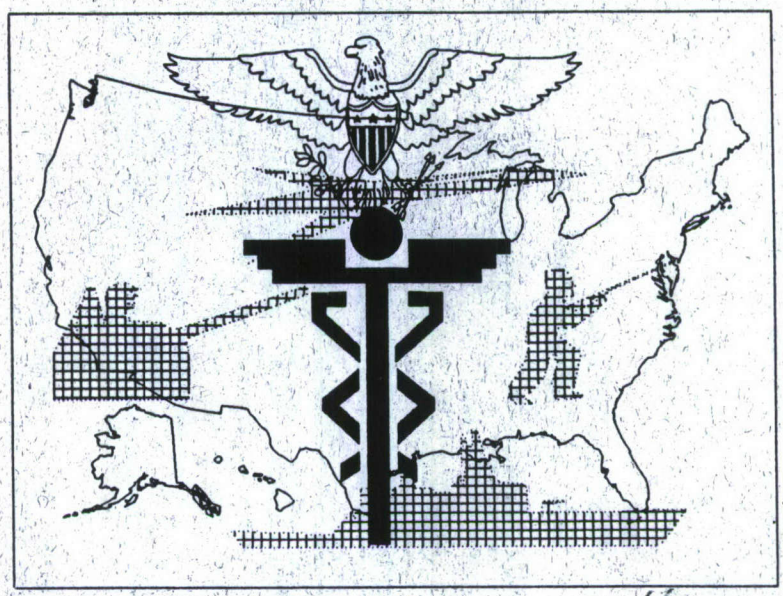
HEALTH PROFESSIONALS SPECIAL PAYS STUDY



REPORT TO CONGRESS
ON ARMED FORCES
HEALTH PROFESSIONALS SPECIAL PAYS

Other Health Care Providers

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This supplement to the Report to Congress on Health Professional Special Pays, issued December 1, 1988, reviews accession, retention and relative compensation status of thirteen health care specialties within the military health care system: dentistry, veterinary medicine, optometry, pharmacy, clinical psychology, physical therapy, occupational therapy, audiology, speech pathology, podiatry, social work, dietetics, and physician assistant.

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EXECUTIVE SUMMARY

BACKGROUND

This supplement to the Report to Congress on Health Professional Special Pays, issued December 1, 1988, reviews accession, retention and relative compensation status of thirteen health care specialties within the military health care system: dentistry, veterinary medicine, optometry, pharmacy, clinical psychology, physical therapy, occupational therapy, audiology, speech pathology, podiatry, social work, dietetics, and physician assistant.

Each specialty or discipline addressed in this supplement consists of a specific community of health care providers operating under the rubric of Dental Corps, Veterinary Corps, Medical Service Corps, Medical Specialist Corps, or Biomedical Sciences Corps. Each Corps is managed as a whole entity within a respective Military Department, with disciplines disengaged from Corps management only for studies such as this. As a result, accession and retention goals, billet authorizations and other manpower management indices are not always easily disaggregated, complicating analyses for discrete determinations and conclusions.

Representatives from each of the separately addressed disciplines were responsible for presenting the status and issues of their discipline. This provided opportunity to explore and bring to light nuances of an individual specialty. It also allowed each group to "make their case" for additional resources believed necessary to resolve problems and inequities in their community. These presentations are found at Appendices A through L of the report.

The report describes the marketplace for health care professionals and presents evidence that increased demand and smaller supply in the national market is propelling civilian pay for virtually all health care providers dramatically upward. At the same time, requirements for these professionals within the military have increased over recent years, driven in large measure by a growing peacetime workload of dependents, retirees and other military beneficiaries.

While the report does not establish definitive total force requirements for each discipline, it refers to ongoing reviews of both wartime and peacetime requirements within the Department which, when combined with cost-benefit analyses unique to the health-care environment, are anticipated to provide credible requirements in 1990. Based on limited analytical evaluations of cost-benefit decisions, there is preliminary evidence for increasing manpower in some of these disciplines today in order to reduce CHAMPUS costs.

FINDINGS AND RECOMMENDATIONS

One clear finding of this review of health care providers is that the inventory of "other" health care providers in the military is declining, both in absolute terms, and as compared to authorizations. The FY83 inventory of all 13 disciplines studied was 9949, against 9856 authorizations. By FY88, authorizations were 9730, while inventory had declined to 9374 individuals assigned, a drop of 575, or 6% in five years. Some

disciplines sustained significant losses, such as Army Optometry, which lost 40% of its force in those years, while others were able to maintain their size fairly well.

Various factors have contributed to the relative health of each professional discipline, but substantially it is the outside environment driving up prices and cutting into the supply that has proved most troublesome. An additional difficulty results from the small personnel numbers of most of the "other" health care disciplines. Small communities can develop management problems when managed within the overall environment of Corps, Military Department and Defense Officer Personnel Management Act (DOPMA) standards. Complications, such as awarding constructive credit for experience and education may then play havoc with promotion opportunities in small communities constrained by various grade controls, making it particularly difficult to put forth an encouraging career plan for potential recruits.

While each discipline provided detailed information on its specialty for the report appendices, a coordinated evaluation resulted in no specific legislative proposals at this time. It is clear that there are emerging problems in some of the studied disciplines. Optometry and pharmacy specialties did not make recruiting goals last year, dentists are well below accession numbers necessary to reach authorizations, and clinical psychologists did not fill four of 47 internship positions available in FY88, their primary recruiting vehicle. Other disciplines are experiencing significant difficulty recruiting to goals, and all project a worsening environment for the military.

The Department believes an accession bonus may be necessary in the future to assist in recruiting professionals for these disciplines. Such a bonus, as described in the main body of the report, might be a relatively low cost solution to recruiting problems. After careful study, and in consideration of the fiscal climate, the Department decided not to recommend enactment of accession bonus authority in this report. The Department will maintain a close watch on the disciplines included in this report supplement and communicate observations of further significant deterioration within them, making recommendations if necessary.

N.B. Preceding supplemental reports to Congress, alluded to an ongoing analysis of a physician accession bonus designed to remedy specific difficulties in recruiting experienced physicians into the military. Analysis is continuing for this potential recommendation. The findings will be reported as soon as possible.

REPORT TO CONGRESS ON OTHER HEALTH CARE PROVIDERS

INTRODUCTION

This is the final supplemental report responding to section 612(g) of the National Defense Authorization Act for Fiscal Year 1989 (P.L., 100-456) which stipulates:

The Secretary of Defense shall submit to the Committees on Armed Services of the Senate and House of Representatives a report containing the following:

(i) An analysis of the current and projected requirements of the Armed Forces for health professionals by specialty and years of service.

(ii) The Secretary's assessment of the adequacy of the existing compensation system for such health care professionals.

(iii) Such recommendations for legislation as the Secretary considers necessary to attract and retain on active duty the health care professionals needed to meet the needs of the Armed Forces.

This report reviews thirteen health care specialties that provide direct patient care: dentists, veterinarians, optometrists, pharmacists, clinical psychologists, physical therapists, occupational therapists, audiologists, speech pathologists, podiatrists, social workers, dietitians, and physicians assistants. Detailed analysis of each specialty is found in designated Appendices.

The report also describes how today's revolution in the health care industry has affected recruiting and retention of health care providers. Two important characteristics of the current health care delivery system in the United States are its dynamic, evolving nature and the interdependence of its increasingly specialized health care providers. These factors have particular significance for health care in the Military Health Services System (MHSS).

The Military Departments compete in the marketplace for fully qualified health care professionals. Since there is considerable change in the medical environment today, the Department of Defense must assess the impact of change on current and future military staffing. To effectively respond to rapid change, the Department should have the flexibility to move quickly when a problem emerges. Adequate staffing of each discipline is important to prepare for emergencies, as well as to meet the peacetime needs of military health care beneficiaries. Data gathered over recent years indicate that proper staffing of each health care discipline is important to the overall operation of the system. This is important from the perspective that each of the parts is essential

to the operation of the whole from a system view as well as from a purely morale-oriented standpoint. Because of the unique referral system found in military health care, each discipline builds on and assists in the efforts of the others. When one discipline is not properly staffed and prepared, the shortage has adverse effects on many other disciplines. For example, if there are insufficient optometrists to provide eye care treatment, ophthalmologists are taken away from their surgical and procedural responsibilities to fill the gap. This is inappropriate utilization of ophthalmologists, which then breeds frustration and aggravates retention problems in that community.

Opportunities for reasonable career progression and equitable promotion for all disciplines are necessary to retain a balanced force of health care professionals. Providing opportunities for small health care specialty groups under the guidelines of the Defense Officer Personnel Management Act (DOPMA), however, presents the Department with special challenges. The framers of DOPMA recognized the value of providing common career expectations and opportunities among officers of the various military specialties. DOPMA was designed, though, based on the typical constructs and needs of the large line officer community which represents the largest component of the military officer force. Small cohort size, divergent professional education requirements, and the use of constructive service credit require innovative management techniques in order to achieve the Department's goals.

The Department must pursue solutions to the management problems, in small and unique health care disciplines, that will provide the optimum efficiency for the overall health care personnel system. Spot problems exist in various disciplines today, and the dynamic and rapidly changing situation in the health care professions poses the danger of greater deterioration in the military's ability to attract and retain these professionals. They are different than other military communities. Relatively few other military specialties have the opportunity to exercise their skills both in and out of uniform. Therefore, the management of these health care specialties present unique challenges. The Department must be diligent and innovative in administering these disciplines.

THE HEALTH CARE ENVIRONMENT

A significant characteristic of health care in the United States today is the dynamic, changing nature of the health care delivery system. Many factors interrelate to cause major changes in health care delivery since the early 1970s. And health care is continuing to evolve as a result of many complex and interrelated variables such as increasing specialization, competition among provider entities, and increasing influences of technology.

Health care provider disciplines are more dependent upon each other than ever before. The health care environment today has spawned many specialist providers in addition to physicians and nurses. Medical care does not function alone, but rather with the support of a wide range of health care specialties, including health care administrators and other direct and indirect patient care specialists. The interdependent nature of health care delivery has generated a system in which not only an adequate

supply, but also an appropriate mix of health care providers with diverse skills is necessary for the timely provision of high quality health care at an acceptable cost.

The Military Health Services System mirrors the civilian sector to the extent that it needs a broad spectrum of specialists. In most cases, the Department does not educate health care personnel, but rather, is dependent on recruiting trained professionals from civilian life. This means the Department must compete in the civilian market place for trained health care providers. Factors such as scholarship availability, pay competetiveness, workplace environment, practice setting, opportunity for continuing education, facility and equipment adequacy, and many other related considerations impact the decisions of professionals to join and remain in the military. The Department must continually evaluate all relevant factors when seeking to attract and retain the best available health care providers. The Department must then respond rapidly to changes in the civilian sector to maintain adequate staffing.

Increased Demand for Health Care Providers

Several socioeconomic factors cumulatively indicate increased national demand for health care providers, not matched by projected future supply. The Department must be able to contend as competition for qualified specialists increases.

Aging Population

The national requirement for specialized health care is projected to continue to increase, driving demand for health care providers up. A major factor in this projection is the advancing age of the U.S. population. The population, 65 years and older, is projected to grow from 32 million in 1988 to 51 million in the year 2020. The population, 85 years or older, is projected to increase at an even faster rate, growing from 3.5 million in 1988 to 7 million in 2020.[1] The requirement for health care is greater among the elderly than among the general population. For example, the National Institute on Aging estimates that, by the year 2020, twice as many occupational and physical therapists and 40 percent more audiologists will be needed to provide adequate health care.[2]

Cost-Containment Measures

Health care financing began moving from traditional fee-for-service and cost reimbursement to prospective payment plans following implementation of the Medicare Prospective Payment System (PPS), and the Health Maintenance Organization concept of fee-paid managed care.

As a result of these and other innovations, only the sickest patients are treated in hospitals and the average hospital stay is shorter. These cost containment measures have had a significant impact on hospital budgets and have increased demand for ambulatory and outpatient health care. This, in turn, has increased demand for health care providers in nursing homes, home care agencies, and other ambulatory care settings.

Despite the shift to more outpatient health care, the Bureau of Labor Statistics projects that hospital employment will also increase based on the increase in the number of elderly patients and the demands created by advanced technology.[3] The shift of care out of the hospital will also stimulate growth in the number of physician offices (projected to grow 4.4 percent per year), office laboratories, office surgery and the number of independent allied health practices.[4]

Specialization

Specialization and proliferation of new categories of health care providers may cause constriction in the range of skills practiced by specialists. The trend toward increasing specialization further increases the interdependence of the health care disciplines in providing comprehensive patient care. No single category of health care professional, as has traditionally been the case with primary care physicians, dominates the health care market. Recent changes in state laws and third party reimbursement procedures now allow many different specialties to practice independently, rather than under the umbrella of a referring physician.

Supply of Health Care Providers

There has been considerable increase in health care personnel since 1980, continuing a trend begun in the late 1960s. However, the health care field is now experiencing an overall decline in students entering training for professional careers.[5] Factors causing this decline include the high cost of education in the health professions, a smaller college-age population, and attractive, competing career options. There is concern that a decreased number of applicants may reduce the quality of enrolled students and, therefore, increase competition for high-quality graduates.

The primary source of accessions of military health care professionals are new graduates educated in civilian schools. The military services typically recruit individuals after they complete professionally qualifying education. Any reduction in the output of civilian graduates will increase competition for qualified personnel and reduce the size of the primary population from which the military recruits.

Many health care disciplines have increased the education requirements for entry into the profession. There is a similar trend toward increased requirements for licensure. Increased qualifications can be anticipated to drive up civilian income. Military pay must remain competitive.

Increased Participation by Women

Although women have historically had the greatest numbers in the health care work force, this was largely due to female predominance in the nursing and allied health professions. There is a trend, however, toward increasing female participation in the health disciplines previously dominated by males. In addition to medicine, increasing numbers of women are entering the fields of dentistry, pharmacy, and veterinary medicine. Since 1980, the proportion of females in these specialties has increased by one-third. This number is expected to double by the turn of the century.[6] It is too soon to accurately predict if the larger numbers of females in these professions will impact military recruitment and retention.

Professional Interdependence and Job Satisfaction

The interdependent nature of health care delivery creates a strong link between the health care disciplines, affecting job satisfaction in all disciplines. As discussed in the Report to Congress on Armed Forces Health Professionals Special Pays[7], studies conducted in 1987 and 1988 show that military physicians rate a lack of support personnel as a major factor contributing to job dissatisfaction. Medical officers view an inadequate support staff as negatively affecting their professional practice. Inadequate staff support produces harmful consequences which include: reduced volume and quality of patient care; as well as the lack of opportunity for physicians to use and maintain specialty skills due to the unavailability of other staff personnel skilled in requisite specialized follow-up care.

As also noted in the Report to Congress on Management of Military Medicine,[8] a General Accounting Office survey indicates that military physicians are performing clerical and administrative duties, causing a detriment in patient care. In the past, military physicians were generally responsible for fewer administrative functions than their civilian peers. This was considered a positive aspect of military medicine which has now disappeared.

