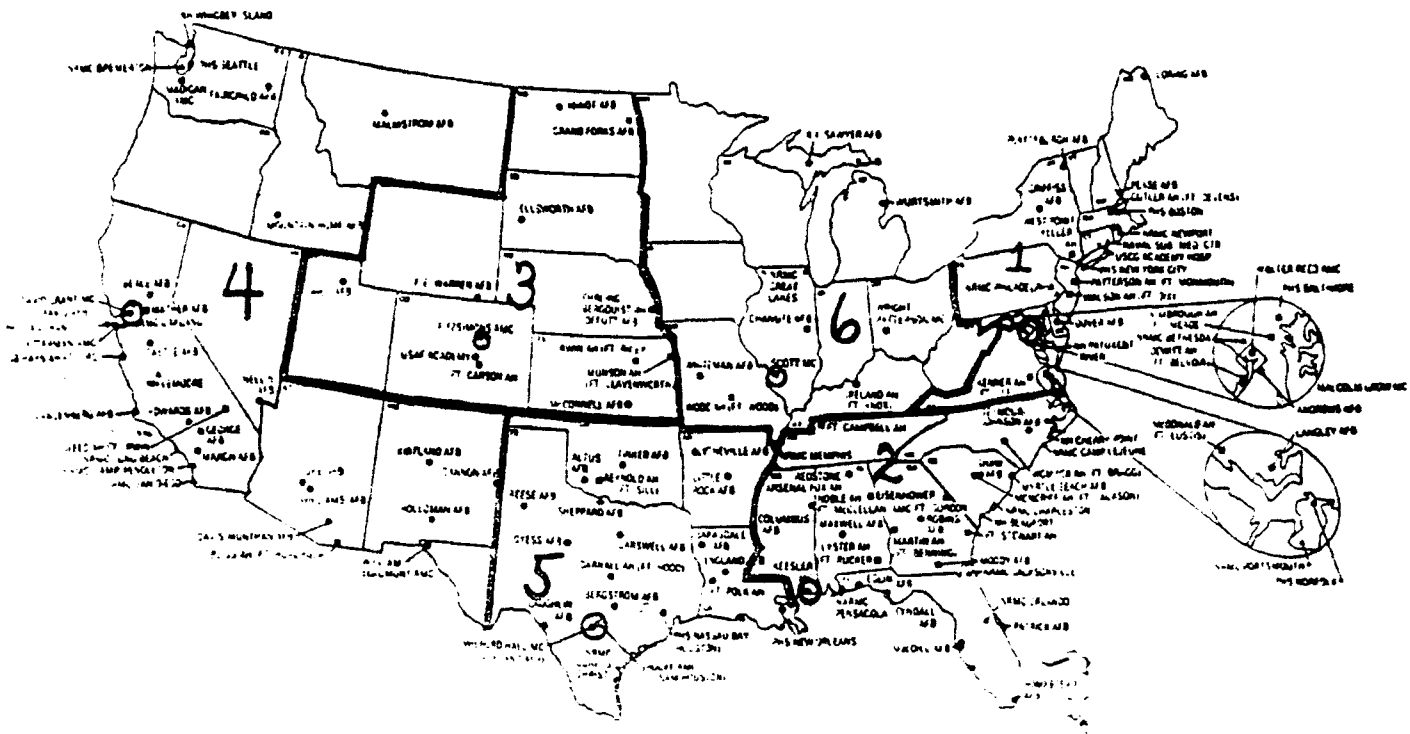
The DOD definition of aeromedical evacuation is "the movement of patients under medical supervision to and between medical treatment facilities by air transportation" (AR 40-350, 1975). Consistent with this definition, the aeromedical evacuation system provides for the control of patient movement by air transport; furnishes specialized medical attendants and equipment for in-flight patient care; provides facilities for limited medical care of patients entering, in transit, or leaving the system; and communicates with the originating and designation hospital concerning patient requirements.

The physician at the originating hospital determines whether the patient requires aeromedical evacuation for more definitive treatment. The referring physician has a strong influence on the patient referral process and serves as a gatekeeper for specialized services. An aeromedical evacuation request is generated by the referring physician

for patient evacuations out of the local medical community. Preparing a patient for aeromedical evacuation is a joint responsibility of the referring physician, nursing staff, and administrative staff. However, it is the referring physician who remains fundamentally and professionally responsible for the evacuated patient. The physician's responsibility does not end until the patient is under the care of the physician at the destination hospital. (AFP 164-4, 1986)

Figure 6 shows a map of the six United States Air Force aeromedical staging facilities (ASF) and their respective areas of responsibility. An ASF is defined as a medical facility which has aeromedical staging beds located on or in the vicinity of an enplaning or deplaning air base or air strip (AFP 164-4). The ASF's are located at strategic points for major aeromedical evacuation routes and basically form six geographical regions that are comparable to the nine DOD Military Medical Regions. The six ASF's and their detachment headquarters are located at Andrews AFB, Maryland (ASF 1), Keesler AFB, Mississippi (ASF 2), Buckley Air National Guard Base, Colorado (ASF 3), Travis AFB, California (ASF 4), Kelly AFB, Texas (ASF 5), and Scott AFB, Illinois (ASF 6).

Figure 6. Aeromedical Staging Facilities



An aeromedical evacuation mission refers to the complete routing of an aircraft from the originating hospital to the destination hospital including en route stops or legs. Daily missions are planned with consideration to patient requirements, geographical areas, availability of aircraft, maintenance, time factors, and weather (AFP 164-2, 1983). Several aeromedical evacuation missions are flown each day of the week. There is always

the possibility of flight cancellations due to weather conditions, maintenance requirements, or the need to divert the aircraft for urgent or priority patient cases.

There are five primary aeromedical evacuation routes that service FAMC and they can be found at Appendix B. The aeromedical evacuation routes include Mission 663 which transports patients from Illinois, Michigan, and Ohio to Scott AFB with a final destination at FAMC; Mission 336 which transports patients from North Dakota, South Dakota, and Utah to and from FAMC with a final destination at Scott AFB; Mission 636 which transports patients from Missouri, Kansas, and Nebraska to and from FAMC; Mission 436 which transports patients from California, Washington, Montana, Idaho, and Utah to FAMC with a final destination at Scott AFB; and Mission 634 which transports patients from Scott AFB to FAMC and continues on to Utah, Idaho, Montana, Washington, and California.

Graduate Medical Education and Research

The value of quality medical education and research endeavors in a COE program is immeasurable. Keeping abreast of all the continual changes in the field of medicine ensures that the quality of care that is provided is

top-notch. A COE program requires that a major portion of a physicians' time is spent on mentoring others, serving as consultants, and conducting research projects.

In the AMEDD, the medical education and research functions are generally grouped under the GME training programs which are conducted at the major teaching hospitals. The GME programs require that the faculty staff keep abreast of all the changes in a particular medical specialty and serve as mentors for medical residents and fellows. GME overlaps into all aspects of health care provided at a hospital because of the direct involvement of the resident and fellow in patient care activities.

There is an established RRC for each of the GME medical specialty programs for which certification is provided by a specialty board. Each RRC develops Special Requirements for training programs in its specialty. They set forth the requirements for the essential educational content, instructional activities, patient care responsibilities, supervision, and facilities that should be provided by the programs in the particular specialty. Typically, the RRC's specify the number of trainees (either maximum or minimum) permitted in each program, the length of training, the number and specialty mix of the staff faculty, the level of

research and academic endeavors expected of both faculty and residents, and the expectation that each program will possess a meaningful university affiliation. Increasingly, the RRC's are also defining a specific patient case mix and patient volume which is acceptable, the amount of space required, the level of ancillary support, and even the maximum permissible work hours for residents. The actions of the RRC's are primarily based upon information gained through written submission by program directors and evaluations made on site by assigned visitors. Evaluations made by the RRCs, under the authority of the ACGME, determines the approval and accreditation status of GME training programs. (Crowley & Etzel, 1990)

The General Requirements for GME can be found at Appendix C where it delineates training program requirements and responsibilities which are common to all RRC's, institutions, and programs regardless of medical specialty. Adequate institutional facilities and resources must be available to foster the development of physicians' teaching abilities, interpersonal relationships, medical ethics, and the importance of cost-effective medical practice.

The Special Requirements for cardiology can be found at Appendix D where it outlines specific required program experiences to include non-laboratory clinical practice, electrocardiography, chest radiography, non-invasive testing, cardiac catheterization, interventional cardiology, pacemaker use and follow-up, invasive electrophysiology, and research.

A complete description of the GME cardiology program at FAMC can be found at Appendix E. The cardiology training program is a three year fellowship with two openings every year. The purpose of the program is to provide instruction, training, and supervised experience in the diagnosis and treatment of cardiovascular diseases. The first year of training provides a thorough knowledge of the normal and pathological anatomy of the heart and vessels (including congenital malformations and aberrant vessels), normal and pathological physiology of the heart, peripheral circulation and knowledge of the pathological changes associated with the common as well as the unusual diseases of the heart and blood vessels.