Adequate staffing of all health care disciplines is important to ensure availability of the unique services and skills that each discipline provides. It is also required in order to meet civilian hospital accreditation standards and for accreditation of military medical residencies. From a broader perspective, adequate staffing of each discipline is an important contributor to job satisfaction for members of other health care specialties whose professional practice is enhanced or dependent upon the availability of those services and skills. Adequate manning of each discipline is not only a desirable goal in itself, but also positively effects retention in other health care disciplines.

REQUIREMENTS AND FORCE STRUCTURE

The determination of requirements for military health professionals continues to be a tremendously challenging, as well as challenged, process. It has been the focus of serious study and high level attention within the Department throughout the past year.

The active component's medical personnel requirements are especially complex because of the inherent dual responsibilities for wartime preparedness and provision of peacetime health care benefits. This duality represents two distinct missions for the Military Health Services System: (1) maintaining the peacetime health of the active duty force and being prepared to attend the sick and wounded in time of war; and (2) providing a health benefit as a condition of service to active duty dependents, retirees and their dependents and survivors.

There is yet another complex dimension to the requirements estimation process for medical personnel: the numbers and types of health professionals needed in both wartime and peacetime are driven primarily by the demand for patient care services, rather than force structure manning, as is the case for traditional requirements methods and for most other Defense communities.

The complexities of these dimensions continue to generate improved analytic approaches to the requirements milieu. The Department is committed to seeking greater precision and consistency in the process of estimating requirements for scarce health care personnel resources. In this regard, we have challenged our methods during the past year and subjected them to internal debate. These efforts are furthering the significant progress made in recent years toward more sophisticated and accurate techniques for this complex requirements estimation process.

Wartime Requirements

At the same time the physician and nurse compensation studies were being conducted, a separate review of wartime medical requirements goals was underway within the Department. The review addressed inconsistencies between the Services regarding important aspects of the wartime requirements process. The Department has begun to implement the many important recommendations stemming from the review. These include initiatives to: establish more standardized protocols for use in determining medical program requirements; validate wartime force structure requirements; identify wartime requirements goals for the various health personnel categories and specialties; and allocate those goals between the active and reserve components based on criteria developed through the total force policy initiatives being led by the Assistant Secretary of Defense for Force Management and Personnel. Several OSD staff principals, the Joint Chiefs of Staff, and the Military Departments are all participating in these activities.

Full implementation of these initiatives will provide better analytic and policy parameters for refining and validating the Services' estimates of wartime medical

personnel requirements and component mix. However, because the Services' current statements of wartime requirements cannot yet be validated or allocated between components in accordance with the approved review recommendations, they have not been adopted by the Department.

Peacetime Requirements

Medical readiness remains the prime criterion for determining medical force size and specialty mix. However, as a corollary to this readiness approach, the medical system's peacetime health benefit mission also invites a distinctive, cost-effectiveness approach to the active force requirements process. Health benefits are provided to eligible nonactive duty beneficiaries in peacetime by military hospitals and clinics, or they are purchased through CHAMPUS as part of the overall Military Health Services System. Thus, it is reasonable to look at the process of determining requirements for health professionals as a cost-benefit decision and readiness decision. To the extent that it is more cost effective to have military health professionals provide care, there is a valid personnel requirement independent of the readiness requirement.

We developed a limited analytic approach to examine physician and nurse requirements in this cost-effective fashion for use in the health professionals special pays study. This approach used workload requirements for the peacetime beneficiary mission to derive a target force of active duty physicians for purposes of evaluating the proposed compensation system. Cost-benefit analyses were used to estimate additional manpower needed to perform additional workload in the direct care system. By this method, it was possible to estimate a range of additional health professional requirements that would be cost-effective based on recovery of care being purchased in the private sector.

A significant result of this cost analysis methodology is that it appears cost-effective to the government to recapture some additional CHAMPUS inpatient workload for all beneficiary categories and clinical areas. Recapture of CHAMPUS workload also increases the health benefit for nonactive duty beneficiary, since CHAMPUS requires beneficiary co-payment.

We recognize that the analytic results developed by the Special Pays Study Group are preliminary assessments of ranges of requirements for the peacetime beneficiary mission. We are confident that additional health professional manning would be cost effective in reducing CHAMPUS expenditures. Since physician productivity and morale already suffer from a lack of adequate support staff, any physician increases must be accompanied by at least a proportional increase in support staff.

Authorizations Versus Inventory

Since the personnel requirements determination process is not yet stabilized, we used budgeted authorizations as the statement of requirements for this report. We then compared actual end year FY88 specialty inventories to these authorizations. Figure 1 and Table 1 show the results of this comparison.

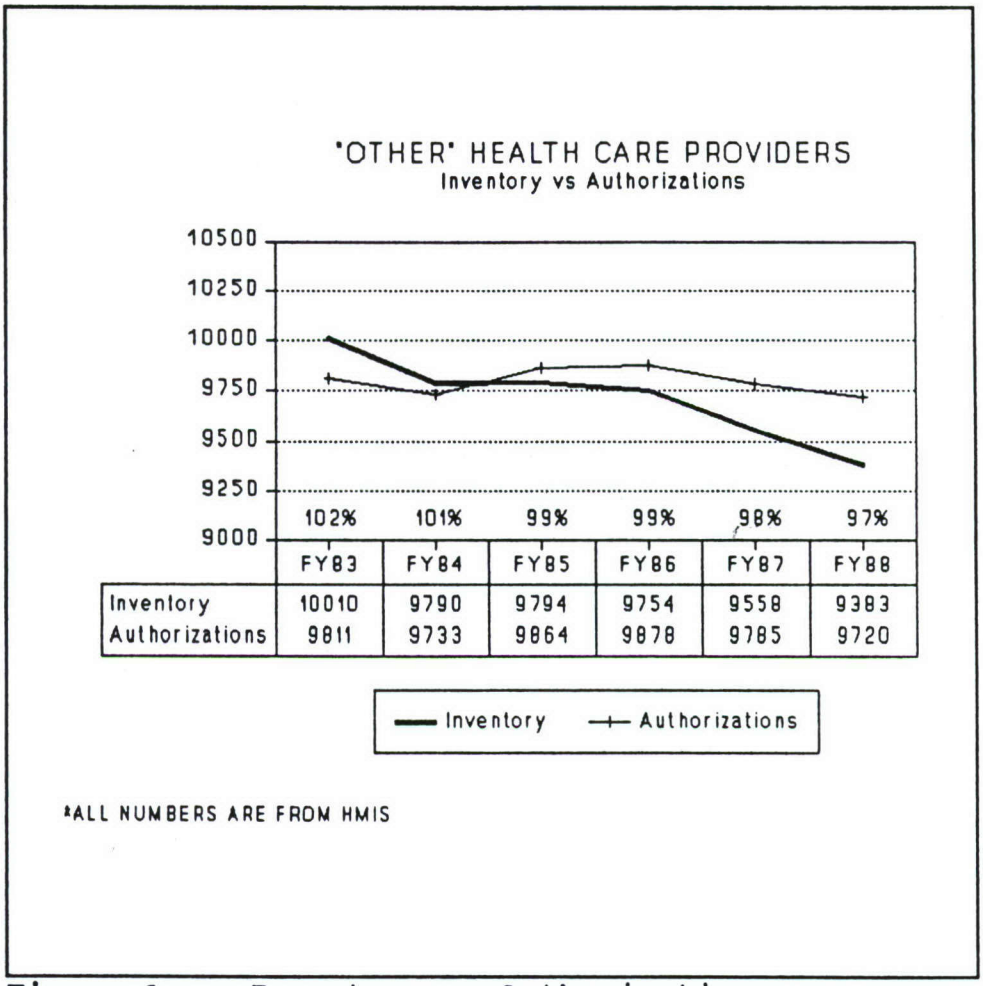

Figure 1: Inventory vs Authorizations

Source: Health Manpower Statistics Report (HMIS), Fiscal Year 1988

Table 1

Budgeted Authorizations Vs Inventory

Specialty	Budgeted Authorizations	FY 1988 Inventory	%	Diff
Dentistry	4903	4827	98	-76
Veterinary Med	442	455	103	+13
Optometry	545	461	85	-84
Pharmacy	570	517	91	-53
Psychology[1]	492	468	95	-24
Physical Therapy	413	401	97	-12
Occupational Ther	132	124	94	- 8
Audio/Speech Path	106	111	105	+ 5
Podiatry	92	87	95	- 5
Social Work	446	411	92	-35
Dietetics	293	299	102	+ 6
Physician Assist	1270	1208	95	-62
Total	9720	9383	97	-337

Source: Health Manpower Statistics Report, Fiscal Year 1988

[1] In addition to clinical psychologists, totals include research and aerospace experimental psychologists.

As shown in Figure 1 and Table 1, a downward trend has developed in the aggregate inventory for these specialties which is causing concern. This deficit in health care personnel inventory may be a result of the complex and rapidly changing health care environment, increasing competition and making recruiting and retention more difficult.

Force Structure

The nature of the military health care system and the military personnel management and compensation systems dictate that the Department distribute health care personnel in a specialty force profile (i.e., the required number and skill mix of personnel throughout years of service). The Services manage these specialties collectively by competitive categories or corps. Variables within year groups (such as size of accession group, promotion/retention rates, growth in specialty requirements) are difficult to manage across the overall corps, and even more so by individual specialty. The force structures were developed for each specialty by representatives of the Department's Army Veterinary Corps (VC), Army Medical Specialist Corps, (AMSC),

Army and Navy Medical Service Corps (MSC), Air Force Biomedical Sciences Corps (BSC), and the Dental Corps of all three Military Departments. These profiles were constructed using current authorizations, professional standards, and the missions of each Service. The profiles developed for this report, for the most part, represent initial efforts at force structure development. As the Department found in its analyses of physicians and nurses, the Military Departments must develop more definitive data on retention objectives and force structure requirements. The Department will insure that the efforts begun for the Health Professionals Special Pays Study will be refined and reviewed on a continuing basis.

Actual inventories, by years of service, were compared to the force structure profiles of the specialties. The result showed that several health care communities are lagging in accession and/or retention and may be unable to provide the proper number of trained providers for adequate health care in the military. (See Appendices.)

Frequently, personnel problems within a health care specialty are not Department-wide, but are localized within a specific Service. This may be caused by differences in individual preferences for a particular Service, method of accession or specific Service training programs. An example of this is physical therapy. The Army has been making recruiting goals by training physical therapists via the Army Academy of Health Sciences Graduate Program. The Air Force, on the other hand, has more difficulty meeting accessions goals since fully qualified physical therapists must be accessed.

CAREER MANAGEMENT CHALLENGES FACING HEALTH PROFESSIONALS

Favorable prospects for career progression and promotion are essential when recruiting or retaining military officers. Positions of increasing responsibility and associated promotions provide career incentives, and they are the basis for competitive increases in compensation.

Opportunity for career growth within each specialty is rather straightforward. Typically, it is a progression of assignments with successively more complex responsibilities. Each Service provides such guidance. Included in these career paths are broadening assignment opportunities in military-unique positions outside the realm of traditional duties associated with a chosen health care discipline.

These health care disciplines compete for promotion within the Dental Corps, Medical Service Corps (Army and Navy), Army Medical Specialist Corps, or Biomedical Sciences Corps (Air Force) and are managed within the respective competitive category. Officers in the health care provider specialties have experienced selection rates generally below those of their line contemporaries and, more recently, have seen phase points lengthen.

The Defense Officer Personnel Management Act provides the Services with the flexibility to create competitive promotion categories for groups of officers with extensive specialty training and experience and associated narrow utilization. Congress recognized that such officers would find it impossible to compete on an equal basis with officers having more general utility and experience. Further, it acknowledged that without separate promotion categories the Services would have difficulty attracting and retaining specialized officers, particularly if promotion opportunities were too severely limited. Maintaining grade balances with the method traditionally utilized for the total officer force can cause excessively sharp corrections. For example, an inordinately large accession year group within one of these competitive categories stands out dramatically when compared with the 5-year projection of controlled grade requirements. As a result, promotion opportunity or promotion phase point may require significant adjustment, adversely affecting the entire competitive category. A similar large year group, if subsumed as a component of the total officer force, would probably not be noticed. Creating smaller competitive categories, as authorized, does not allow the economies of scale afforded the large, diverse, multi-occupational competitive categories (i.e., unrestricted line). Unlike the line, which adjusts grade and skill imbalances by allowing officers to shift into occupations with improved promotion opportunities, the career opportunities of specialized officers in smaller competitive categories must be managed within the officer's specialty. Therefore, these officers must be able to realize career and promotion advancement within their specialty or competitive category.

Force management is compounded by awarding constructive service credit for education and experience upon appointment. In many professional specialties, advanced education is a prerequisite for appointment as a commissioned officer. Credit is also granted for experience in a professional specialty when that experience is needed and used by the Services. Officers entering in a grade beyond O-1 have a different career

paths than the "due course" officer whose career traditionally would move through the entire promotion spectrum. A community composed of officers awarded constructive credit will have higher percentages of field grades or DOPMA controlled grades than the line competitive category. Congress recognized this when medical officers and dental officers were excluded from controlled grade calculations.

Managing careers and promotions for specialists eligible for DOPMA controlled grades is difficult. DOPMA stipulates that the Services promote to requirements. Each officer position is associated with a particular required grade. The sum of those grades within each component forms these requirements. Criteria for defining grade requirements of the more traditional military command and staff positions do not parallel the experience, skill and grade needed for skilled health care providers. Therefore, grade requirements have not always been sufficient to support a promotion rate comparable to line components. Nonetheless, a predictable career pattern is vital to retaining health care professionals.

Table 2 shows DOPMA guidelines for opportunity and flow point objectives. The grade tables and allocation of control grades are predicated on congressionally established end strengths, but differ among the Services.

Table 2

DOPMA Promotion Guidelines

Grade	Opportunity	Flow Point
O-4	80% (+5%)	10 +/- 1 YR
O-5	70% (+5%)	16 +/- 1 YR
O-6	50% (+5%)	22 +/- 1 YR

Table 3 provides a comparison of promotion opportunity, actual in-zone promotion selection rate, and flow point for each of the Corps addressed in this report, as submitted to the Department in the Fiscal Year 1987 Annual Defense Officer Promotion Report.