Experiences with evaluations of various special techniques used in the diagnosis of cardiovascular diseases are also provided in the GME cardiology program. This

includes electrocardiography, vectorcardiography, roentgenography, right and left heart catheterization, cineangiography, dye dilution studies, isotope studies, angiography, aortography, and venography.

According to Crowley and Etzel (1990), an active research component must be included within each accredited subspecialty program. FAMC faculty members are expected to participate actively in basic, clinical, or health services research. The training program at FAMC ensures that a meaningful supervised research experience is achieved for each resident, while maintaining the essential clinical experience. The Clinical Investigation Department at FAMC assists residents and medical staff personnel in the conduct of clinical trials, research methodology, and interpretation of data. Active involvement of the FAMC medical staff in advising and supervising medical residents in the conduct of research is also required.

IV. Discussion

The medical specialty of cardiovascular disease was selected as the candidate for a COE program at FAMC. The medical specialties of special pediatrics and psychiatry were eliminated because they failed to meet the criteria of GME medical education and research, as well as ensuring a

sufficient patient volume and mix.

Cardiovascular disease met all of the criteria mentioned in the methodology for establishing COE programs at FAMC. It is the optimum choice for maximizing savings per admission with an average cost of \$11,752, and for maximizing overall total CHAMPUS savings with a total government cost of \$4,113,274 for the period July 1989 to June 1990.

The OCHAMPUS Health Care Summary report listed the total CHAMPUS inpatient admissions nationwide for cardiovascular disease for Fiscal Year 1989 as 21,010. This was broken down into 12,186 admissions for beneficiaries that resided inside a defined catchment area (usually zip code zones or 40 mile radius of the nearest military medical treatment facility) and 8,824 admissions for beneficiaries that resided outside a defined catchment area. Using the Fitzsimons Army Health Service Region average government cost per admission of \$11,752, a total of \$246,909,520 ($\$11,752 \times 21,010$) CHAMPUS dollars could potentially be recaptured if all beneficiaries seeking cardiovascular treatment were brought back into the military health services system. A total of \$143,209,872 ($\$11,752 \times 12,186$) CHAMPUS dollars could immediately be saved if beneficiaries

residing inside defined catchment areas could be directed to seek their cardiovascular treatment at military medical treatment facilities with designated COE programs in cardiovascular disease. This action, however, would require new legislative authority and some type of control mechanism possibly through issuance of regional nonavailability statements (NAS) for cardiovascular disease.

The selection of cardiovascular disease as a COE program in the civilian medical sector is well supported in the literature. Seven of the 25 Humana COE programs are in cardiovascular disease (Humana, 1990). A recent report from the Health Care Financing Administration stated that in 1989 the most common reason for hospitalization among Medicare beneficiaries was heart failure and shock, which accounted for a total of 550,000 admissions nationwide. The second most common reason for hospitalization in 1989 was angina pectoris, which accounted for 360,000 Medicare inpatient admissions (Unger, 1991). The prevalence of patients with cardiovascular disease is a trend that will continue to increase with the anticipated aging of America.

A report by Medtronic Incorporated studied hospitals that were involved with restructuring their cardiovascular services into heart institutes, cardiac specialty centers,

or cardiac COE programs. The report found that hospitals that restructured their cardiac services performed more angioplasties, more open-heart procedures, and had more cardiac catheterization laboratories than hospitals that did not plan to restructure. The most frequent reasons that hospitals chose to restructure were to retain or increase market share, to improve physician relations, to improve the quality of service, to fund new capital or technology, to facilitate research, and to improve the management of cardiovascular services. (Koska, 1991)

A COE program must have an effective patient referral process to obtain the necessary patient mix and volume needed to maintain an expert status. The patient referral process in the AMEDD relies heavily on the physician's involvement to refer patients to the appropriate treatment facility for specialized care. In the past, FAMC physicians would frequently visit the military community hospitals in our region to provide consultation services and to assist in clinic operations. This served the purpose of educating the military community hospital physicians on what FAMC had to offer and establishing a referral network. Unfortunately, travel funds for this purpose have been severely curtailed over the past few years with FAMC experiencing a

corresponding decrease in the number of total patient referrals.

Once a patient is referred for specialized care, then the problem of how to transport the patient to the medical treatment facility with a designated COE program must be addressed. In the civilian medical sector, incentives exist for the patient to utilize the services offered at designated hospitals with COE programs. These may include free or discounted transportation fares and lodging expenses for the patient and one significant other. In the military, free transportation is provided for the patient through our aeromedical evacuation system. In most cases, family members may accompany the patient depending on available space in the aircraft. Disadvantages to our aeromedical evacuation system include circuitous routes and possible lengthy stays at the destination hospital due to the established flight routes for the aeromedical evacuation missions. With very few exceptions, the length of stay and discharge date for aeromedical evacuation patients is dictated by the schedule for returning flights. This is a major constraint of the aeromedical evacuation system.

The importance of medical education and research in a COE program cannot be overemphasized. In order to remain

on the cutting edge of medicine, medical professionals must keep up with the continual changes in their particular medical specialty. This also includes being an active participant in some of those changes by conducting research activities. The major military teaching hospitals are fortunate that they have active GME training programs that serve this purpose of medical education and research. The resources required to support a teaching hospital are immense and quickly eliminates the smaller community hospitals from participating in the full spectrum of educational and research pursuits. The military GME programs have always been one of the primary recruiting and retention mechanisms for military physicians. The supporting research and academic endeavors associated with GME has created the perception of an enhanced quality of care in military medicine. However, problems do exist with the military GME training programs. In the Final Report of the Department of Defense Graduate Medical Education Advisory Committee (1987), a recommendation was made that the DOD should merge its GME programs to strengthen those programs in locations where resources were lacking. Many GME programs were on the verge of losing their accreditation with the ACGME due to inadequate faculty staffing and

insufficient numbers of patients in the appropriate case mix or volume. The merging of GME programs could improve the overall strength of the programs in such areas as total number of teaching staff, critical mass, and case load mix. In a corresponding report submitted by the Society of Medical Consultants to the Armed Forces, Military Graduate Medical Education Under Stress (1987), a major finding was of all RRC deficiencies in military GME programs, the lack of a viable research effort was second only to deficiencies found in institutional support. Recommendations from the report stated that in order to provide a meaningful research experience for medical residents, faculty staff members must be required to devote more time and effort in a teaching and mentoring role for residents doing research.

A major stumbling block in developing a COE program is overcoming the organization's resistance to change. Moving from an environment of safety and security to one of unknown dimensions is always potentially unsettling. Overcoming resistance to change involves basic modifications to behavior which can be implemented through education and training. The role of management in this change process will be to create a new corporate culture that is non-threatening and mutually beneficial.

There is a cost involved in developing a COE program. It requires substantial funding, additional personnel and equipment resources, and extensive time and effort from the existing hospital staff for planning and implementing the COE program. A strong compatible team of both clinical and administrative personnel is needed to make the COE concept work. It is a dynamic process that requires continual monitoring and developmental efforts to make it a success.

Once a COE program is established, it must prove its exclusiveness by requiring more definitive and supportive care for its targeted patient population. It must provide comprehensive services along a defined continuum of care. A COE program is a long term commitment of resources. The issue of commitment can be summed up nicely with a quotation from Robert Carlson who says that "... the most important question to ask is whether administration can make a commitment to the center of excellence. Commitment can't be half way either in enthusiasm or in budget, or the time and money will likely be for nought" (Carlson, 1991).

V. Conclusions and Recommendations

The FAMC Strategic Plan mentions the need to establish a COE program as a way to demonstrate the medical center's capability to provide specialized care for patients in our

region. The establishment of a cardiovascular disease COE program at FAMC could potentially result in cost savings of over 4 million CHAMPUS dollars for the beneficiaries in the Fitzsimons Army Health Service Region. This can only happen though if major changes are made to the way we currently do business. More control is needed over the decisions as to where patients can go for their specialty care treatment. The issue of "choice" for CHAMPUS eligible beneficiaries needs to be curtailed to some degree to ensure that all military health service system options are exercised first. Legislative attempts are currently on-going with the recent increases in CHAMPUS co-payments and deductibles to make the civilian health care option less appealing and in some cases cost-prohibitive. Managed health care initiatives in the military have to be coordinated with the tertiary medical centers to ensure that patients requiring specialized care are referred to the appropriate COE program. This requires a closer working relationship between the physicians at the tertiary medical centers and the military community hospitals to expand the current patient referral network. This can be accomplished by reinstating consultation and assistance visits to the military community hospitals. An effective marketing campaign is also needed to obtain the

support from the referring physicians, as well as educating the targeted patient beneficiary population about the COE concept. As a last resort, regional NAS's could be issued for certain high cost medical procedures to ensure that patients are referred to designated COE programs for their specialty care treatment.