Table 3
Promotion Opportunity/Selection Rate/Flow Point

	Actual Promotion Opportunity	In Zone Selection Rate	Flow Point
Army Medical Service Corps			
O-4	70.0%	53.8%	11 yrs 7 mos
O-5	60.0%	51.8%	17 yrs 8 mos
O-6	40.2%	35.2%	22 yrs 6 mos
Navy Medical Service Corps			
O-4	87.7%	82%	10 yrs 1 mo
O-5	70.0%	64%	15 yrs 6 mos
O-6	56.3%	31%	19 yrs 9 mos
Air Force Biomedical Sciences Corps			
O-4	80.6%	68.9%	11 yrs 2 mos
O-5	60.9%	39.0%	15 yrs 7 mos
O-6	62.5%	59.3%	20 yrs 3 mos
Army Medical Specialist Corps			
O-4	69.2%	53.4%	11 yrs 11 mos
O-5	52.9%	47.0%	18 yrs 8 mos
O-6	50.0%	50.0%	22 yrs 0 mos
Army Veterinary Corps			
O-4	81.5%	48.1%	12 yrs 4 mos
O-5	53.8%	38.4%	17 yrs 4 mos
O-6	55.6%	33.3%	23 yrs 1 mo

It is important that health care professionals be grouped in competitive categories to afford a more equitable opportunity for promotion selection. Conversely, it presents a dilemma when their opportunity is reduced due to dynamics of year group size, constructive credit, retention rates, or disparate grade requirements. This dilemma becomes acute when viewing overall officer career management and recruiting problems. Authority to award constructive credit as a recruiting enhancement is helpful, but

recruited officers have not been afforded the comparable promotion flow of their line, medical or dental contemporaries.

COMPENSATION ANALYSIS

The Problem

The growing demand for universal adequate health care, rapid technological advances, increasing costs, the severity of patient illness, and increasing personnel skill/educational requirements are all affecting the supply and demand for health care providers. In many areas the health care industry is having difficulty meeting this demand with the proper quantity and quality of trained specialists.

As the largest single provider of health care in this country, the military must compete in the market place for health care specialists. Benefits of the military lifestyle, excellent training programs, and the military compensation system were the basis of our success in meeting health care personnel goals. A growing demand for specialists, however, has brought about rapid and significant changes in the civilian salary structure in many health care fields. Consequently, today's military incentives may no longer meet the needs of many of the diverse specialties that comprise the military health care system.

Increase In Civilian Compensation

The military compensation system is so complex and different from typical civilian salary structures that comparisons between them are both difficult and arbitrary. However, economic theory and common sense suggest that a decline in military compensation, relative to civilian compensation, would make the military less attractive to those contemplating entering military service or those facing a stay-leave decision. Figure 2 shows that civilian pay growth (measured by the Employment Cost Index - ECI) and cost of living increases (measured by the Consumer Price Index - CPI) have exceeded the rise in military pay since 1982 (the point where military and civilian pay are presumed to be comparable).

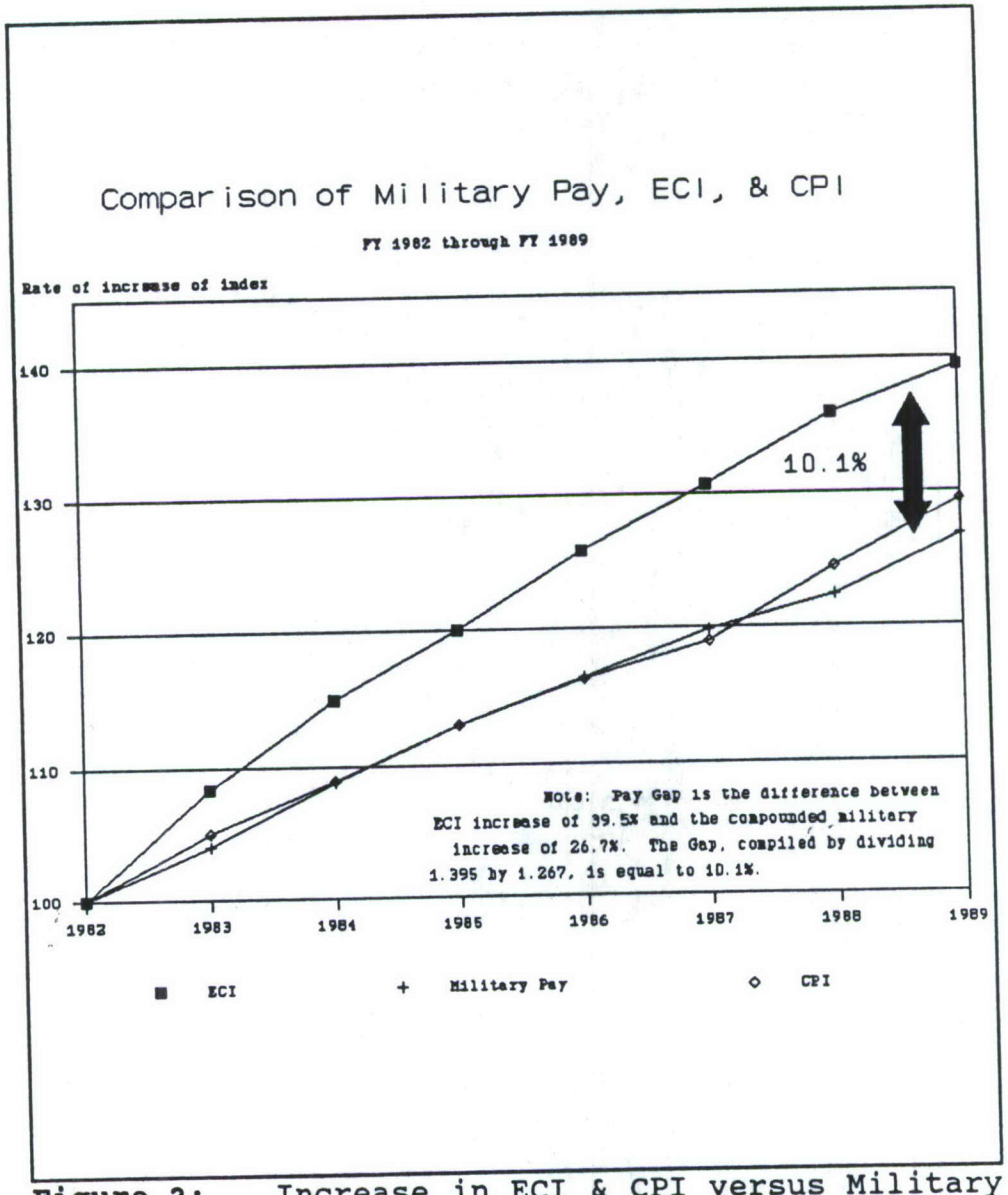

Figure 2: Increase in ECI & CPI versus Military Pay

As with general increases in civilian pay (ECI), the pay of civilian health care specialists has also been growing at a faster rate than increases in military pay. This is especially true for more experienced and highly trained specialists, as well as for those specialists in private practice. Tables 4 and 5 show the growth in mean starting salaries and mean maximum salaries for selected health professionals versus the growth in military Regular Military Compensation (RMC).

Table 4
Mean Starting Pay[1]

Specialty	1984	1988	% Increase	
Pharmacist	$24,708	$30,313	22.6	
Physical Therapist	$19,620	$24,504	24.8	
Audiologist	$19,884	$22,944	15.3	vs. 10.9% increase in military pay
Physician Assistant	$21,744	$24,852	14.3	

Table 5
Mean Maximum Pay[1]

Specialty	1984	1988	% Increase	
Pharmacist	$31,632	$40,476	27.9	
Physical Therapist	$24,828	$33,330	34.2	
Audiologist	$24,924	$31,416	27.0	vs. 9.9% increase in military pay
Physician Assistant	$27,464	$34,212	24.6	

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[1] Source of civilian pay data is from University of Texas Medical Branch at Galveston surveys conducted at hospitals and academic institutions. **Data do not include salaries of specialists in private practice which are often considerably higher.**

Figure 3 depicts the change in entry level pay for military and civilian dentists since 1980.

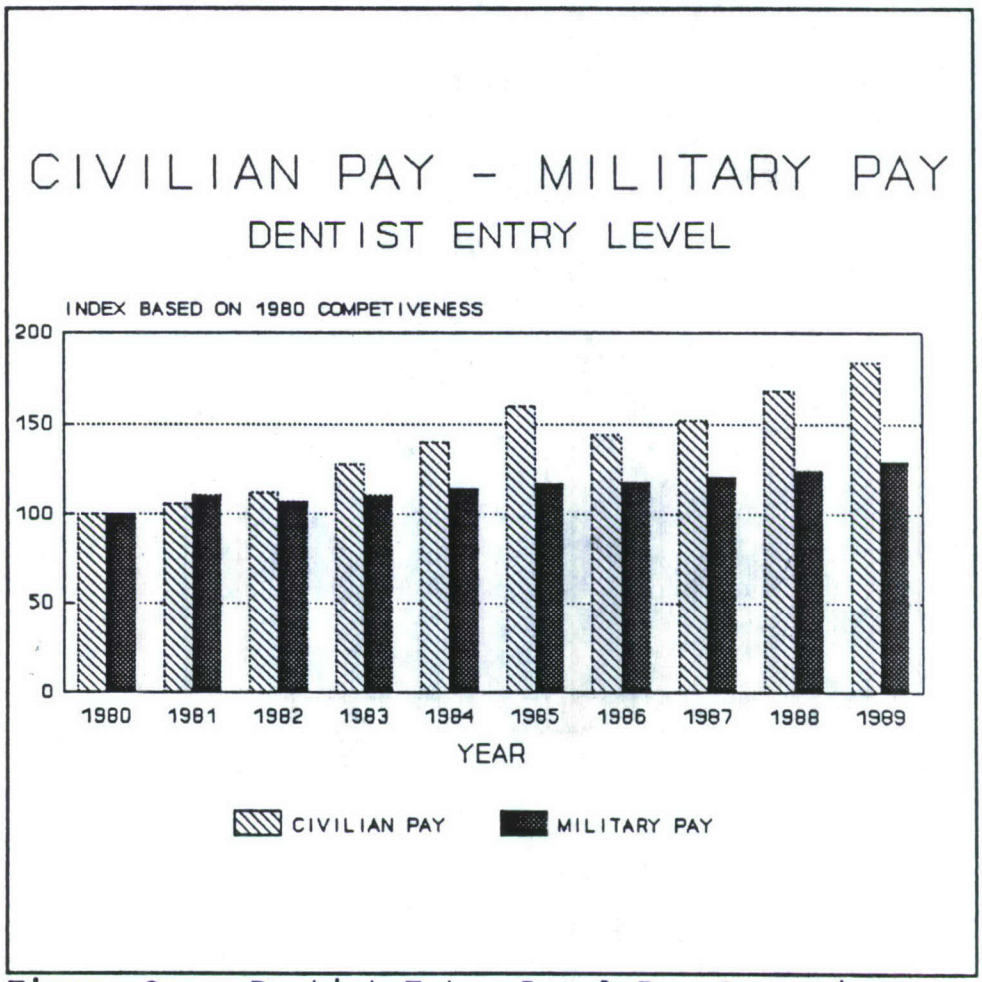


Figure 3: Dentist Entry Level Pay Comparison

Figure 4 shows the difference between mean optometrist's net income and miliary pay (RMC) in 1988.

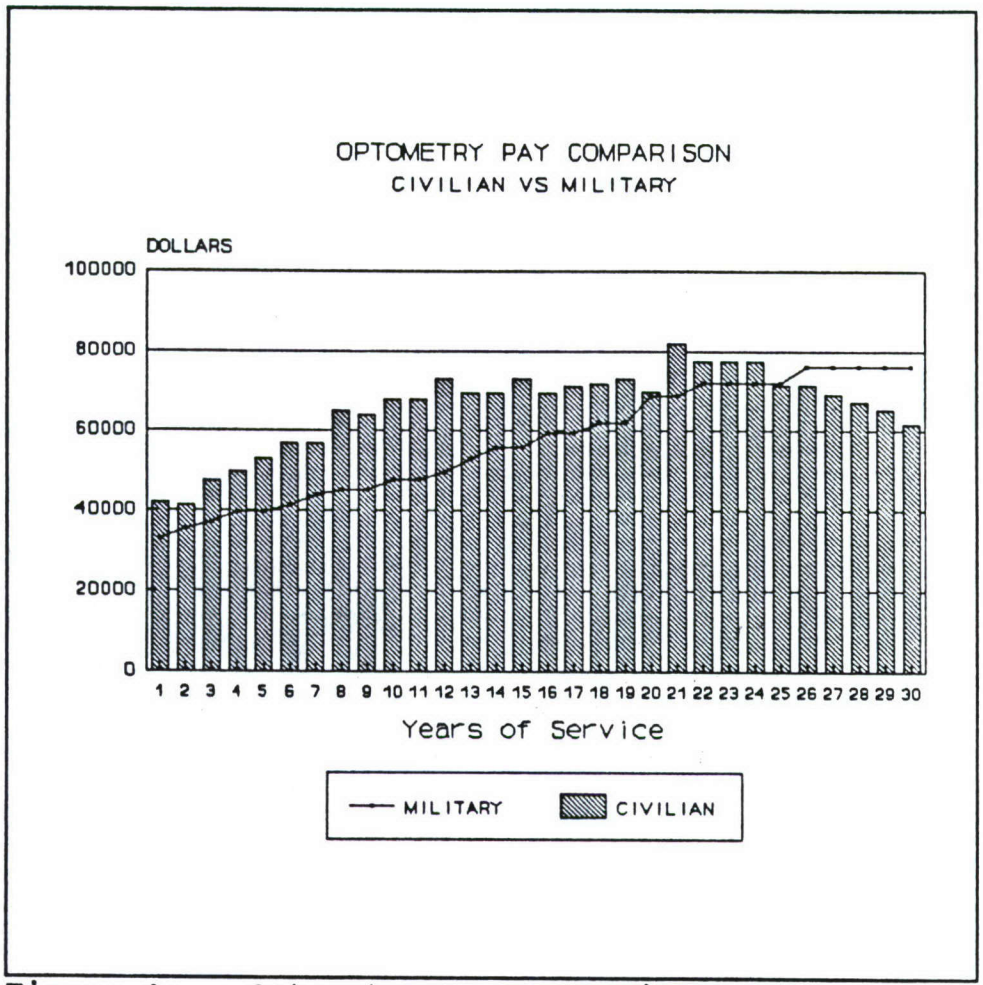


Figure 4: Optometry Pay Comparison

As shown by the previous graphs and tables, civilian pay is not only increasing at a faster rate than military pay, but the starting salaries and the salaries for experienced providers are now also higher than military pay in several health care specialties. Clearly, the previous advantage and competitiveness of military compensation for these specialists is eroding. This fact is already affecting our ability to compete for required health care providers in several disciplines, and the prognosis is negative for any improvement near term.

Military Compensation System

The military compensation system has evolved as an integral part of the military manpower management system. Its basic purpose is to support the combat arms, and since most military skills are not directly comparable to those in the civilian sector, the compensation system is designed to bring in untrained manpower at relatively low pay. Additionally, the incentives of military service provide on-the-job training to instill military specific skills, develop an adequate number of experienced managers and leaders, and then maintain the youth and vigor of the force by providing an incentive to leave (retirement).

In general form, the system does not exactly fit the needs of all communities within each Service. Accordingly, the compensation system has undergone evolutionary changes to meet these needs. For example, the Department pays special allowances for educational programs; accession and retention bonuses to officers and enlisted personnel; and career incentive pays to aviators, submariners and physicians. These programs are designed to supplement basic compensation in order to attract or retain specific groups in separate Services.