The aeromedical evacuation system must be modified to make it more responsive to the the needs of the patient and the hospitals. When the length of stays and discharge dates are predicated on intermittent flight schedules, then there is something seriously wrong with the system. Alternatives do exist to include the possibility of converting C-141 Starlifter aircraft to aeromedical evacuation missions. A cost benefit analysis could also be conducted to investigate the leasing of civilian aircraft for transporting patients to selected COE programs. Greater coordination and more cooperation is needed between the United States Air Force and the AMEDD to develop a more responsive aeromedical evacuation system.

Medical education and research in a COE program are largely fulfilled in the military medical setting with the existence of the GME training programs. The establishment of COE programs in the military is one way of ensuring that

patient mix and volumes are maintained for GME accreditation purposes. The anticipated force reductions in the military will possibly terminate some of the existing GME training programs. The effects of these reductions can be lessened if the GME programs are consolidated DOD-wide. The GME programs have historically been and will continue to be the primary motivator for recruiting and retaining military physicians on active duty.

There is no question that in order for COE programs to succeed, there must be commitment from the top levels of management. Resources have to be committed to ensure success. The decision to designate a medical treatment facility as a COE program in a particular medical specialty should be made at the Office of the Surgeon General or OASD-HA level. The criteria developed in this study for a cardiovascular disease COE program should be used as the basis for developing criteria in other medical specialties.

What has been proposed in this study is a methodology for establishing a COE program in cardiovascular disease at FAMC. Commitment at all levels in the AMEDD is essential for success. The consolidation of existing resources, to include the GME training programs, is a natural complement

to the COE concept where unnecessary duplication of services is avoided. The COE concept has been proven to be beneficial in the civilian medical sector. The COE concept is readily applicable to the military medical setting with the purpose of ultimately delivering better care to our patients.

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Appendix A. Cardiovascular Center of Excellence Criteria

1. Staffing

LIST YOUR CURRENT AND PROJECTED STAFFING LEVELS FOR THE CENTER OF EXCELLENCE PROGRAM.

<u>Description</u>	<u>MOS</u>	<u>Required Strength</u>	<u>Additional Positions</u>
CARDIOLOGY SERVICE			
Chief, Cardiology	60H	1	0
Cardiologist	60H	3	0
Cardiologist Fellow	60H	4	0
Health Care Administrator	67A	0	1
Cardiac NCO	91N	1	0
Secretary	GS5	1	0
Medical Clerk	GS4	1	0
Clerk Typist	GS4	1	0
CARDIAC CATHETERIZATION LAB			
Cardiologist	60H	1	2
Cardiac NCO	91N	1	0
Cardiac Cath Tech	91N	3	3
Cardiac Specialist	91N	1	2
Cardiac Cath Tech	CS8	1	2
Clerk Typist	GS4	1	1
EKG SECTION			
Chief, EKG Section	60H	1	0
Cardiac NCO	91N	1	0
Cardiac SGT	91N	1	0
Cardiac Cath Tech	91N	2	3
Cardiac Specialist	91N	4	4
Echocardio Tech	GS7	1	2
EKG Tech	GS6	4	4
Medical Clerk	GS4	2	2

2. Space

LIST ALL RENNOVATION OR EXPANSION PROJECTS FOR ANY ADDITIONAL SPACE REQUIRED FOR THE CENTER OF EXCELLENCE PROGRAM.

-Project 1: Construction of a second cardiac catheterization laboratory.

-Project 2: Rennovation of the coronary care unit with an additional three critical care beds to include a four bed step down unit.

-Project 3: Construction of an adjoining operating room to a cardiac catheterization laboratory for interventional procedures.

-Project 4: Construction of an electrophysiology laboratory.

-Project 5: Double the size of the existing outpatient clinic.

3. KEY SUPPORT SERVICES

LIST ALL KEY DIAGNOSTIC AND THERAPEUTIC SUPPORT SERVICES FOR THE CENTER OF EXCELLENCE PROGRAM.

<u>Description</u>	<u>Currently Available</u>	
	<u>YES</u>	<u>NO</u>
Cardiovascular Units	X	
* Catheterization laboratory	X	
** Coronary Care Unit	X	
*** Electrophysiology/pacemaker implantation laboratory	X	
Postoperative Recovery Room	X	
* Need second catheterization laboratory.		
** Need upgrade to total of 10 CCU beds with step down unit.		
*** Need dedicated electrophysiology laboratory.		

4. Capital Equipment

LIST YOUR CURRENT AND PROJECTED CAPITAL EQUIPMENT REQUIREMENTS FOR THE CENTER OF EXCELLENCE PROGRAM.

<u>Description</u>	<u>Current Strength</u>	<u>Additional Items</u>
Heart lung machine (Cardiopulmonary support)	0	1
Cardiac care monitors	7	3
Cath lab equipment	1	1 (2nd cath lab)
Holter monitor	10	6
Echocardiography	1	2
Computer assisted EKG	1	1
Electrophysiology lab	0	1
Intra-aortic balloon pumps	1	2
PET scanner	0	1
Athrectomy system	0	1
Holter scanner	1	1

5. Special Services

LIST ALL REQUIRED SPECIAL ANCILLARY SERVICES FOR THE CENTER OF EXCELLENCE PROGRAM.

<u>Description</u>	<u>Currently Available</u>	
	<u>YES</u>	<u>NO</u>
Echocardiography	X	
M-mode	X	
2-Dimensional	X	
Doppler	X	
Color flow	X	
Cardiac Cath	X	
Ultra fast CT Scan		X
MRI	X	
Digital Subtraction Angiography with edge detection		X
Nuclear Medicine Triple head scanner		X
Treadmill Stress Tests	X	
Holter Monitor	X	
Cardiac Rehab	X	
Percutaneous Coronary	X	
Percutaneous Right Femoral Ablation Angioplasty		X
Arrhythmia Service	X	
Electrocardiology	X	
Electrophysiological Mapping	X	
Cardiovascular Risk Assessment	X	
Cardiovascular Diagnostic Service	X	
Chest Pain Service	X	
EKG Service Network	X	
Open Heart Surgery	X	

6. Accreditation

LIST YOUR ACCREDITATION STATUS WITH ALL APPLICABLE ACCREDITING AGENCIES AND DATE OF ACCREDITATION.

<u>Accrediting Agency</u>	<u>Status</u>	<u>Date</u>
Joint Commission on Accreditation of Healthcare Organizations (JCAHO)	Full	August 1988
College of American Pathologists (CAP) Accreditation Council for Graduate	Full	April 1991
Medical Education (ACGME)- cardiology	Full	April 1990

7. Emerging Technology

LIST THE LATEST TECHNOLOGICAL BREAKTHROUGHS IN THE CENTER OF EXCELLENCE PROGRAM THAT ARE ANTICIPATED FOR YOUR FACILITY.

Description

Nuclear Stethoscope
Non-invasive Vascular Testing
Artificial Heart Transplant (Endovascular echocardiological angiography)

8. Patient Population

DESCRIBE THE PATIENT POPULATION FOR THE CENTER OF EXCELLENCE PROGRAM.

- Coronary artery bypass grafts (CABG): Patients undergoing CABG excluding those with other cardiac or peripheral vascular surgical procedures performed at the time of the CABG (ie. valve replacement).
- Percutaneous transluminal coronary angioplasty (PTCA): Patients for whom a PTCA procedure is initiated, regardless of whether or not a lesion is crossed or dilated.
- Acute myocardial infarction (MI): Patients with a principal diagnosis of acute MI either upon hospital discharge, emergency department transfer to another acute care facility, or death in the emergency department, and patients who are admitted for an acute MI or to rule out an acute MI.
- Congestive heart failure (CHF): Patients with a primary discharge diagnosis of CHF with or without specific etiologies.
- Sudden cardiac death syndrome: Patients who are admitted after being resuscitated. These include patients who have had a previous cardiac arrest, either total or fibrillation.

9. Clinical Indicators

LIST THE CENTER OF EXCELLENCE PROGRAM CLINICAL INDICATORS FOR QUALITY IMPROVEMENT AND OUTCOME ASSESSMENT.

Indicator Focus: Intrahospital mortality as a means of assessing multiple aspects of CABG care.

-Indicator (Numerator): Intrahospital mortality of patients undergoing isolated CABG procedures, subcategorized by initial and subsequent CABG procedures, emergent or nonemergent clinical status, and postoperative day and intrahospital location of death.

Indicator Focus: Specific clinical events as a means of assessing multiple aspects of PTCA care.

-Indicator (Numerator): Patients undergoing non-emergent PTCA with subsequent occurrence of either an acute MI or CABG procedure within the same hospitalization.

Indicator Focus: Diagnostic accuracy and resource utilization.