There are many reasons why the current military compensation system may not properly fit the needs of all military health care communities:

- o With the exception of unique military skills, health care providers are often fully trained in the required cognitive skills of their profession upon entering the Service.

- o Cognitive skills are enhanced by age and experience, rather than diminished, as is most often the case with combat-oriented physical skills.

- o Skills are directly transferrable and increasingly sought after in the civilian environment.

- o Changes in civilian pay are making military pay progressively less competitive in many specialties.

- o Specialties are having difficulty recruiting and retaining trained specialists past initial obligation. For example, the dental corps has not met its accession goals since 1985; Army and Navy Optometry have not met accession goals since 1984.

CONCLUSION

This report deals with 13 different specialties or communities within the military health care system. Each specialty often has unique and changing requirements which make it difficult to deal with the question of adequate compensation for each community. Adequate numbers of all health care professionals are required to support

the Military Health Service System. Shortages in one health profession directly impact the retention behavior of other highly skilled health professionals.

The disparity between military and civilian beginning pay in selected disciplines, combined with more rapid increases in all civilian pay (see Tables 4 and 5), is causing increasing problems in accessing health professionals. This trend may only become worse, making accessions more difficult. The Department believes that some action may be necessary in the near future to assist in recruiting and retaining professionals for these disciplines. An accession bonus, targeted to disciplines experiencing extreme difficulty in recruiting, would allow the Department the ability to apply a powerful tool to turn around significant problems that quickly emerge. Accession bonus authority, with amounts not to exceed $5,000 a year, could enable the Department to increase accessions in disciplines unable to meet recruiting goals.

The Department will maintain a close watch on the health care disciplines and communicate observations of further significant deterioration within them, making necessary recommendations at that time.

Endnotes

1. U.S. Department of Health & Human Services, Sixth Report to the President & Congress on the Status of Health Personnel in the United States, (Washington, DC: June 1988), pp 2-1 - 2-2.

2. U.S. Department of Health & Human Services, Report to Congress on the Study of the Role of Allied Health Personnel in Health Care Delivery, (Washington, DC: xxx 1987), ch.3, p. 3.

3. AH Report to Congress

4. Ibid. p. 11.

5. Ibid. p. 2-6 - 2-7.

6. Ibid. p.2-3.

7. Department of Defense, Health Professional Special Pays Study Group, Report to Congress on Armed Forces Health Professionals Special Pays, December 1988, pp.4-14 - 4-15.

8. Ibid. p. 1-4.

APPENDIX A

DENTISTRY

EXECUTIVE SUMMARY

This report deals with requirements for dentists, an analysis of the current force structure vs the ideal force, an assessment of the existing compensation system, a discussion of the present and future supply of dentists, and legislative recommendations to better attract and retain dentists.

A critical concern is how the dental force is shaped to achieve the desired distribution of experience and proficiency. An examination of the current force profile shows a maldistribution of manpower, compared to the ideal, particularly with respect to insufficient manpower in the early years of service. It appears that dentists may be forsaking the military for civilian practice or civilian residencies, possibly leaving insufficient members to adequately man the force. At the end of Fiscal Year 1988, the dental force had a deficit of 76 dentists. An ideal force profile includes a more experienced dental force to provide adequate dental supervision, guidance and leadership in dental commands and facilities in both the peace and war-time scenarios. In addition, highly trained faculty members and mentors for graduate dental education programs are essential to train adequate numbers of specialists for the dental corps.

To achieve this force profile, two things are necessary: (1) increased accessions and (2) stable retention. If efforts to increase accessions are not effective, then an increase in retention is required. Retention of experienced dentists is desired because of the requirement for experienced dentists and the large investment in both time and money to adequately train specialists (for example, four years of dental school and two to four years of residency or fellowship training).

The ability of the military to attract graduating dental students has been on the decline in recent years, and the number of dental school graduates has been dropping since 1983. First year enrollment is now at a 20-year low. In 1985, 543 dentists entered the military; in 1988, only 310 entered. The reduction of dentists entering the Service is partly due to decreased goals set as a result of reduced end-strength, and also by the fact that the Department has not met published recruiting goals since 1985. An American Dental Association survey of 1988 senior dental students indicated that only 8.4 percent are considering government service, a significant decrease from 1978 (19.7 percent).

The recent Department of Defense Health Professionals Special Pay Survey (1988) showed that dentists were dissatisfied with current pay levels. Over 63 percent of the dentists responding felt that the present compensation level was inadequate to access or retain dentists. This attitude, coupled with increased pays in the civilian sector, has led to decreased retention and increased problems with accessions. By contrast, the results of the 1985 Department of Defense Survey of Dental Officers indicated a dissatisfaction level of 33 percent.

In the past, when faced with a deterioration of the force profile, increasing compensation has improved the military's ability to attract and retain dentists. In 1980, increased special pay for military dentists was followed by increased retention for several years. The numbers of officers, presently on active duty with 9 to 12 years of service, are evidence of that improvement. However, a large military/civilian pay disparity which has developed since 1986 appears now to threaten the gains of the 1980 special pays. The 1986 Defense Authorization Act authorized categories of special pays similar to medical officers, with the exception of Incentive Special Pay (ISP). The Act did not increase compensation over the 1980 level for most officers, and the total cost was approximately the same as the 1980 level. The Act also did not compensate for the loss of dental school longevity pay credit which was eliminated with the enactment of DOPMA.

Proposed long term dental pay modifications consist of two elements:

- o Modification of entry level Variable Special Pay (VSP) to serve as an inducement for graduating dentists to enter military service. This proposal is designed to overcome recent problems and the anticipated greater recruiting difficulties.

- o Initiation of additional special pay multi-year contracts to enhance retention.

INTRODUCTION

Role of Military Dentistry

The Military Health Services System (MHSS) is an important support activity of the Armed Forces. It does not perform a combat mission, but rather, it enhances the ability of the combat arms to effectively perform their mission by ensuring the dental health of the troops and their expeditious return to combat duties. Indeed, without an effective military dental care system, casualties could quickly destroy the stability of combat forces in the field. In Vietnam, approximately 12 percent of the non-combat casualties were dental related. Additionally, 14 to 17 percent of all combat injuries were maxillo-facial in nature.

Historically, military dentistry was established to provide care to members of the Armed Forces on active duty. Care for active duty members is comprehensive, guaranteed, free, and offered on demand (10 U.S.C. §1074).

Quality Assurance in Patient Care

The maintenance of high patient care standards is important for recipients of dental care in military treatment facilities. Military dentistry must remain abreast of recent changes and technical developments. Further, military dental treatment facilities and various training programs require a substantial number of highly qualified health care professionals. The ability to access and retain these health professionals requires the use of special management techniques and monetary incentives not required in most other military occupations.

Availability of Dentists

In the late 1960s, Congress, acting on reports of severe dental manpower shortages, started Federal Capitation programs to boost dental school enrollments. This program was quite effective. Dental school enrollments soared 50 percent from 1968 to 1978. Subsequently, everyone agreed that there was an overproduction, and the Federal Capitation programs were halted. Meanwhile, applications to dental schools dropped 30 percent. Most dental schools have since reduced class size, and three dental schools have closed. First year enrollment is at the lowest point since 1967. The inclination of graduating dentists to enter government service has decreased from 19.7 percent of dentists graduating in 1978 to 8.4 percent of those graduating in 1988. The demographics of dental school enrollment are also changing with over one-third of the students being female.

Development of Medical and Dental Special Pays

Since 1947, special pay has been authorized for medical and dental officers and various other health professionals. Congress authorized, in the Army-Navy-Public Health Officer Procurement Act of 1947, a $100 per month special pay for Regular commissioned medical and dental officers and for Reserve medical and dental officers on active duty for one year or more. Authorities for special pay were temporary until 1980, but they had in common the underlying need to continually authorize programs that would attract and retain on active duty the number of health professionals required by the Armed Forces.

In the Defense Authorization Act of 1986, Congress permanently authorized special pays for dental officers and revised the special pay program. The current special pay program for dental officers includes the following three elements:

- Variable Special Pay (VSP). Variable Special Pay is an entitlement for all dental officers ranging from $1,200 a year for an entry level dentist to $6,000 per year. VSP is paid monthly and is designed to attract and retain the appropriate numbers of qualified dentists by reducing the disparity between military and civilian income.

- Additional Special Pay (ASP). This is an annual payment between $6,000 and $10,000 for dentists with over three years of creditable active dental service who agree to remain on active duty for one year. Dentists who are engaged in an initial residency training are ineligible for ASP. It is an entitlement for all eligible career dental officers. The purpose of ASP is to induce dental officers to remain on active duty.

- Board Certified Pay (BCP). This monthly pay rewards military dentists who are board certified by an approved dental specialty board. Amounts vary with years of creditable service and range from $2,000 to $4,000 a year. Board Certified Pay is an entitlement to encourage dental officers to achieve specialty certification.

Figure A-1 shows current military pay for dentists in 1989. Total pay for dental officers includes Regular Military Compensation (RMC) and dental special pays. Regular Military Compensation consists of basic pay, basic allowance for subsistence, basic allowance for quarters, variable housing allowance, and an imputed tax advantage. Figure A-1 shows that special pays constitute a significant percentage of a dentist's total income.

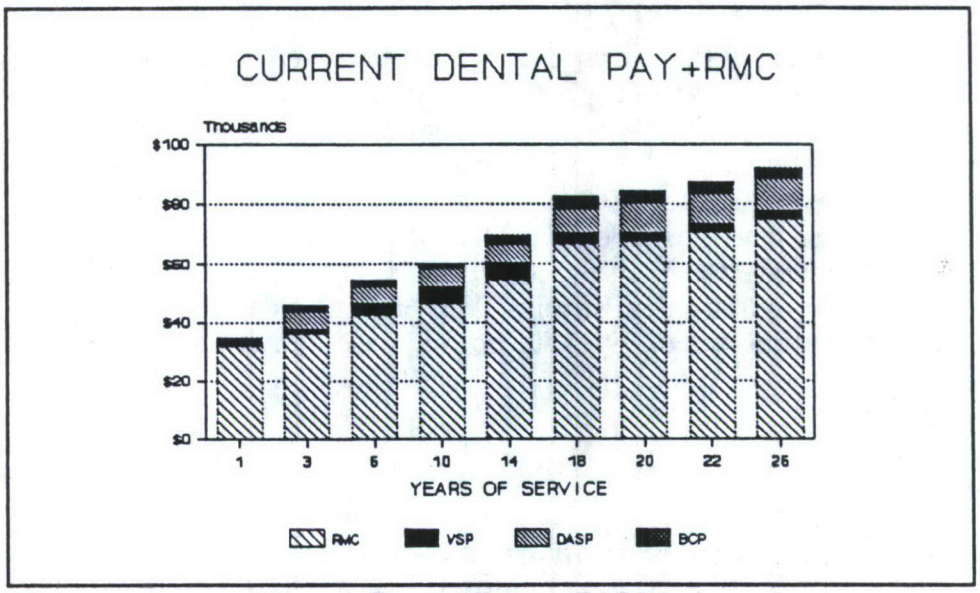


Figure A-1: Current Dental Pay + RMC

Note: The RMC graphed represents eligibility for military pay and allowances based on 4 years of constructive service credit for grade and the number of years of active service. Only board certified specialists receive BCP.

In 1980, Congress restricted the use of constructive service credit to calculating rank, seniority, and promotion. It could no longer be used in calculations of longevity for pay or retired pay. Congress continued to acknowledge the need for special incentives, but it was their view that the differentials in pay should be largely incorporated in the special pay packages designed for that purpose. This action effectively reduced the pay of entry level dentists after September 1981 and reduced the total career pay of these dental officers compared to those entering active duty prior to September 1981.

Development of a Pay Gap

The large increase in regular military compensation in 1981 placed the military dentist income on a competitive level with the civilian marketplace. Although absolute comparability of pay was not achieved, the increases in military dentist income, along with other positive factors in military life, created an overall competitive condition as evidenced by significant improvements in the recruitment and retention of dental officers. The establishment of the Armed Forces Health Professions Scholarship Program (AFHPSP) in the early 1970s, the enhanced prestige of military life and public

pronouncements of Administration support, further contributed to the increase in dental officer accession and retention.

However, since 1981, several events have occurred which decrease the attractiveness of a military dental practice: (1) the loss of AFHPSP for dental students deprived recruiters of a valuable recruiting tool and (2) the loss of credit for pay purposes for dental school without additional compensation in special pays which reduced the pay level for dentists entering active duty after September 1981. Significantly greater increases in civilian dentist pay compared to increases in military dentist pay and increased civilian practice opportunities, has eroded the competitive position enjoyed by military dentistry in 1980. The new dental special pays legislated by the DoD Authorization Act of 1986 did not increase dental special pays which had been set in 1980.

Summary

Unlike other military occupations, the MHSS has two distinct missions--the care of eligible beneficiaries during peace and during war. Particularly challenging to the DoD is manning the military with the required numbers of dentists to meet both the readiness and peacetime benefit missions. The Congress and DoD have long recognized the need to use pay as well as nonpecuniary incentives in order to properly manage the dental community. The current 1986 special pay program for dental officers approximated the 1980 level of special pays. A sound program of dental pays enables the military to attract and retain the highly qualified dental officers needed to accomplish the dental missions required of the MHSS. Competitiveness must be maintained. Adequate retention and accessions must be achieved. If accessions and retention fall below acceptable levels, the ability to successfully perform both MHSS missions will be jeopardized.

DENTAL REQUIREMENTS

Overview

The determination of active duty requirements continues to be a challenging and controversial process. A good deal of the controversy lies beyond the scope of this report.

The last decade has seen a significant change in the nature of dental disease with a decrease in dental caries. However, according to the report to Congress on the "The Status of Health Personnel in the United States", June 1988, the need for dental treatment will continue. Significant technological breakthroughs have opened entirely new realms of treatment such as implants for prosthodontic patients or for reconstruction of facial injuries. The need for military dentists will continue at, or above, current levels.

Table A-1 presents the Fiscal Year 1988 authorized level in addition to the actual inventory. A shortfall of 76 officers existed at the end of FY88.

Table A-1
Military Department Active Component Dentists Levels
FY88

	Authorized	Actual
Army	1682	1640
Navy	1702	1679
Air Force	1519	1508
Total	4903	4827

Source: 1. DoD Health Manpower Statistics FY 88, Format 1, Format 4

Studies being conducted by the Joint Health Care Manpower Standards for Dental Services, OASD (HA) project a significant increase in requirements for dental health care providers. With revised requirements authorized, end-strength is expected to remain at or above current levels.

DENTAL FORCE MANAGEMENT

This section describes methods used to manage the size and shape of the dental force and presents an idealized force structure profile for military dentists.

Ideal Force

Based on authorizations, wartime needs and work load requirements, the Department of Defense can effectively employ approximately 5,000 dentists in the active force. This constitutes a target number of dentists required to continue to provide quality dental care for active duty personnel and eligible beneficiaries.