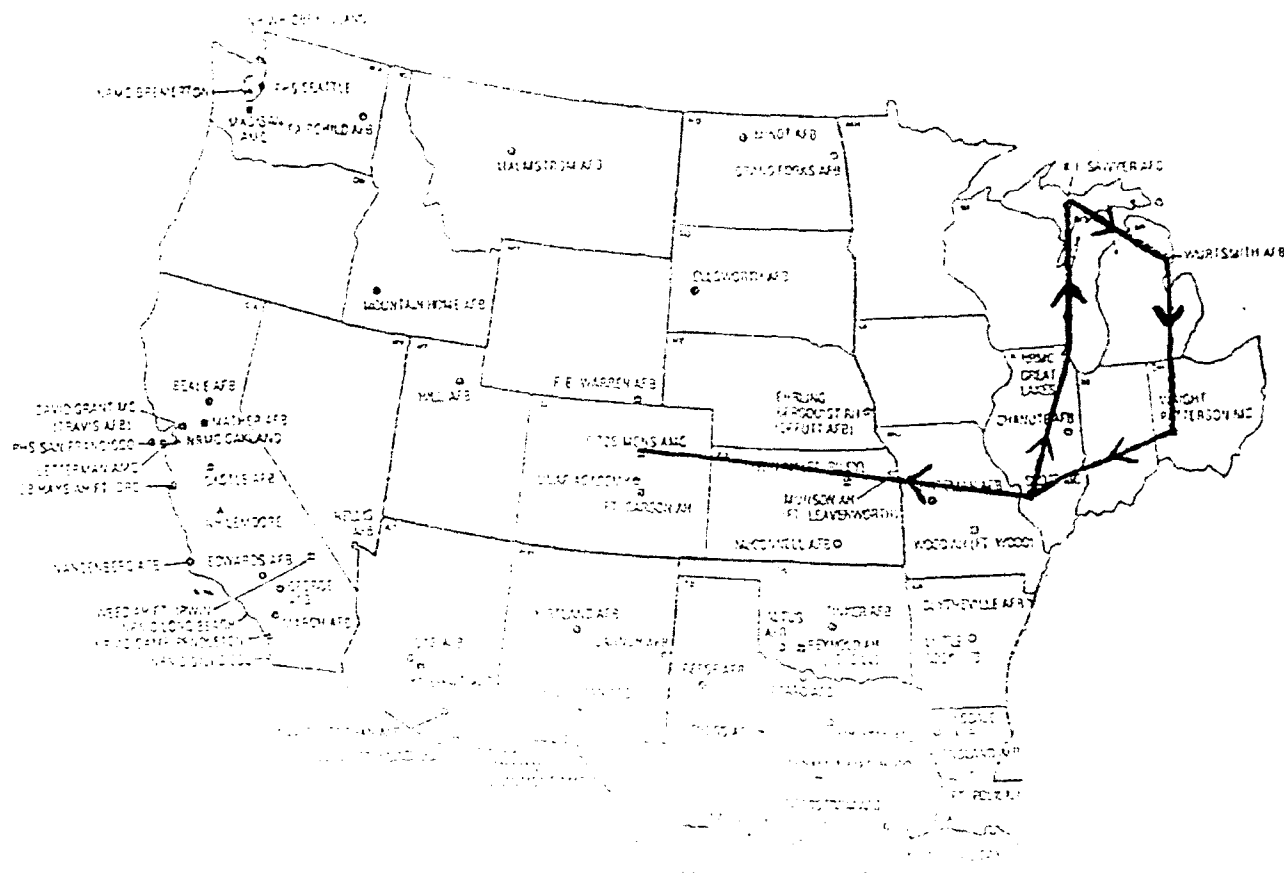
-Indicator (Numerator): Patients admitted for acute MI, to rule out acute MI, or for unstable angina who have a discharge diagnosis of acute MI subcategorized by admission to an intensive care unit, a monitored bed, or an unmonitored bed.

Indicator Focus: Monitoring patient's response to therapy.

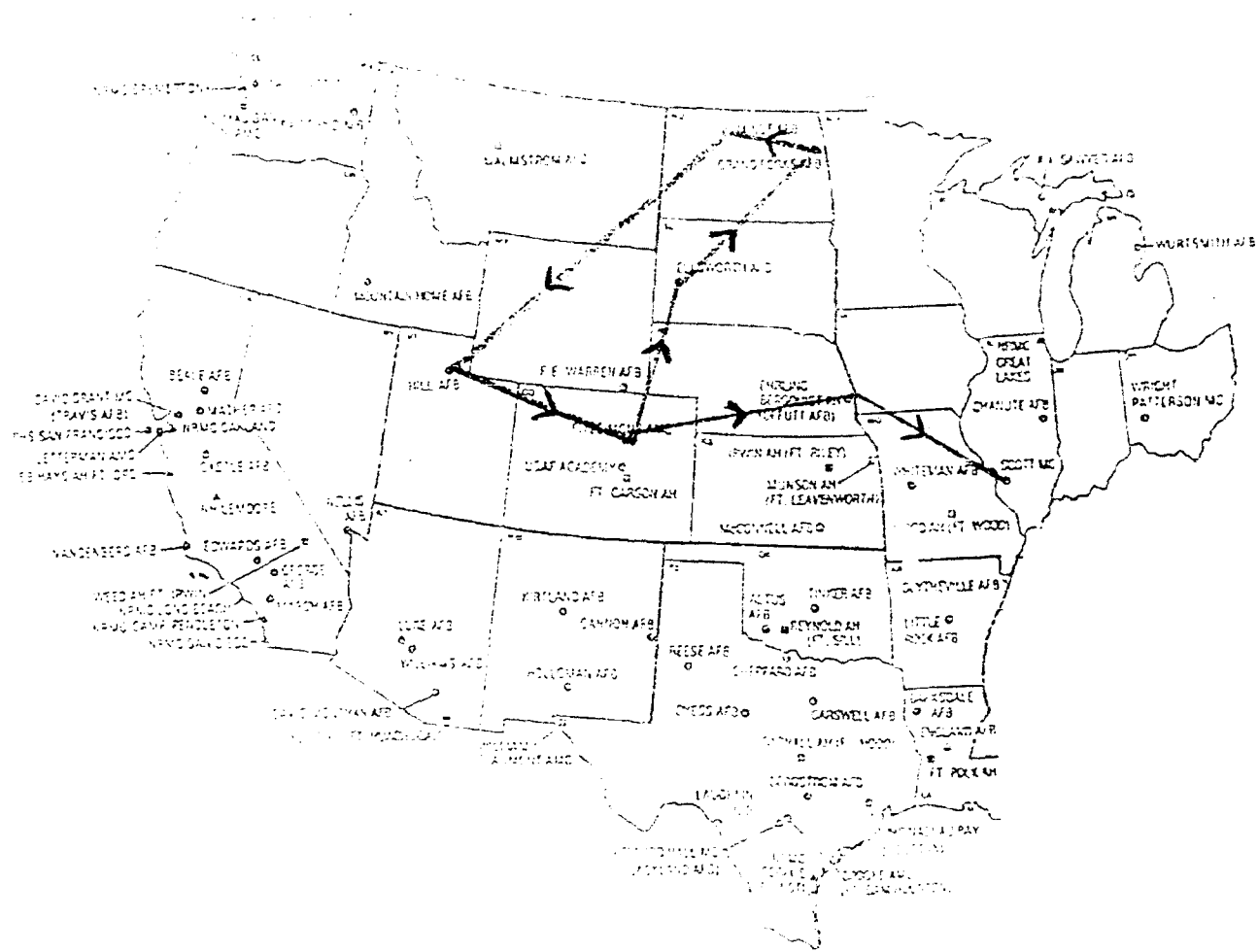
-Indicator (Numerator): Patients with a principal discharge diagnosis of CHF and with at least two determinations of patient weight and serum sodium, potassium, blood urea nitrogen, and creatinine levels.

Appendix B. Aeromedical Evacuation Routes that Service FAMC.