The nature of the mission of military dentistry, the overall military compensation system, and the methods employed for managing military personnel all dictate that the Department distribute dentists in a force profile, that is, the required number of personnel throughout individual years of service.

The ideal dental force profile has a high demand for trained, experienced dentists. With limited opportunity to recruit at the mid-career or senior-career levels, the military services must "grow" experienced dentists from personnel accessed in the early years. These large early-year groups are necessary to compensate for those

dentists who leave prematurely, either at their own desire or at the desire of the Service. The ideal dental officer force profile also reflects the military requirement for physical fitness which sets military dentistry apart from civilian dental practice. The balance of accession and retention is important to insure sufficient numbers of dentists remain beyond initial obligation. Experienced dentists are required to sustain dental residency programs and to provide efficient dental corps operation.

Figure A-2 shows the DOD 1988 steady-state ideal dental officer force profile. The total number of dentists is approximately 5,000 with about 416 accessions per year. This distribution supports large general dental officer requirements in the early years. The profile shows a significant decline at the first career decision point following initial obligation. Those officers remaining on active duty will become candidates for specialty training and sustain a career force that requires many specialists. This profile also assumes that many military trained specialists do not choose military careers, and other dentists choose to leave the service to pursue a civilian residency or private practice. Figure A-2 compares actual FY88 inventory to the ideal force structure.

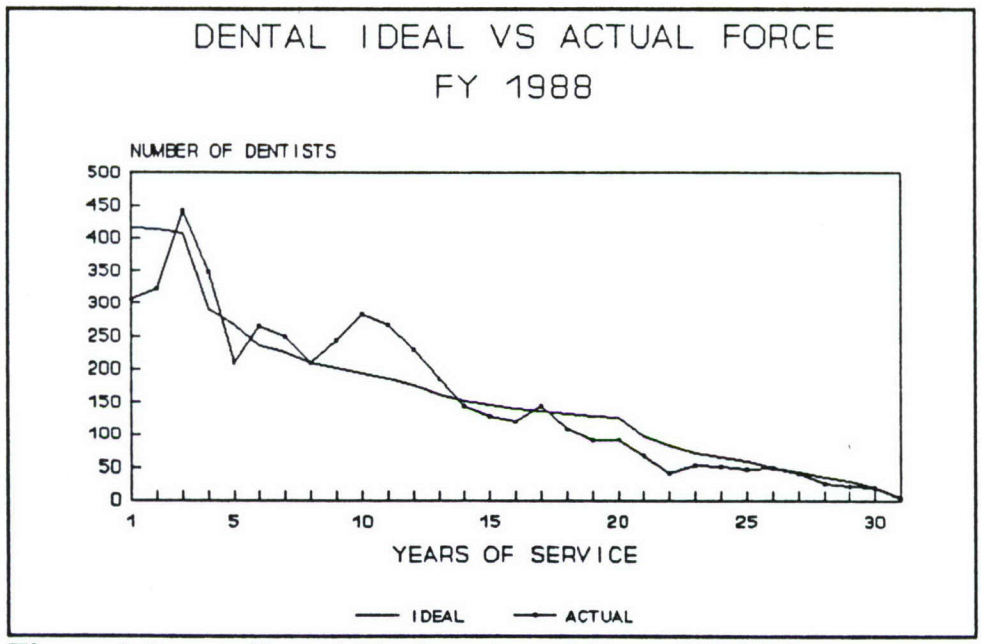


Figure A-2: Dental Ideal vs. Actual Force FY 1988

There is also a significant need for experienced dentists beyond 20 years of service. This demand is generated by several factors:

- The need to provide sufficient numbers of mature, experienced officers to provide senior leadership positions both in peacetime and at mobilization.

- The cost effectiveness of maintaining experienced dentists in the active force whenever practical, rather than replacing them with newly graduated dentists who lack military training and clinical experience.

- The need to provide qualified academic staff for the Graduate Dental Education programs which are the core resource for providing specialty trained dentists for the military departments. To sustain high quality residency and fellowship programs at the level necessary to attract young dentists and comply with the rigid requirements of the American Dental Association Education and Accreditation Council on Graduate Education.

Actual Force

The 1986 Dental Officer Pay Program established a system of special pays and bonuses which approximates the 1980 levels of special pay. Figure A-2 shows end FY88 actual dental officer inventory versus the FY88 ideal steady-state force structure. Although total inventory approached the ideal (76 dentist deficit or 1.6 percent of authorized strength), there is a shortage of experienced dentists beyond the seventeenth year of service. An even greater shortage is developing in recent accession year groups. Neither trend can be allowed to develop further. Incentives must be adopted to attract young dental officers and to ensure retention of our experienced dentists.

Although there are many factors that affect the force profile and retention, compensation is a major force that determines proper force structure. The system should be designed to provide pay competitive with similar civilian occupations and also provide incentives at career decision points.

RETENTION

This section analyzes retention and continuation statistics in order to determine retention trends for military dentists in recent years. It also investigates the relationship between retention and pay.

Military Dentist Continuation

Continuation rate is defined as the percentage of dentists on active duty at the start of a fiscal year who remain on active duty through the end of that fiscal year. Both

retention and continuation are used synonymously. Our analysis identified a correlation between dental officer losses and pay which demonstrated that retention is sensitive to pay. Table A-2 illustrates, with two post-DOPMA year groups, the decrease in the predicted retention behavior experience between 1985 and 1988.

Table A-2

Predicted Retention Behavior of the Fiscal Year 1982-1983 Accession Cohort (Using Fiscal Year 1985 and 1988 Retention Experience)

	Predicted Average Years of Service	Predicted Percent staying at least 10 yrs	15 yrs	20 yrs
FY 85 Experience	12.37	44.3	38.7	35.9
FY 88 Experience	10.77	38.4	34.4	29.2

Source: OASD(Health Affairs)

The changes in retention behavior between 1985 and 1988 revised the estimate of the average length of service for the Fiscal Years 1982 - 1983 accession cohort by a decrease of 1.6 years (12.37 to 10.77 average years of service). This will have a significant impact on accession goals if continued and will mean that to maintain the same dentist end strength, the annual accession goal (set in 1985) would also need to increase by 13 percent.

Initial Retention

Because dentists have varying obligations, years of service and specialties, aggregate data do not provide a sensitive measure of dentist's behavior. At the end of initial obligation, dentists make their first retention decision. In Fiscal Year 1988, 51.7 percent of dentists who entered active duty in 1982 and 1983 remained past four years of service and 46.2 percent past five years of service. This was a decrease for all Services and represents a continuation of a three-year negative Department-wide trend. Retention after initial obligation is a sensitive measure of career intent. Many dentists, however, continue past their initial obligation to pursue residency training. This is a common career path for the general practitioners wishing to specialize. The cost-effectiveness of training dentists after showing career potential has historically paid dividends both in the quality of the residents and their subsequent retention. The recent decrease in retention rates demonstrates a decreased willingness on the part of young dentists to compete for military sponsored residencies. The Services must remain competitive both in quality of training programs and compensation during and following training to ensure sufficient specialists for the future.

Retention Analysis

The need for a mature service profile with experienced specialists is of fundamental importance to the basic tenets of dental practice and its positive impact on retention. A dentist does not become more proficient through textbook study, but through hands-on experience with differing types and complexities of patient cases. The dentist's ability to diagnose correlates with the variety of illnesses and symptoms encountered during his/her career. This experience and practical knowledge is crucial to the practice of quality dentistry.

The recent trends in retention suggest a developing shortage of military dentists in the next several years. The Services have already demonstrated shortages by not meeting end strength the last four years. Action taken now can prevent a crisis. Delay could cost much more than the amount recommended for program changes.

ACCESSIONS

The remainder of this section examines factors which are contributing to recent problems in recruiting adequate numbers of dentists.

The Problem

Although the budgeted dental end strength has decreased by 200 since 1985, the Department has been unable to meet the total dental accession goal (Figure A-3). At the end of Fiscal Year 1988 there was a shortage of 76 dental officers versus the budgeted end strength. Working within stabilized end strengths and recent decreased retention rates, 456 dentists need to be accessed in 1989, an increase of 150 over 1988. Without new recruiting incentives this goal cannot be met. Pay disparity is a major factor in the inability to attract graduating dentists, but other recent developments have also compounded the problem. Decreasing numbers of graduating dentists, along with changing demographics and the propensity of those graduates to enter military service, negatively impact on the services' ability to attract new dentists.

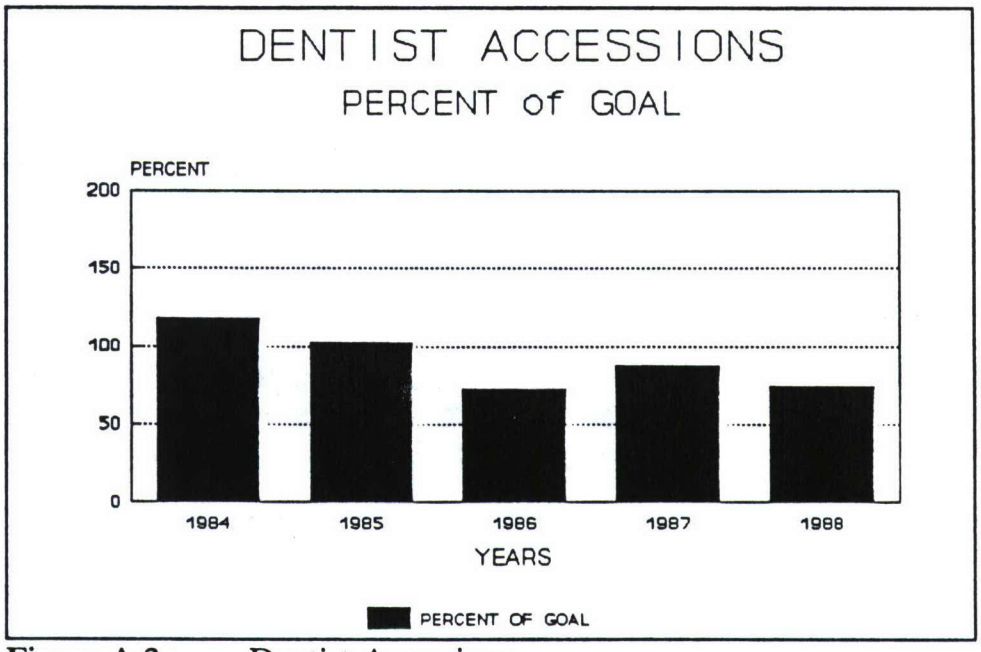


Figure A-3: Dentist Accessions
Percent of Goal

Source: DoD Health Manpower Statistics FY84-FY88

The number of applicants to dental schools has dramatically decreased. The number of applicants is at its lowest point since 1961. The ratio of applicants to first year enrollees has never been lower. The report to Congress on "The Status of Health Personnel in the United States", June 1988, predicted that annual decreases would slow down in 1988 to 1.7 percent. The rate actually continued at a 4 percent decline and does not show signs of leveling. If this trend continues, first year enrollment will be less than 3,600 by 1993.

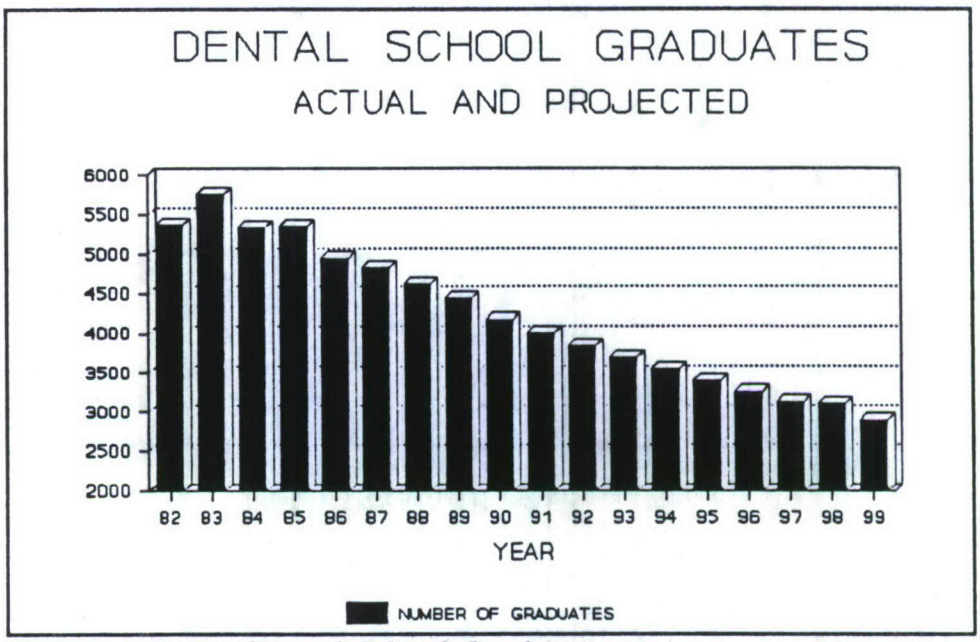


Figure A-4: Dental School Graduates
Actual and Projected

The number of graduating dentists can accurately be predicted for the next four years. The average attrition rate during dental school has remained constant at 8 to 9 percent of the entering class. Figure A-4 shows that from the high point of 5,756 graduates in 1983, to the predicted number of 3,850 in 1992, the number of graduates has dropped 33 percent. If the decreasing enrollment trend continues, the graduating class will be below 3,000 dentists by the year 2,000. This projected decrease in graduating dentists is particularly significant to the Services. Some of the largest active duty year groups will be reaching initial retirement eligibility at the time of the lowest availability of graduating dentists.

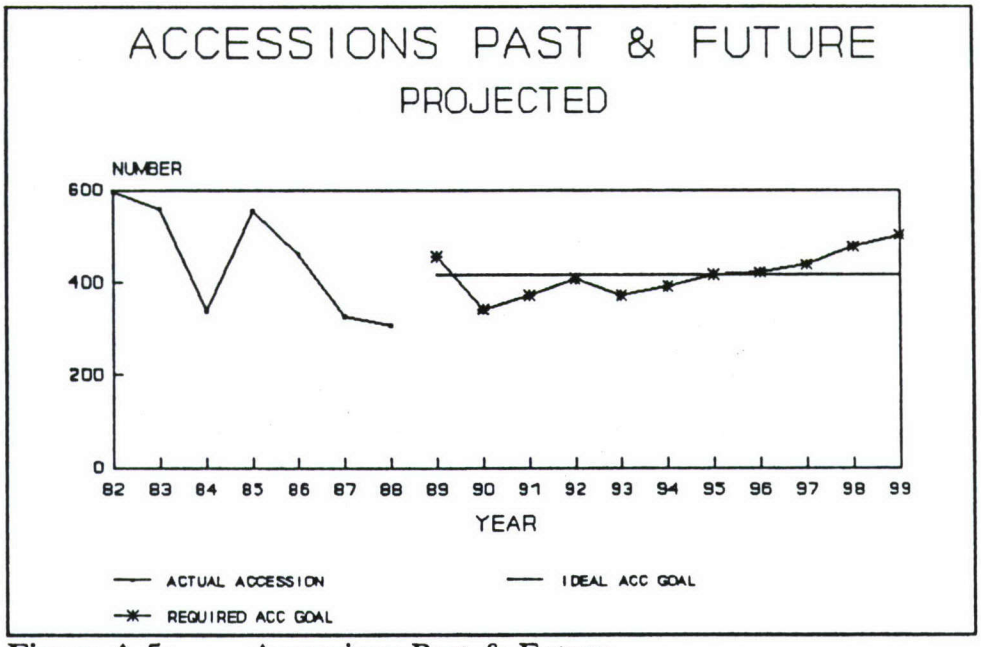


Figure A-5: Accessions Past & Future Projected

Figure A-5 graphically depicts the actual number of accessions from 1982 until 1988. Also displayed are the number of accessions needed to meet authorizations. The peak in 1989 represents the "catch-up" year in which the shortfall in accessions of previous years should be overcome. The numbers of projected accessions past 1989 are equal to the anticipated losses. This prediction of losses is based on data developed by OASD (HA) using average continuation rates from the last three years. In light of what we know about the availability of graduating dentists in the 1990s, efforts must be made to both increase retention and increase the attractiveness of the military to graduating dentists.