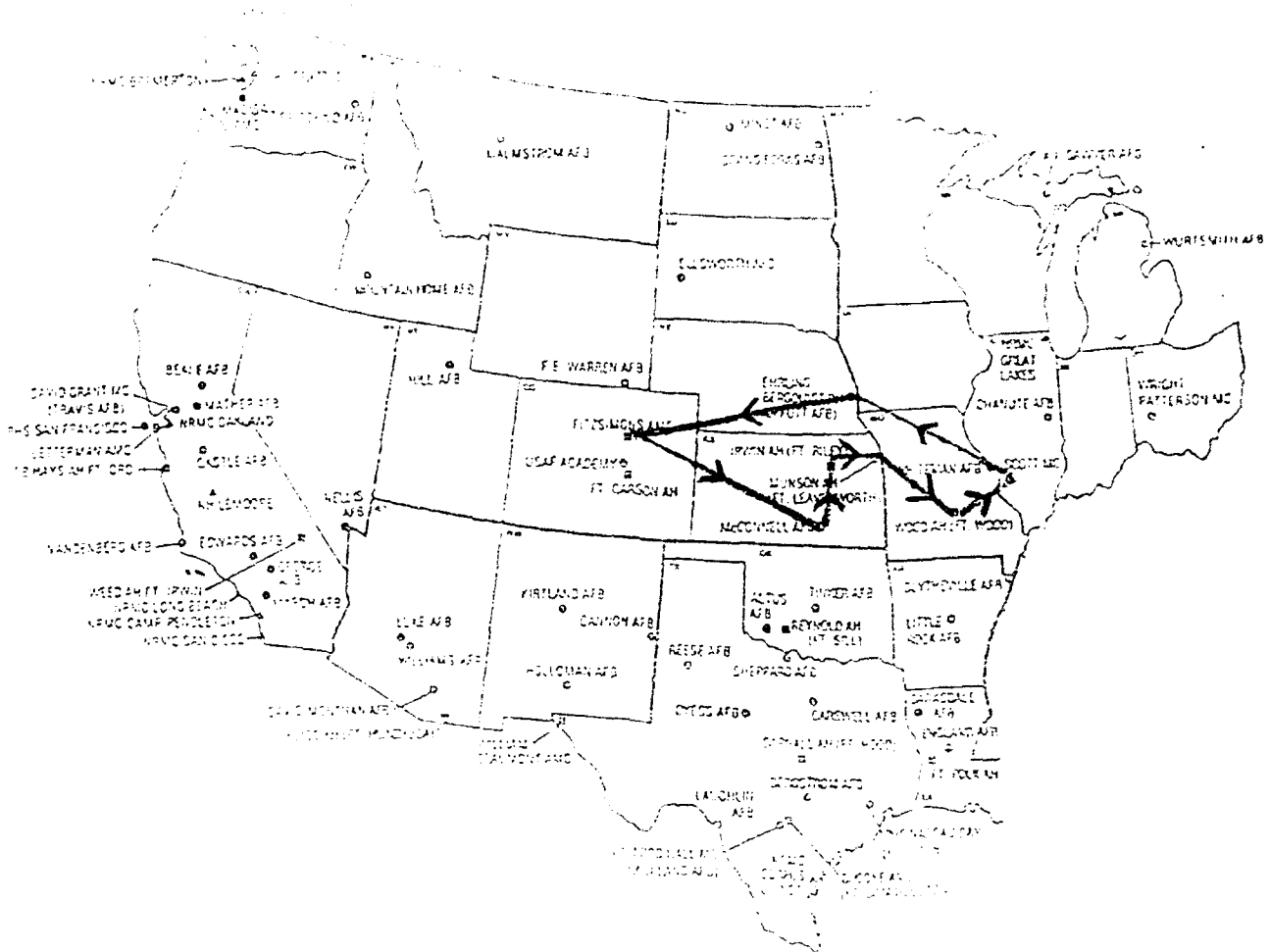
1. Aeromedical Evacuation Route Mission 663.



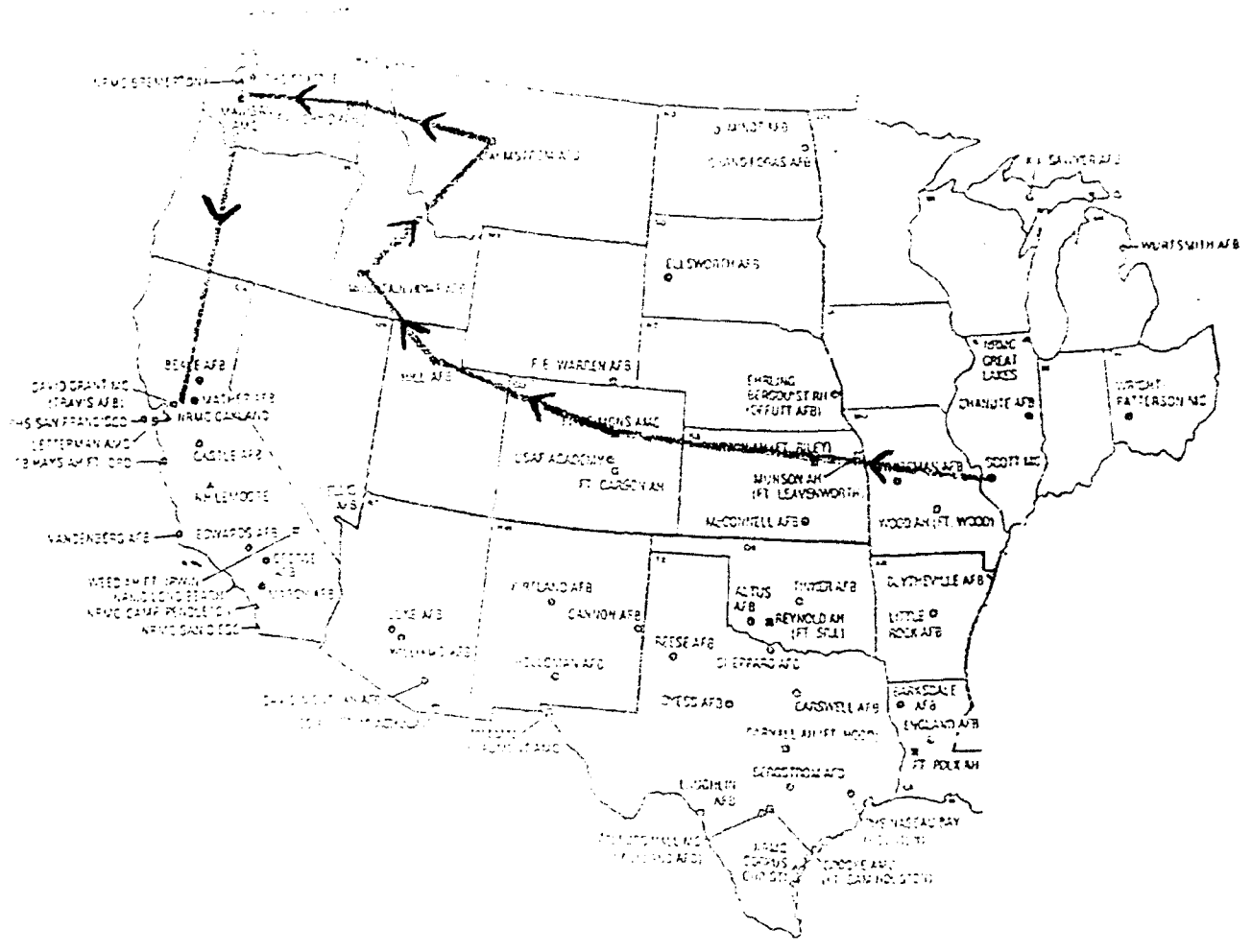
2. Aeronautical Evacuation Route Mission 336.



1. Aeromedical Evacuation Route Mission



3. Aeromedical Evacuation Route Mission 634.



Appendix C. General Requirements for Graduate Medical Education Programs.

Part I. General Requirements

Programs in graduate medical education are sponsored by institutions engaged in providing medical care and health services. The principal institutions for graduate medical education are hospitals. In order to provide the complete education and training experience established by the Special Requirements of a specialty, programs may involve more than one institution and various types of settings, which can include settings for ambulatory care, medical schools and various health agencies. Whatever the institutional form, providing education, training and health services of the highest quality must be a major mission. Graduate medical education requires that residents be directly involved in providing patient care under supervision in an institution that accepts responsibility for the quality of its educational programs. The educational mission must not be compromised by an excessive reliance on residents to fulfill institutional service obligations. Excellence in patient care must not be compromised or jeopardized by needs and prerogatives of educational programs or of research. The need for an institutional commitment to education is expressed in this policy statement which was promulgated by the Coordinating Council on Medical Education and approved by its sponsoring organizations in 1974:

Institutions, organizations and agencies offering programs in graduate medical education must assume responsibility for the educational validity of all such programs. This responsibility includes assuring an administrative system which provides for management of resources dedicated to education and providing for involvement of teaching staff in selection of candidates, program planning, program review and evaluation of participation.

While educational programs in several fields of medicine properly differ from one another, as they do from one institution to another, institutions and their teaching staffs must ensure that all programs offered are consistent with their goals and meet the standards set forth by them and by voluntary accrediting agencies.

The governing boards, the administration, and the teaching staff must recognize that engagement with graduate medical education creates obligations beyond the provision of safe and timely medical care. Resources and time must be provided for the proper discharge of these obligations.

The teaching staff and administration, with review by the governing board, must (a) establish the general objectives of graduate medical education, (b) apportion residency and fellowship positions among the several programs offered, (c) review instructional plans for each specific program, (d) develop criteria for selection of candidates, (e) develop methods for evaluating, on a regular basis, the effectiveness of the programs and the competency of persons who are in the programs. Evaluation should include input from those in training. Facilities and teaching staff shall be appropriate and sufficient for effective accomplishment of the educational mission of each program. If outside facilities or staff are needed to fulfill program needs, the primary sponsor must maintain full responsibility for the quality of education provided.

Implementation of these General Requirements requires that the program directors and teaching staffs of sponsored programs work with each other and the institutional administration and the governing agencies to provide an operating system for educational resource

allocation and quality control to ensure that sponsored programs can fully meet the Special Requirements set forth in Part II of these Essentials. In order to prevent duplication of effort, all of the resources provided by institutions for their training programs are not specifically mentioned in this document.

1. RESPONSIBILITY OF INSTITUTIONS

Ensuring that each specialty program fully meets the Special Requirements for approval by its RRC is an institutional responsibility. The specifications set forth in this section make necessary an institutional system involving the teaching staff for the allocation of educational resources and maintenance of the quality of all sponsored programs.

- 1.1 The ACGME expects institutions sponsoring programs in graduate medical education to provide documentary evidence of a commitment to medical education by:
 - a) The administration.
 - b) The teaching staff.

This evidence should consist of:

- 1.1.1 *A written statement setting forth the reasons why the institution sponsors graduate medical education.*
There should be evidence of agreement to this statement by the teaching staff and the administration.
- 1.1.2 *A description of the process by which institutional resources are distributed for educational purposes.*
There should be clear evidence that the process is agreed to within the institution. Those responsible for administration of the process should be identified by name and title in the institution's table of organization.
- 1.1.3 *An operational system involving the program directors based on institutional policies establishing how the sponsored programs provide for:*
 - a) The appointment of teaching staff.
 - b) The selection of residents.
 - c) The apportionment of resident positions among programs, consonant with the Residency Review Committee policies.
 - d) The supervision of residents.
 - e) The evaluation and advancement of residents.
 - f) The dismissal of residents whose performance is unsatisfactory, and
 - g) The assurance of due process for residents and teaching staff.

These policies should be developed after widespread consultation among the concerned parties, and should have institutional approval.

- 1.1.4 *A periodic analysis of each program by representatives of the concerned departments, the residents, and the administration should be developed.*

These analyses should include the appraisal of:

- a) The goals and objectives of each program.
- b) The instructional plans formulated to achieve these goals.

- c) The effectiveness of each program in meeting its goals, and
- d) The effectiveness of utilization of the resources provided.

There should be documentation of these analyses and of the mechanisms to correct identified deficiencies.

Implementation of General Requirements may be delegated to a committee of program directors or their designees and others responsible for the institution's educational program. Once a system is in place, each program must comply with these policies and procedures.

1.2 **Interinstitutional Agreements.** When the resources of two or more institutions are utilized for the conduct of one or more programs, each participating institution or organizational unit is expected to demonstrate a commitment to graduate medical education as set forth in 1.1.1 through 1.1.4. Documentary evidence of agreements, approved by the institutions, should be available for inspection by assigned site visitors. The following items should be covered in such interinstitutional agreements.

1.2.1 **Items of Agreement:**

- a) **Designation of program director:** A single director for each specialty program should be designated. The scope of the director's authority to direct and coordinate the program's activities in all participating institutions should be clearly set forth in a written statement.
- b) **Teaching staff:** The teaching staff responsible for providing the educational program and supervising the residents in each institution should be designated.
- c) **Educational contribution:** The expected contribution to the educational objectives to be provided by each institution to each program should be delineated.
- d) **Assignment of residents:** The period of assignment of residents to the segment of a program provided by each institution, and any priority of assignment, should be set forth.
- e) **Financial commitment:** Each institution's financial commitment to the direct support of each program should be specifically identified.

1.2.2 When several institutions or organizational units participate in sponsoring multiple programs, mechanisms should be developed to coordinate the overall educational mission and facilitate the accomplishment of the policies and procedures set forth in subsections 1.1 and 1.2.

1.3 **Facilities and Resources.** Institutional facilities and resources should be adequate to provide the educational experiences and opportunities set forth in the Special Requirements for each sponsored program. These include, but are not limited to, an adequate library providing access to standard reference texts and current journals, sufficient space for instruction, adequate facilities for residents to carry out their patient care and personal education responsibilities. Adequate sleeping, lounge, and food facilities must be accessible to the residents during assigned duty hours. Adequate clinical support services must be provided on a 24-hour basis,

including retrieval of medical records and of laboratory and radiologic information in a manner appropriate for quality patient care and educational programs. Further financial support of residents is necessary to assure that residents are able to fulfill the responsibilities of their educational programs.

1.4 As part of the educational program, it is important that all deaths be reviewed, and that autopsies be performed whenever possible. Autopsies must be performed in sufficient number to provide an adequate educational experience and to enhance the quality of patient care.

1.5 **Hospital Accreditation.** Hospitals sponsoring or participating in programs of graduate medical education should be accredited by the Joint Commission on Accreditation of Hospitals. If a hospital is not so accredited, the reasons why accreditation was not sought or was denied should be explained.

2. PROGRAM ORGANIZATION AND RESPONSIBILITIES

The director and the teaching staff of a program in graduate medical education are responsible for defining and implementing the goals and objectives of the program.

All training programs should foster the development of residents' teaching abilities, interpersonal relationships, and understanding of medical ethics. Instruction in ethical issues, in the socioeconomic of health care, and in the importance of cost-effective medical practice should be part of all programs.

The educational effectiveness of a residency training program depends largely on the quality of its supervision and organization. The responsibility for these important functions lies with the department heads or service chiefs, who in most instances are also the program directors. The program directors should have qualifications and breadth of experience which will enable them to carry out an effective training program. Each program director accepts the responsibility of resident selection, evaluation and promotion within the framework of the policies of the sponsoring institution. Additional responsibilities of the program director are the development of other members of the health care team; and the selection of the various evaluation techniques employed.

The sponsoring institution is expected to assist program directors in carrying out their responsibilities through the development of appropriate institutional policies to assure excellence in resident physician education. When a Residency Review Committee reviews a program, the extent to which the sponsoring institution is supporting the efforts of the program director through its institutional policies will be taken into consideration.

2.1 **Qualifications of Program Staff.** The individuals who have responsibility for the conduct of graduate medical education programs should be specifically identified.

2.1.1 **The program director** should be certified by the specialty board in the discipline of the program or should possess suitable equivalent qualifications as a teacher, clinician, and administrator. Each director should have the authority and time needed to fulfill administrative and teaching responsibilities in order to achieve the educational goals of

the program and to participate with other program directors in maintaining the quality of all institutional programs.

- 2.1.2 *The teaching staff* should have a strong interest in teaching, and be willing to contribute the necessary time and effort to the educational program. The key professional personnel, as teachers, clinicians, and/or administrators, should:

- a) have adequate special training and experience.
- b) actively participate in appropriate national scientific societies.
- c) participate in their own continuing medical education.
- d) engage in specific presentations as appropriate, and
- e) exhibit active interest in medical research related to their specialties.

- 2.2 *Relationships between Medical Staff and Graduate Programs:* In some institutions a distinction is made between the teaching staff and the non-teaching staff of a department. Where this is the case, the institutional educational plan (1.1.2) should clearly delineate the agreements reached regarding the utilization of institutional resources for education. This should include agreement as to whether residents and teaching staff may have contact with the patients of members of the medical staff not involved in the teaching programs and what responsibilities residents have for such patients.

3. ELIGIBILITY AND SELECTION OF RESIDENTS

Physicians with the following qualifications are eligible to enter graduate medical education programs accredited by the ACGME:

- 3.1 *Unrestricted Eligibility:* Unrestricted eligibility is accorded to those with the following qualifications:

3.1.1 Graduates from the institutions in the U.S. and Canada whose programs are accredited by the Liaison Committee on Medical Education.

3.1.2 Graduates from institutions in the U.S. accredited by the American Osteopathic Association.⁴

3.1.3 Graduates of medical schools whose programs are not accredited by the LCME who meet the following additional qualifications:

- a) Have fulfilled the educational requirements to practice in the country in which they have had their medical education, or, if a national of the country concerned, have obtained an unrestricted license or certificate of full registration to practice in that country; have passed examinations designated as acceptable by the ACGME for determination of professional preparedness and capability to comprehend and communicate in both spoken and written English; and have had their credentials validated by an organization or agency acceptable to the ACGME, or
- b) Have a full and unrestricted license to practice medicine in the U.S. jurisdiction providing such license

3.1.4 U.S. citizen graduates from institutions whose programs are not accredited by the LCME who cannot qualify under Section 3.1.3, but who have successfully completed the

licensure examination in a U.S. jurisdiction in which the law or regulations provide that a full and unrestricted license to practice will be granted without further examination after successful completion of a specified period of graduate medical education, or

- 3.1.5 In the case of students who have completed, in an accredited college or university in the U.S., undergraduate premedical education of the quality acceptable for matriculation in an accredited U.S. medical school, have studied at a medical school whose program is not accredited by the Liaison Committee on Medical Education, but which is listed by the World Health Organization, have completed all of the formal requirements of the foreign medical school except internship and/or social service, such students may substitute for an internship or other service required by the foreign medical school an academic year of supervised clinical training (such as a clinical clerkship) on or after July 1, 1971, prior to entrance into the first year of ACGME-approved graduate medical education. The supervised clinical training must be under the direction of a medical school whose program is accredited by the Liaison Committee on Medical Education. Before beginning the supervised clinical training students must have their academic records and other credentials reviewed and approved by the medical school supervising their clinical training and must attain a score satisfactory to the sponsoring medical school on a screening examination. Effective July 1, 1985, candidates must have passed examinations designated as acceptable by the ACGME for determination of professional preparedness prior to entrance into the first year of ACGME accredited graduate medical education.