Figure A-6 shows graphically that, with current trends in dental school enrollment, the Services will be competing for an increasing share of graduating dentists to fulfill its manpower requirements.

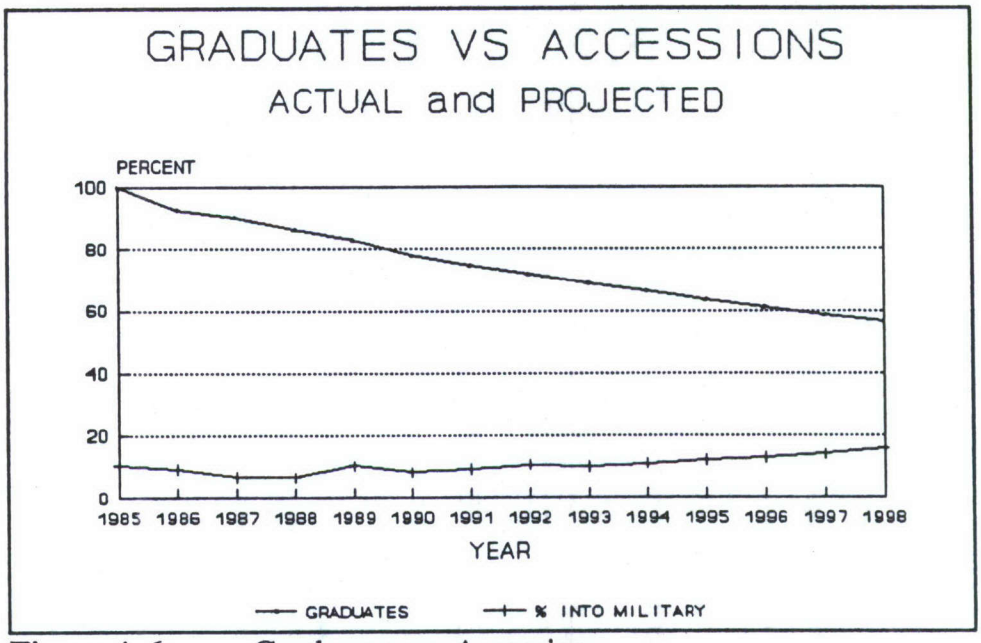


Figure A-6: Graduates vs. Accessions
Actual and Projected

In addition to decreased dental school enrollment, changes in dental school student demographics have also occurred. The segment of the dental profession which has experienced the most dramatic growth is the female segment. In twenty years the number of females have climbed from 1 percent of entering freshman to over 33 percent in 1988. It is predicted that, by the year 2000, women will comprise 40 percent of dental school enrollment. (Figure A-7)

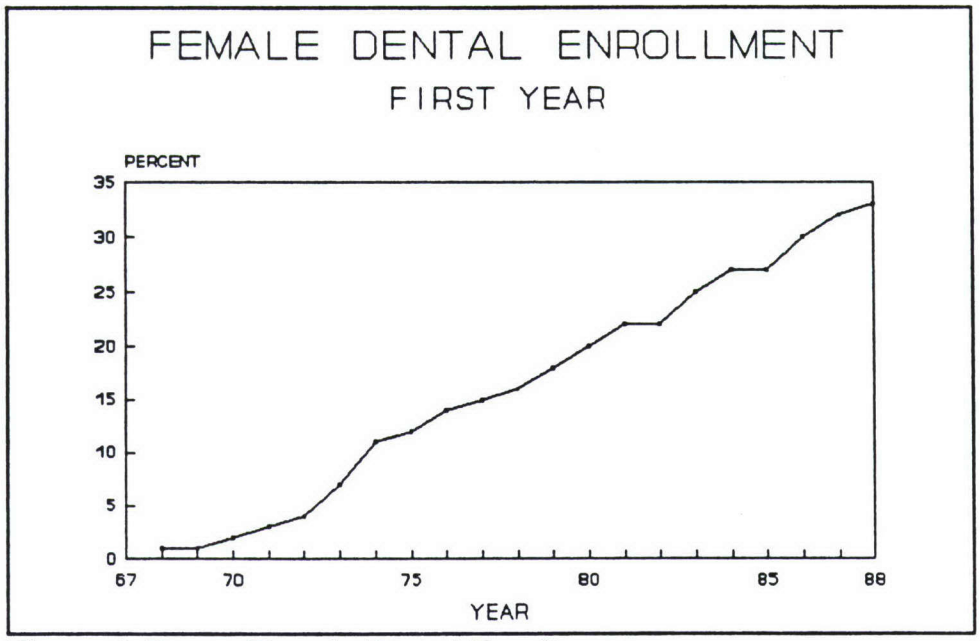


Figure A-7: Female Dental Enrollment
First Year

Although dentists are not recruited based on gender and many women do enter the military, they have not done so in proportion to their percent enrollment in dental school.

The dental profession, like the medical profession, is becoming increasingly specialized. The "Survey of Dental Seniors" conducted by the American Association of Dental Schools reported that 31 percent of seniors in 1988 planned to enter a post graduate training program upon graduation. In 1979 only 17 percent entered immediately into a training program. This further reduces the number of graduating dentists available to the military.

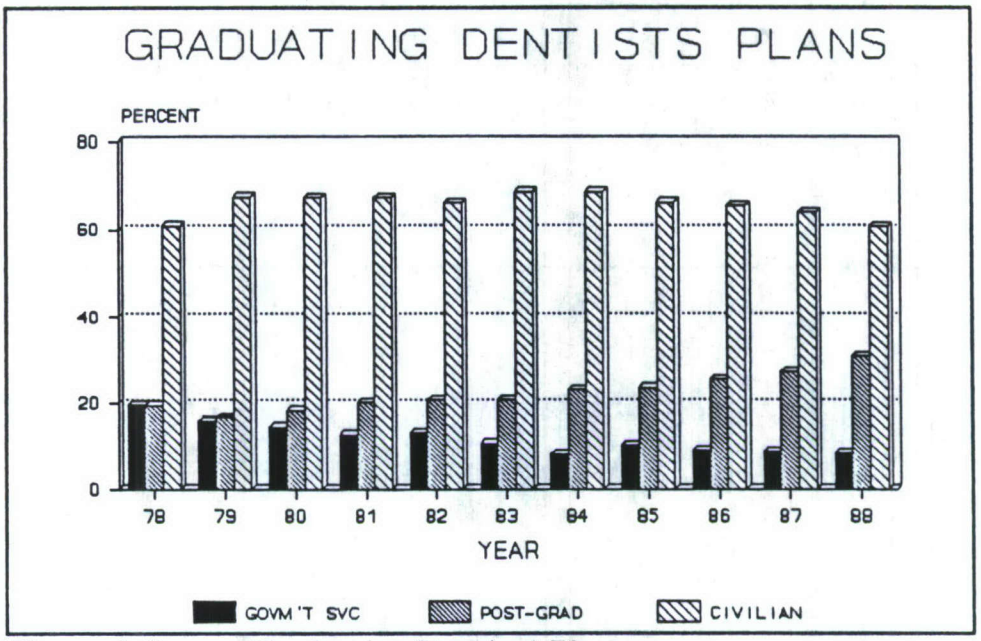


Figure A-8: Graduating Dentists' Plans

The propensity of new dentists to enter government service has also declined. In 1978, 19.7 percent of graduating seniors planned to entered government service, in 1988 only 8.4 percent. Figure A-8 illustrates the change in immediate graduation plans of dental school seniors.

A dental degree is expensive to obtain. Financial burdens secondary to education costs are at an all-time high. Graduates of private dental institutions have an average debt over $55,000. More money has to be paid at the entry level to attract dental students with large education debts. Figure A-9 shows the recent increases in this debt.

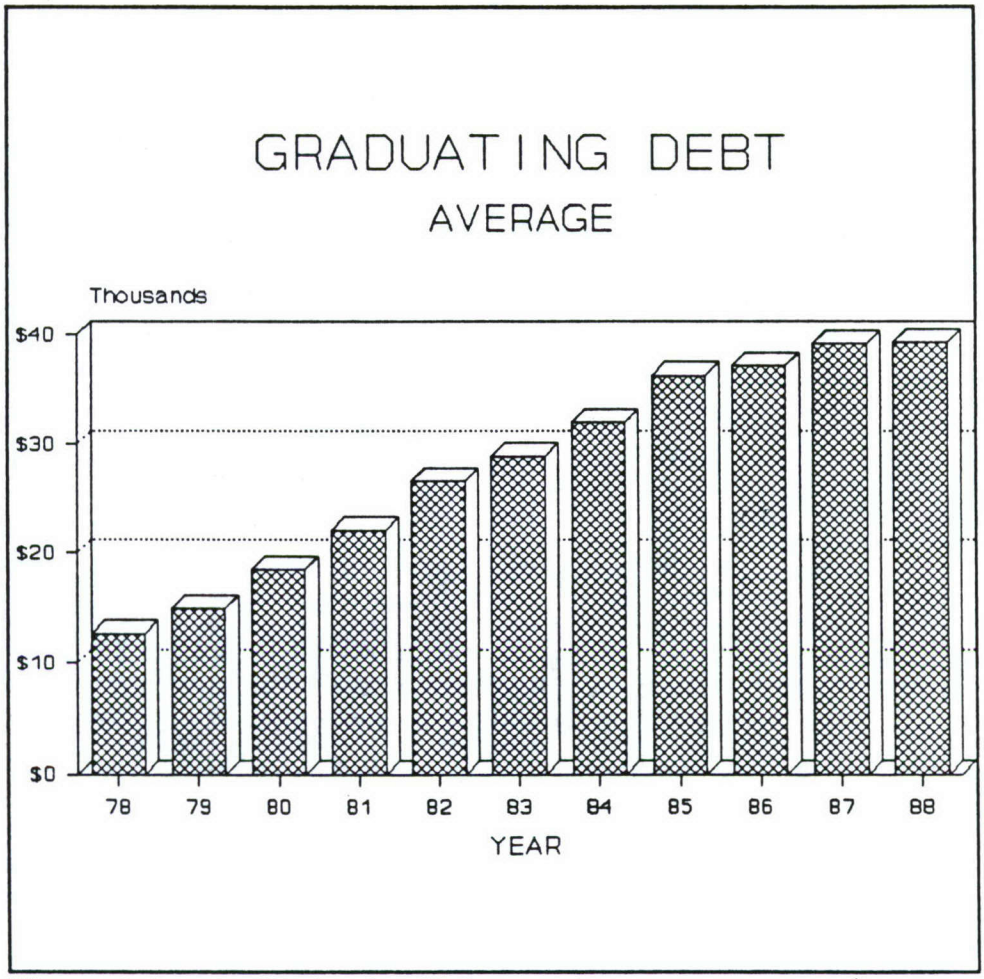


Figure A-9: Graduating Debt Average

This chapter has dealt with both retention problems and accession problems. These two subjects are very closely related in that if one drops, the other has to compensate in order to maintain the size of the force. The potential problem facing all the Services is a decrease in both accessions and retention; currently this is a major problem with the Army. With decreasing dental school enrollments, more incentives must be in place to attract graduating dentists to military service.

COMPENSATION

The Problem

This section deals with the shift in military compensation which has decreased its competitiveness with the civilian sector and decreased attractiveness of a career in military dentistry.

Congress has long recognized that, in order to attract and retain sufficient dental officers, the military compensation system must address the disparity between military and civilian dentist's income. This has been necessary not only to overcome military-civilian pay differences, but also to compensate for the inherent dissatisfiers associated with military life, commonly called the "X-factor."

Because it was felt that recruitment of dental officers was not a problem, dental participation in the AFHPSP program was ended. In 1986 Congress created new categories of special pay for dental officers to mirror those for medical officers, but they did not significantly increase the payment amounts over those set in 1980.

Table A-3 shows the current dental special pays levels.

Table A-3
Dental Special Pays

Years of Creditable Service	VSP	ASP	BCP	Total
<3	$1,200	$ 0	$2,000	3,200
3-6	2,000	6,000	2,000	10,000
6-10	4,000	6,000	2,000	12,000
10-12	6,000	6,000	2,000	14,000
12-14	6,000	6,000	3,000	15,000
14-18	4,000	8,000	4,000	16,000
>18	3,000	10,000	4,000	17,000
general officer	1,000	10,000	4,000	15,000

The Issue

Dental officer special pay, with the exception of structure, has not significantly increased since 1980. Inflation, on the other hand, as measured by the Consumer Price Index for urban wage earners and clerical workers (CPI-W), rose 35 percent from 1980 to 1987. During this same period, civilian dentists net income rose 50 percent. Military income increased 36 percent.

An effect of DOPMA was a 23 percent reduction in entry level pay (1982, O-3 under 2 years versus O-3 over 4 years) for entry level dentists due to loss of creditable service for pay purposes previously given for dental school. Figure A-10 illustrates the impact of DOPMA on entry level dentists pay and relates changes in military pay to that in the civilian sector. The effect of this was not immediate for accessions. Recruiters were warned in advance that the change in pay structure was coming, and a large number of dental students were commissioned early to avoid this loss in pay.