- 3.2 *Restricted Eligibility:* Restricted eligibility for foreign nationals to enroll in ACGME programs is accorded under the following circumstances:

- a) When a U.S. medical school and one or more of its affiliated hospitals have a documented bilateral agreement, approved by an agency recognized for that purpose by the ACGME, with an official agency or recognized institution in the physician's country of origin to provide an educational program designed to prepare the physician to make specific contributions in a health field upon return to the country in which the sponsoring agency or institution is located; and
- b) The physician has been granted an unrestricted license or certificate of full recognition to practice medicine in the country wherein the agency or institution making the agreement referred to in (a) is located, and
- c) The physician has passed examinations designated as acceptable to the ACGME for determination of the professional preparedness and capability to comprehend and communicate in both spoken and written English, and
- d) The physician has made a formal commitment to return to the country in which the sponsoring agency or institution is located, and

e) The credentials of the physician and the existence of a suitable agreement have been validated by an organization or agency acceptable to the ACGME.

Restricted eligibility shall be limited to the time necessary to complete the program agreed to by the parties as referenced in (a).

- 3.3 *The Enrollment of Non-Eligibles.* The enrollment of non-eligible residents may be cause for withdrawal of approval of accreditation.
- 3.4 *Special Educational Provisions for Residents Who Are Not Graduates of LCME Accredited Programs at Medical Schools.* Institutions and programs providing education and training to residents eligible under Sections 3.1.3, 3.1.4, 3.1.5 and 3.2 should make special educational provisions to correct deficiencies these residents may have in their professional preparation and their knowledge of the United States health care system, medical practices and ethics, and United States culture and cultural values.
- 3.5 *Transition between Undergraduate and Graduate Medical Education.* Eligible physicians may enter graduate medical education at any time after they have attained the M.D. degree. Institutions and their sponsored graduate programs are expected to select residents with due consideration of their preparedness to enter into the program they have selected. Personal characteristics and aptitude as well as academic credentials should be considered in selection.

In selecting from among qualified applicants for first graduate year positions, institutions and all of their sponsored programs should participate in the National Resident Matching Program (NRMP).⁵

4. TYPES OF PROGRAMS

Residency programs must demonstrate to a reasonable degree that they have met their goals and objectives and those specified in these Essentials. Graduate programs of two types may be provided to residents by institutions:

- 4.1 *Categorical Programs.* Categorical (C) are programs in a specialty which meet the Special Requirements for that specialty. Some specialties require that residents have complementary educational experiences in other disciplines. Whether it is required that such experiences precede or be interwoven into the education and training for the specialty, institutions sponsoring such programs and the program director should make the necessary arrangements for residents to gain these complementary experiences in educational settings which fulfill the Special Requirements for such specialties, unless the resident has already completed these requirements.⁶
- 4.2 *Transitional Programs* (Previously termed Flexible Programs). Transitional programs are provided for physicians who desire in their first or later graduate year an experience in several specialties prior to embarking on further training in a single specialty. Institutions or consortia of institutions may offer a transitional year provided the following conditions are met:
- 4.2.1 A special committee, composed of representatives of the specialty services on which residents are being trained during this graduate year and of representatives of two or more specialties in which there are accredited residencies, should be responsible for the development and evaluation of the program.

4.2.2 A qualified director must be appointed to assume responsibility for the operation of the program, counseling the residents, and coordinating their evaluation.

4.2.3 The year should be spent in an educational setting selected by the special committee for the transitional program, in cooperation with two or more accredited programs sponsored by the institution.

4.2.4 The residents in most of their assignments are associated with more senior residents in the participating specialties.

4.2.5 The impact of the training in the transitional year should not be deleterious to the quality of training of the residents in the provider disciplines.

- 4.3 *Completion of Training.* The total objectives of graduate medical education are met only when residents complete the full program for training in a specialty. Transitional year residents are expected to continue their graduate medical education in a categorical specialty and completion of their categorical programs is expected of all residents. The failure of a significant number of transitional year residents to transfer to a categorical program or of categorical residents to complete their program will be considered as evidence that a program is ineffective in achieving its essential objectives and may be cause for adverse accreditation action.⁷

5. RELATIONSHIPS BETWEEN INSTITUTIONS, PROGRAMS AND RESIDENTS

5.1 *Responsibilities of Institutions and Programs*

5.1.1 *Teaching and Learning.* An environment wherein both the teaching staff and the residents are seeking to improve their knowledge and skills is essential. Insofar as possible, residents should be incorporated into medical staff programs of medical education and patient care in a true collegial relationship. Residents may be assigned by program directors to assume responsibility for teaching more junior residents and students. Special attention should be given to assisting residents to acquire skills in teaching and evaluating those for whom they are responsible. The number of students for whom residents have educational responsibility should be sufficiently balanced so that the institution can ensure that the education of both students and residents is augmented and not diluted. The clinical departments are expected to organize formal teaching sessions tailored to meet the Special Requirements of their programs. Participation in these sessions by teaching staff from the basic science disciplines is encouraged. Adequate records should be kept of all those trained, including residents and medical students.

5.1.2 *Participation in Policy Development and Review.* Residents should be involved by institutions and programs in the development of recommendations on policy issues. Their day-to-day involvement with institutional and departmental activities may provide unique perspectives which can be of significant value to improving education and patient care.

5.1.3 *Supervision.* There must be institutional and program policies and procedures that ensure that all residents are supervised in carrying out their patient care responsibilities. The level and method of supervision must be consistent with

the special requirements for each program. To ensure proper supervision, the program director must prepare explicit written descriptions of lines of responsibility for the care of patients and make these clear to all members of teaching teams. Residents must be provided with rapid, reliable systems for communication with and appropriate involvement of supervisory physicians in a manner appropriate for quality patient care and educational programs.

- 5.1.4 *Counseling*: Graduate medical education places increasing responsibilities on residents and requires sustained intellectual and physical effort. For some, these demands will, at times, cause physical or emotional stress. Institutional awareness, empathy, and responsiveness towards these problems are vital to the educational process. Program directors and teaching staff should be sensitive to the need for the timely provision of counseling and psychological support services to residents.
- 5.1.5 *Evaluation and Advancement*: There must be a clearly-stated basis for annual evaluation and advancement. This must be based on evidence of satisfactory progressive scholarship and professional growth of the trainee including demonstrated ability to assume graded and increasing responsibility for patient care. This determination is the responsibility of the program director with advice from members of the teaching staff. The institutional system should assure that through the director and staff each program:
- At least annually, but preferably semi-annually, evaluates the knowledge, skills and professional growth of its residents, using appropriate criteria and procedures.
 - Provides to residents an assessment of their performance, at least annually, and preferably semi-annually.
 - Advances residents to positions of higher responsibility only on the basis of an evaluation of their readiness for advancement.
 - Maintains a personal record of evaluation for each resident which is accessible to the resident.
- 5.1.6 *Due Process*: There must be institutional procedures which provide for due process for all parties potentially involved when actions are contemplated which could result in dismissal or could significantly threaten a resident's intended career development or when there are grievances against a program or institution. Residents, program directors, teaching staff and administration should be involved in the development of these policies and procedures which are to be approved by the governing board. The details must be written and made known to the residents, program directors, and adhered to by all programs sponsored by the institution. There must be an equitable and satisfactory mechanism involving the participation of the medical staff, for the redress of grievances. Although final responsibility rests with the institution's governing body, the latter should rely upon the determinations of the medical staff in professional/educational matters.

5.2 *Resident Physician Responsibilities*: Resident physicians are expected to:

- Develop a personal program of self study and professional growth with guidance from the teaching staff.
 - Participate in safe, effective and compassionate patient care under supervision, commensurate with their level of advancement and responsibility.
 - Participate fully in the educational activities of their program and, as required, assume responsibility for teaching and supervising other residents and students.
 - Participate in institutional programs and activities involving the medical staff and adhere to established practices, procedures, and policies of the institutions.
 - Participate in institutional committees and councils, especially those that relate to patient care review activities, and
 - Apply cost containment measures in the provision of patient care.
- 5.3 *Resident Agreement*: The ACGME urges that programs provide residents with a written description of the educational experience to be provided including the nature of assignments to other programs or institutions. In addition, ACGME urges that each resident be offered for acceptance a written agreement encompassing the following:
- Residents' responsibilities as set forth in Section 5.2
 - Benefits including financial support, vacations, professional leave, sick leave, liability insurance, hospital and health insurance and other insurance benefits for the residents and their family, and the conditions under which living quarters, meals and laundry or their equivalent are to be provided.
 - The term of residency.
 - Practice privileges and other activities outside the educational program.
 - The usual call schedule and schedule of assignments.
 - Guarantee of Due Process.
- 5.4 *Liability Insurance*: Trainees in graduate medical education should be provided with professional liability coverage for the duration of training and such coverage should provide legal defense and protection against awards from claims reported or filed after the completion of graduate medical education if the alleged acts or omissions of the trainees are within the scope of the education program. Each institution must provide current residents and applicants for residency with the details of the institution's professional liability coverage for residents.

Appendix D. Special Requirements for Graduate Medical Education Program in Cardiology.

Special Requirements for Programs in Cardiology

1. EDUCATIONAL PROGRAM

A subspecialty educational program in cardiology must be organized to provide training and experience at a sufficient level for the trainee to acquire the competency of a specialist in the field, it shall not be less than three years in duration.

The principles enumerated in the Special Requirements for Graduate Education in Internal Medicine are also applicable to training in this subspecialty. Clinical experience must include opportunities to observe, manage and judge the effectiveness of therapeutic programs in patients with a wide variety of adult cardiovascular disorders on both an inpatient and outpatient basis. The trainee must be given opportunities to assume continuing responsibility for both acute and chronically ill patients in order to learn the natural history of cardiovascular disorders.

The program should be structured to provide a clinical core experience in the following:

- a. Non-laboratory clinical practice
 - 1) Consultation
 - 2) Coronary care unit
 - 3) Pre-operative and post-operative care of the surgical patient
 - 4) Outpatient experience
- b. Electrocardiography
 - 1) Standard ECG interpretation
 - 2) Stress testing
 - 3) Ambulatory ECG monitoring
- c. Chest radiography
- d. Non-invasive testing
 - 1) Echocardiography and Doppler
 - 2) Radionuclide techniques
- e. Cardiac catheterization
- f. Interventional cardiology such as angioplasty, flotation catheterization, thrombolysis, etc.
- g. Pacemaker use and follow-up
- h. Invasive electrophysiology
- i. Research

2. FACILITIES AND RESOURCES

Modern facilities to accomplish the overall educational program must be available and functioning. These include inpatient, ambulatory care and clinical and research laboratory resources. Specifically, there should be laboratories in which cardiac hemodynamics, angiography, percutaneous transluminal coronary angioplasty, invasive electrophysiologic studies, and other interventional procedures are performed. There should be laboratories which provide resources for electrocardiography, ambulatory ECG monitoring and exercise testing, echocardiography including Doppler studies, and radionuclide studies. Other resources should include facilities for assessment of peripheral vascular disease and pulmonary physiology. Clinical care units must

include intensive cardiac care units, cardiac surgery intensive care units, rehabilitation/functional assessment units (or instructional experience in these areas if there is not a formal unit), and cardiac clinics. Resources must be available for pacemaker follow-up. Association with and participation in a cardiovascular surgical program is an essential component of a cardiovascular training program.

The program should provide the equivalent of four full-time teaching faculty. Also, there should be no less than one full-time faculty member per 1.5 trainees. The director and faculty should be board certified in the Subspecialty of Cardiovascular Diseases or possess equivalent qualifications. There should be a minimum of one trainee per training year leading to a minimum of three trainees per training program.

3. SPECIFIC PROGRAM CONTENT

Cardiovascular medicine is an increasingly complex and expanding discipline. In order to function as a consultant in cardiovascular medicine, trainees must become expert in an ever-expanding body of knowledge and technological skills. This expertise will allow the trainee to integrate appropriate information regarding the pathophysiology, pathogenesis, natural history and diagnosis requisite for the management and prevention of diseases of the heart and blood vessels.

The goal of a training program is to provide opportunities for the trainees to develop clinical competence in the field of adult cardiology. In order to accomplish this goal the following components must be included in the curriculum of the program:

- a. Opportunities to acquire skill in the interpretation of the following:
 - 1) Electrocardiography
 - 2) Ambulatory ECG monitoring
 - 3) Exercise stress testing
 - 4) Echocardiography and Doppler flow studies
 - 5) Hemodynamics
 - 6) Cardiac and coronary angiography
 - 7) Chest radiography
 - 8) Radionuclide studies of cardiovascular function
 - 9) Electrophysiologic recordings
- b. Opportunities to acquire skill in the performance of the following:
 - 1) History and physical examination
 - 2) Cardiopulmonary resuscitation and advanced cardiac life support
 - 3) Cardioversion
 - 4) Bedside right heart catheterization
 - 5) Insertion and management of temporary pacemakers
 - 6) Arterial cannulation

- 7) Pericardiocentesis
- 8) Permanent pacemaker surveillance
- 9) Critical analysis of published cardiovascular data in laboratory and clinical research
- 10) Management of critically ill patients
- 11) ECG
- 12) Ambulatory ECG
- 13) Exercise stress testing
- 14) Echocardiography
- 15) Right and left heart catheterization
- 16) Intracardiac electrophysiologic studies and their interpretation
- 17) Radionuclide evaluation of cardiovascular function and myocardial perfusion
- 18) Programming of pacemakers
- 19) Cardiovascular research and evaluation thereof
- 20) Intra-aortic balloon counterpulsation

c. Opportunities to acquire knowledge through formal instruction in:

- 1) Cardiac-circulatory physiology
- 2) Cardiovascular pharmacology
- 3) Hypertension
- 4) Lipid abnormalities
- 5) Congenital heart disease
- 6) Prevention of cardiovascular disease
- 7) Heart disease in pregnancy
- 8) Principles of cardiovascular rehabilitation
- 9) Cardiovascular pathology
- 10) Peripheral and cerebral vascular disease
- 11) Biostatistics
- 12) Cardiovascular epidemiology
- 13) Pulmonary vascular disease
- 14) Myocardial biopsy
- 15) Permanent pacemaker implantation
- 16) Newer techniques, such as magnetic resonance imaging, fast computerized tomography, etc.

Effective: October 1988 ACGME: September 1987

Appendix E. Fitzsimons Army Medical Center Graduate Medical Education Program in Cardiology.

The Cardiology Fellowship Program at Fitzsimons Army Medical Center is an approved program of three years duration which satisfies the requirements for board eligibility in the specialty of Cardiology. The program is clinically oriented for the fellow to bear direct patient responsibility for a large number of patients with congenital and acquired cardiovascular diseases. Fitzsimons Army Medical Center serves as the referral area for a large geographic region of the United States and the patient population encompasses active duty, retired, and dependent personnel as well as Public Health beneficiaries, especially from the Indian Reservations.

The overall responsibility for the supervision of the Cardiology fellowship training is with the Chief, Cardiology Service, Department of Medicine, and he is supported by four staff cardiologists, a Pediatric cardiologist, and an Indian Health Service cardiologist.

The objectives of the training program are to produce a clinical cardiologist who is able to provide direct patient care as well as function expertly as a consultant in Cardiology. During the three-year period, the fellow is expected to pursue a research topic to completion which is suitable for presentation and/or publication.

The program is scheduled to provide the fellow with experience in management of outpatient problems, both in the adult and pediatric clinics; opportunity to supervise and teach the medical residents and interns in the management of inpatients on the wards and Coronary Care Units and to work closely with the thoracic surgeons in the evaluation of preoperative and post-operative patients. The Cardiology Fellow has the major responsibility of performing as a consultant for the inpatient and outpatient population of the other services with the assistance and teaching provided by the Cardiology Staff.

The capability of learning and performing the specialized diagnostic techniques in the non-invasive and catheterization laboratories is an integral part of the Cardiology training program. The Cardiology Fellow is expected to become proficient in the interpretation of electrocardiograms, arrhythmias, ambulatory monitors, exercise stress testing, M-mode, two dimensional, doppler and color flow echocardiography. The fellow will have the opportunity to work in Nuclear Medicine and acquire knowledge in the performance and interpretation of nuclear cardiology techniques.

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In the Catheterization Laboratory, the fellow will acquire experience in the percutaneous and brachial approach to cardiac catheterization with continuous staff supervision. Experience will include right and left heart hemodynamics, angiography, exercise testing, electrophysiologic and His bundle studies as well as the use of various drugs as they apply to individual situations. Interventional catheterization procedures including temporary and permanent cardiac pacing, and coronary angioplasty will be observed and/or performed by the fellows. Each fellow will perform approximately 300 catheterizations over a two-year period.

The Cardiology Fellow attends those conferences which are required for residents by the Chief of the Department of Medicine. In addition to these, he participates actively in the following training activities:

1. Teaching rounds conducted by the Chief, Cardiology Service.
2. Conferences concerning electrocardiography, echocardiography arrhythmia analysis and treatment, cardiac physiology and pharmacology, and cardiac catheterization procedures.
3. Combined Thoracic Surgery-Cardiology Conference
4. Weekly Intracity Cardiology Conference at various civilian hospitals.
5. The training program for interns, residents, and medical students conducting didactic teaching on selected subjects in electrocardiography and clinical cardiology.
6. A one-week course at the Armed Forces Institute of Pathology for cardiac pathology.