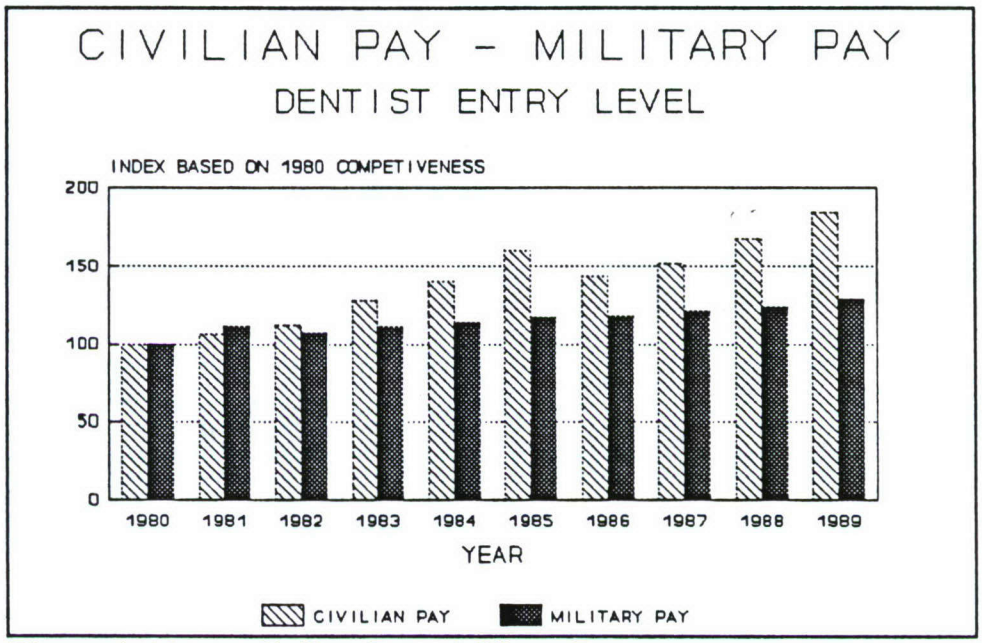


Figure A-10: Civilian Pay - Military Pay
Dentist Entry Level

Note: This figure is drawn on the assumption that full competition was achieved in 1980. The point of competition at a lower than comparable level is a result of advantages of military dentistry (such as retirement benefit and lack of malpractice insurance expense).

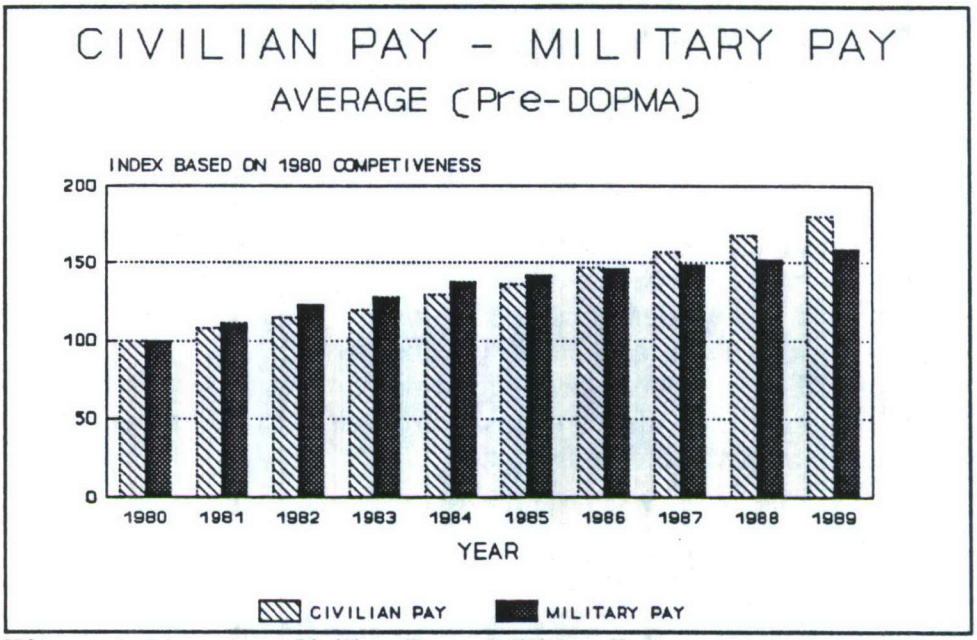


Figure A-11: Civilian Pay - Military Pay Average (Pre-DOPMA)

Source: American Dental Association 1987 Survey of Dental Practice (Civilian dental pay is average for independent dentists. Civilian data has been projected to 1989 using a 7 percent annual increase.)

Figure A-11 illustrates that military dental service (pre-DOPMA) has, until recent years, remained competitive with the civilian sector. The large raises in military compensation in 1980 and 1981 were the main reason for this. Since 1986 the military/civilian pay disparity widened.

The lure of readily attainable, significantly higher pay is an attractive incentive for military dentists to leave the Service at the completion of their obligated service. Many dentists also leave the military to pursue specialty training in the civilian sector.

While the pay gap has been widening, increased opportunities created by the expansion of dental practice opportunities, along with a greater desire for specialty training, have exerted additional pressure on dental officers to opt for a career in civilian dentistry. The increase of individuals covered by dental insurance has also greatly increased, further expanding demand for dental services in the civilian sector.

The recent Department of Defense Health Professionals Special Pay Survey (1988) showed that active duty dentists were dissatisfied with current pay levels. The results revealed that 63 percent of the dentists felt that present compensation was ineffective for accessing dentists, and 68 percent felt that current compensation was ineffective for retaining dentists. A similar survey conducted in 1985 (the Department of Defense Survey of Dental Officers) indicated a dissatisfaction level of only 33 percent.

This increased dissatisfaction has been manifested by decreased accessions and a downward revision of predicted retention behavior since 1985.

The Solution

Long-term modifications to the dental officer compensation system are recommended to ensure the Services maintain their ability to provide quality health care. In devising a revised dental compensation program, the Service dental corps looked closely at: the trends since 1980 (the last actual dental special pay increase); the effect of the 1986 Dental Special Pay legislation; current requirements and authorizations; retention trends; compensation levels for civilian dentists; and dental school enrollment trends and demographics.

Specifics of the Dental Officer Compensation Plan

The dental proposal does not "purport to provide total compensation comparable to that available to health professionals in the private sector." To attempt to accomplish this across all specialties is cost prohibitive and is not necessary to establish adequate retention rates and accessions. Rather, this proposal is a compromise that maintains the basic dental officer pay structure established in 1986 and adds enhancements that make this pay more competitive with the private sector.

Pay Concept

There are three elements in the Dental Officer Pay Plan. Element 1 maintains Additional Special Pay and Board Certified Pay at current levels. Element 2 increases Variable Special Pay (VSP) at entry level to attract new accessions. Element 3 introduces multi-year ASP contracts with increased compensation to serve as a retention inducement.

Element 1: The payment amounts and the pay structure of ASP and BCP remain unchanged.

Element 2: VSP will increase at entry level to help attract new accessions into military service. This increase helps close the pay gap between the civilian and military dentist. Table A-4 indicates the proposed changes to VSP.

Table A-4
Proposed Dental Variable Special Pay Change

Years of Creditable Service	Current VSP	Proposed VSP
<3	1,200	3,000
3-6	2,000	3,000
6-10	4,000	4,000
10-12	6,000	6,000
12-14	6,000	6,000
14-18	4,000	4,000
>18	3,000	3,000
flag officer	1,000	1,000

Element 3: Introduction of multi-year contracts as an inducement for retention. Dental officers will not be eligible to sign a multi-year contract until completion of 3 years of service. These amounts are in addition to current DASP. Table A-5 shows the proposed amounts.

Proposed DASP Multi-year Contract Additive

Years of Creditable Service	2-year	3-year	4-year
< 3	-0-	-0-	-0-
3-14	$2,000	$4,000	$6,000
14-18	$2,000	$4,000	$6,000
>18	$2,000	$4,000	$6,000

The concept of Dental Special Pay is based on the premise that to access and retain adequate numbers of dentists, we must pay our dental officers a competitive wage compared with their civilian counterparts. Since the civilian dental establishment does not exactly mirror that of the military, the choice of the most appropriate civilian reference group for pay comparison and the actual amount of pay to specialists and general practitioners is limited.

To select the best civilian dentist pay "index," the dental corps looked at pay data reported for dentists from data collected by the American Dental Association, provided

under the category of all dentists. A comparison to employed dentists would, in essence, be a comparison of military incomes to itself and not a useful comparison, considering that our "competition" is the private sector. Only 6.9 percent of private practitioners are non-owners, and most of those are working on a commission or percentage basis.

The Department believes that without a revision to dental officer compensation, the dentist shortages we are now experiencing will increase. The end result will be a serious deterioration in the Services' ability to perform their dental mission.

The costs of the proposed changes to dental special pays are listed in Table A-5.

Table A-5
FY-90 Dental Special Pay Costs

Variable Special Pay increase		$ 2.7M
Multi-year contracts 2-year	30%	$ 2.3M
Multi-year contracts 3-year	30%	$ 4.6M
Multi-year contracts 4-year	15%	$ 3.5M
FY90 Program Cost		$13.1M

APPENDIX B

VETERINARY MEDICINE

EXECUTIVE SUMMARY

This report presents the history of veterinary medicine in the Department of Defense and the evolution of the Army Veterinary Corps as the Department of Defense Executive Agent for Veterinary Services. It covers the mission and status of the Army Veterinary Corps. Military and civilian pay are compared and the currently authorized special pay for veterinary officers is addressed along with the need for incentive special pay. The report further discusses problems in managing the force which will have potential negative impact on manning the Corps in the near future. The future of veterinary medicine is discussed relative to its potential impact on military veterinary medicine.

Veterinarians are highly trained and skilled officers generally requiring eight years of training prior to becoming fully qualified. The profession spans broad and complex areas of direct patient care, disease prevention, and research. An expanding knowledge base and developments in technology have caused increasing specialization in the veterinary profession.

The role of military veterinarians is similarly broad and complex in scope. The Army Veterinary Corps has world-wide support requirements. The military is highly dependent on veterinarians trained in veterinary specialties. However, it is anticipated that an increased number of these highly trained specialists will leave the military in the near future.

Trends in veterinary medicine that may impact on the future manning of the Veterinary Corps are increased specialization, a decline in veterinary school applicants, and an increased number of female veterinarians. Although the Veterinary Corps is currently manned above authorized strength, there are spot shortages of veterinary specialists. Based on trends in civilian veterinary medicine, the Army projects that, in the near future, recruiting will become difficult and retention will decline. Aggregate shortages are projected to develop along with increased shortages in the specialty fields.

A key issue identified in this study is whether sufficient field grade authorizations have been allocated to execute the mission of the Veterinary Corps. Preliminary requirements analysis suggests that more field grade positions are needed. Furthermore,

the current veterinarian force structure, with its high proportion of field grade requirements, does not mirror a standard DOPMA force structure, thus requiring deviations from standard DOPMA management practices. A request for exemption from the DOPMA controlled grade ceiling is being evaluated by the Army staff as one means of improving retention of experienced veterinary officers.

Civilian veterinary specialists earn higher incomes than do their military counterparts with comparable experience. The special pay currently authorized for veterinary officers should be retained. Additionally, increased monetary incentives may be needed to retain senior veterinary officers and specialists in the military service.

PROFILE OF VETERINARY MEDICINE

History of Military Veterinary Medicine

The employment of veterinarians for the care and treatment of animals was first authorized by the Congress in 1848. Veterinarians were initially employed in contract status by the Artillery, Quartermaster, and Cavalry branches of the Army. Following the Spanish-American War, more soldiers died from tainted food than from Spanish bullets. The role of veterinarians in the military was expanded when Congress moved to improve the quality of rations and to protect military troops from future outbreaks of food poisoning. Beginning in 1901, the Army required the inspection of all purchased meat. Civilian graduate veterinarians were employed to perform this function. Over the next 15 years, the Army realized that civilian contract veterinarians, while sufficient to inspect meat, lacked the understanding of military logistics and the sanitation problems unique to an army on the move.

Establishment of the Corps

The Army Veterinary Corps was established by the National Defense Act of 1916. Because all Veterinary Corps officers are required to hold a Doctor of Veterinary Medicine Degree, and because the primary function of the Veterinary Corps is directly related to the health of the soldier, the Veterinary Corps was placed in the Medical Department under the direct supervision of the Surgeon General.

World War II

During World War II, the problem of supplying wholesome food to millions of American fighting men on opposite sides of the world demanded extreme diligence on the part of Veterinary Corps officers to prevent food-borne disease. The demand for rapid global delivery of large volumes of food required the creation of a centralized procurement system in which the Veterinary Corps played a major role. The enhanced combat effectiveness of American and Allied soldiers, achieved by the Army Veterinary

Corps through reduction in cases of food-borne disease and intoxications, is now a matter of record. Following the end of the war, Veterinary Corps officers were vital to the re-establishment of the European and Japanese economies by helping to eliminate disease and by rebuilding their livestock and dairy industries.[1,2]

Post World War II

The role of veterinarians in combat expanded in Korea and Vietnam. Problems with food hygiene in the hot Vietnamese climate, together with the increased incidence of tropical disease in both the human and the large working dog population, demonstrated the growing demand for veterinary services.

Air Force Veterinary Corps

In 1949, the Air Force established a Veterinary Corps along with its Medical and other health care provider corps. The Air Force veterinary mission was identical to that of the Army. The total number of military veterinarians expanded to meet the increased demand for veterinarians as vital members of the military preventive medicine team. Additionally, with the advent of nuclear power, military veterinarians found their expertise in demand in new areas of research and development.

All-Service Function Inaugurated

As the functions of the military Veterinary Corps evolved, the DoD directed the Army and Air Force to employ their Corps in support of all Military Departments. Army and Air Force Veterinary Corps officers were assigned to Navy and Marine Corps installations on a full-time basis to perform food inspection and research functions. Part-time service was also provided at a large number of overseas Naval and Marine Corps installations and laboratories, as well as those located in the United States. By 1976, the two Corps expanded to a combined total of 770 veterinary officers.[3] However, in 1979 Congress disestablished the Air Force Veterinary Corps and designated the Army Veterinary Corps the DoD Executive Agent for Veterinary Services. There are twelve remaining Air Force veterinary officers who will leave the military through normal attrition.[4] The Army must fill these positions as they become vacant. Only by requiring individual officers to assume responsibility for multiple installations is the Army Veterinary Corps able to meet its global mission with authorizations for only 442 officers.

Army Veterinary Corps Today

The Veterinary Corps mission is extensive and dynamic, requiring officers who are flexible and competent in multiple specialty areas. The Veterinary Corps' mission includes major roles in combat, mobilization readiness, and during peacetime. The

traditional role of military veterinarians in animal health care and surgery has been expanded to include work in public health, preventive medicine, and biomedical research and development. Military veterinarians also work in disaster and emergency preparedness.[5,6]

Responsibilities of veterinarians relating to combat and combat readiness include roles in low intensity conflict, nuclear/biological/chemical defense, and combat trauma/surgical training. Since World War II, veterinarians have played an increasingly important role in low intensity conflict. The National Strategy of Nation Building[7] recognizes medical support, including veterinary services, as an aid in winning low intensity conflicts, as it is a major factor in controlling disease, stabilizing a nation's economy, and in improving the lifestyle of a population. There is need for veterinary services in support of peacekeeping, peacetime contingency operations, counterinsurgency and insurgency operations, and combating terrorism. This is particularly true in the agricultural based Third World.

The Army Veterinary Corps plays a major role in animal and human disease control and has responsibility for the wholesomeness and quality assurance of subsistence for military troops and dependents during peacetime and combat. Army veterinarians perform sanitary inspections of military and civilian food establishments and military warehouses. Military veterinarians also inspect food vans and carriers and perform ante and post mortem inspections of food animals.

Army veterinarians support government owned animals including military working dogs and U.S. Secret Service bomb and drug dogs. The Army Veterinary Corps also provides support for a large number and variety of other government owned animals, the majority of which have combat support roles. Support is provided by military veterinarians to ensure availability of care for these animals during combat. Military veterinarians also provide support for DoD laboratory animals currently used at a rate exceeding 330,000 annually. Although there is a large workload generated by companion animal visits, less than 10 percent of the collective efforts of the Corps is directed towards direct care of companion animals in zoonoses clinics.[8] Competition with civilian veterinarians is minimized to the greatest extent possible.

The Army Veterinary Corps serves all branches of the Armed Forces as well as many DoD agencies. Army veterinarians serve in 33 countries worldwide, providing direct support to 683 DoD organizations and the Coast Guard.

The authorized Corps strength in FY88 was 442 veterinarians. Of the 455 assigned, sixty-six officers (15 percent) are eligible to retire, eight of whom face mandatory retirement within the next two years. The Corps includes 55 female officers (12 percent).

Veterinary officers average eight years of college prior to entry into the Army. The average age upon entry is 28 years old. All but two officers are graduates of veterinary colleges in the United States accredited by the American Veterinary Medical

Association. Ninety-seven percent are licensed to practice in at least one state, with many licensed in multiple states.

Specialists with training beyond the basic veterinary degree are necessary for accomplishment of the veterinary mission. Of the 300 officers eligible for military sponsored advanced schooling, 44 percent have earned MS degrees and 11 percent have PhDs in diverse fields such as genetic engineering, radiobiology, microbiology, parasitology, virology, pharmacology, toxicology, molecular biology, pathology, and public health. The Corps has 24 officers in civilian training programs for MS degrees or PhDs. Of the 230 officers eligible for board certification, 60 percent are certified in one specialty area; 10 are board certified in two specialty areas.

Veterinary officers also require professional military education to most effectively employ veterinary skills in the unique military environment. Approximately 53 percent of the 135 eligible officers are graduates of Command and General Staff College; seven are graduates of a Senior Service School.

Military veterinary medicine programs directly relate to the physical, mental, and social well-being of soldiers and their families.[9] Army veterinarians have evolved from the farrier/equine doctors of the Civil War era to modern day, highly trained and skilled epidemiologists and biomedical scientists.[10,11] The Army Veterinary Corps, although a relatively small part of the Army Medical Department, is providing a substantial contribution to medical and defense readiness and to the quality of life of the defense community.

Specialization within the Veterinary Corps

The American Veterinary Medical Association recognizes board certification in 16 veterinary specialties. During 1989, the Association will consider three additional specialties for recognition.[12] The Army Veterinary Corps has specialists in seven of the 16 categories. Certification requires a minimum number of years of experience, advanced schooling in most cases, credentials review, and a rigorous examination process. In 1988, seven percent, or 3,205 of the 46,498 veterinarians in the United States, were board certified. The Army Veterinary Corps has 140 specialists which represents 31 percent of the Corps. There has been difficulty recently in filling all specialty positions. The Army Veterinary Corps includes officers qualified in the veterinary specialties listed below:

Veterinary Preventive Medicine/Public Health (VPH)
Veterinary Pathology (V Path)
Laboratory Animal Medicine (LAM)
Toxicology (VTOX)
Microbiology (VMICRO)
Surgery (VSURG)
Veterinary Practitioners

The following section addresses each of the Army veterinary specialties. The Veterinary Pathology and Laboratory Animal Medicine specialties are discussed in detail as they demonstrate the combined problems of management under DOPMA promotion constraints and competition from rising civilian salaries.

Veterinary Preventive Medicine

Military preventive medicine veterinarians play a vital role in food safety throughout the Department of Defense. This includes responsibility for food wholesomeness and quality assurance for wartime rations as well as commissary and troop issue subsistence. Additional missions include supervision of zoonoses and communicable disease control programs, operation of world-wide veterinary reference laboratories, participation in epidemiology studies, provision of health education, and directing preventive medicine and foreign animal disease control programs.

Assigned veterinary preventive medicine personnel currently meet requirements. However, over the next five years, the Army will lose many experienced senior officers in this specialty through mandatory or voluntary retirement in response to lucrative job offers from the private sector.

Veterinary Pathology

Statute and regulation require the presence of veterinary pathologists to provide direction and oversight when biomedical research using animals is conducted. The Army Medical Research and Development Command includes five major biomedical research areas at 11 different laboratories or development activities. Over 500 extramural research contracts are in effect. Army VPath officers directly support this research as well as clinical investigation units at other DoD organizations. There are currently 21 board certified VPath officers in the Army with another 22 officers in Army-conducted training programs leading to qualification in veterinary pathology. Changes in the chemical and pharmaceutical industries, new developments relating to AIDs and recombinant DNA, and other developments in science and environmental and cancer research have increased the demand for these specialty trained veterinarians.

The Army anticipates annual losses of seven board certified VPath officers. Six out of 21 board certified VPath officers will be eligible to retire by FY92. There is currently a shortfall of 13 specialty trained officers to meet requirements.

In their 1987 survey,[13] the American College of Veterinary Pathology reported an average annual salary of $65,164 for board certified veterinary pathologists in private sector research. The average annual salary of board certified veterinary pathologists in the pharmaceutical industry was $83,935. In petrochemical firms, the average annual salary was $77,450. The average annual income of Army field grade veterinarians was $45,166 in 1988. Private research and industrial veterinary pathologists reported $16,000-$35,000 in secondary job income, primarily from consultation. Figure B-1 shows

that military VPath pay is $8,000-$25,000 (average annual pay gap $19,630) less than that of non military veterinarians with comparable years of experience. The data shown apply to the private research category which exhibited the lowest average salary of the four civilian categories reported.

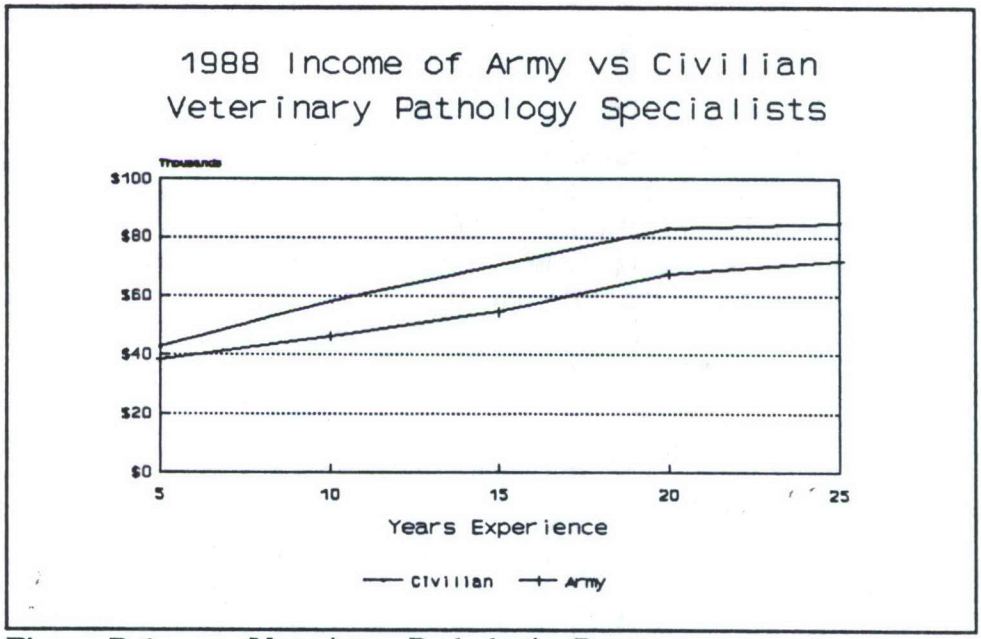


Figure B-1: Veterinary Pathologist Pay

Source: American College of Veterinary Pathology 1987 Salary Survey.

Note: Civilian income based on 1987 data was projected to 1988 using a five percent increase.

Retention of senior veterinarians such as VPath specialists is necessary for the Veterinary Corps to accomplish its mission. Military veterinarians do not reach maximum professional productivity until approximately 15 years of service. The need for high productivity, combined with the small military veterinary population, make retention of a high percentage of officers past twenty years of service highly desirable. Table B-1 shows the recent retirement history of lieutenant colonels who have been selected for promotion to colonel. A single loss represents a significant percentage of the population selected for promotion.

Table B-1
Retirement of Officers Selected for Promotion to Colonel

Year	Number Selected	Retired	Percentage
1988	7	1	14
1987	6	2	33
1986	5	1	20

The Army retirement system has no discernable effect on retention prior to about the tenth year of service. After that, the positive effect on retention rapidly increases. However, the failure of highly trained and qualified officers to be selected for promotion, combined with rising compensation packages offered by industry, may erode the perceived value of the retirement benefit, and also encourage larger losses after retirement eligibility is reached. Each loss is significant due to the small size of the specialty groups. During the last three years, lieutenant colonels have rejected promotion to colonel to pursue a civilian career at a rate ranging from 14 to 33 percent.

Laboratory Animal Medicine

The laboratory animal medicine (LAM) specialty within the Army Veterinary Corps is another specialty required by statute and regulation.

Biomedical research conducted by the Army Medical Research and Development Command includes many animal studies. Military and extramural animal-use protocols, and animal care, housing, and welfare concerns require direction, input, and review by laboratory animal veterinarians. These veterinarians also support clinical investigation at other DoD organizations.

There are currently 23 board certified LAM veterinarians in the Army. The Army is training 18 officers in the LAM specialty in Army programs and two in civilian programs. Completion of the Army training program in LAM requires a minimum of four years. Changes in animal welfare laws, increased visibility of research, and increased activity of animal rights proponents have combined in recent years to increase demand for these specialty trained veterinarians. Twelve out of 23 board certified LAM officers will be eligible to retire by FY90. The Army currently has a shortfall of 13 LAM officers.

The American College of Laboratory Medicine and the American Society of Laboratory Animal Practitioners have conducted three salary surveys since 1980.[14,15,16] The most recent salary survey (1986) showed that, on the average, board certification increased income by approximately $11,000 and that the mean salary for board certified

veterinarians was $60,666. Of the 423 individuals surveyed, 191 reported an average secondary income of $9,013, primarily from consultation. Figure B-2 shows that military pay of LAM veterinarians is $9,000-$15,000 (average annual pay gap $13,835) less than those of non military veterinarians with comparable years of experience.

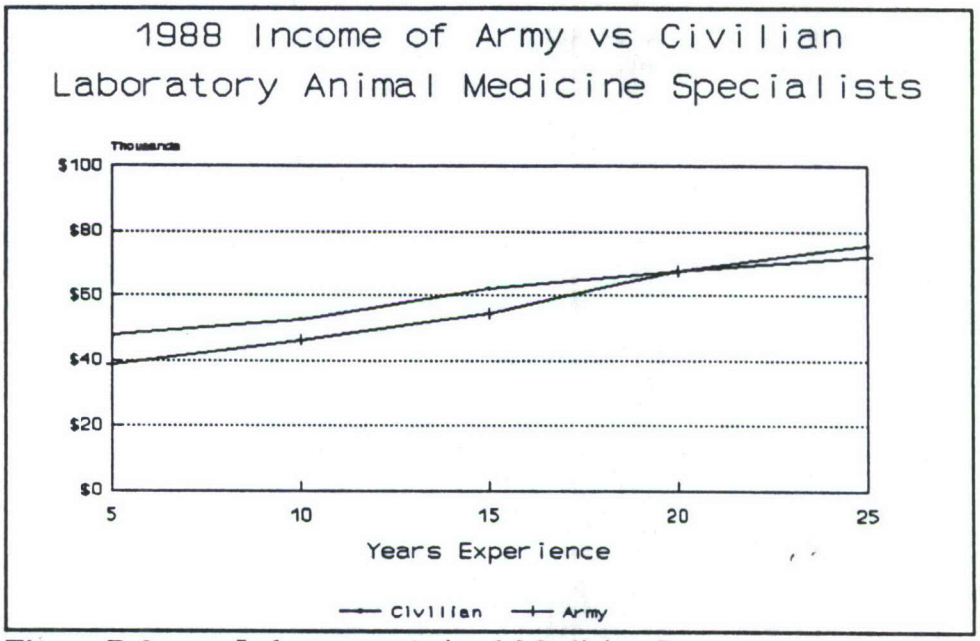


Figure B-2: Laboratory Animal Medicine Pay

Source: **1987 American College of Laboratory Animal Medicine and the American Society of Laboratory Animal Pathologists Economic Survey.**

Note: 1986 civilian income projected to 1988 using a five percent per year increase.

In 1972, the National Academy of Sciences estimated that 700 LAM specialists would be needed in the United States by 1980 to meet increasing demands for animal research.[17] Yet in 1989, there were still fewer than 400 LAM veterinarians. The DoD has 23 LAM specialists. The civilian marketplace is reacting to the lack of LAM qualified veterinarians with significant salary increases, creating increased competition for military LAM specialists.

Veterinary Toxicology

The DoD mission requires that the Armed Services maintain a cadre of medical and chemical toxicologists. Army VTox veterinarians are involved in developing second generation nerve agent antidotes and in elucidating the mechanisms of cyanide/mustard/vesicant intoxication. They test surgical glues for wartime trauma use, new liquid propellants for Army artillery, and new munitions under the criteria documents of the Toxic Substance Control for EPA Clean Water Act. Military VTox veterinarians also conduct medical defense research on select biotoxins and new antiviral drugs destined for AIDs patients.

Veterinary Microbiology

Military VMicro officers have three priority missions: (1) development of medical defenses against biological warfare agents, (2) medical protection against naturally occurring infectious diseases which impair world wide deployment of U.S. forces, and (3) operation of regional veterinary microbiology reference laboratories.

Veterinary Surgery

Veterinary surgeons provide surgical support to the DoD Military Working Dog Center and are involved in teaching programs and development of combat lifesaver's kits (hypertonic saline and I.V. sets). They also teach orthopedic/sports medicine surgical skills, as well as trauma and emergency medicine surgical skills, to physicians and other medical personnel.

Veterinary Practitioners

Veterinary practitioners provide clinical medical support to large military working dog populations in such locations as Kadena Air Force Base in Okinawa, the DoD Military Working Dog Center, and the 51st Veterinary General Hospital in Germany, which provides complete veterinary medical support to all military working dogs in Europe.

The Future of Veterinary Medicine

Despite advances in food safety made in recent years, pressures for faster food production and the continued use of low level antibiotics to enhance animal weight gain are responsible for the development of antibiotic resistant strains of microorganisms that cause food-borne disease. In the United States, medical expenses resulting from food-borne disease alone amounted to an estimated 480 million dollars a year. This reflects only those cases that came to the attention of a physician.[18,19] The continued pollution of the global environment and the use of low level antibiotics in meat and

poultry will make the problem worse. Veterinary Corps officers will continue to be in high demand if this challenge is to be met.

Pressure from animal rights groups and humane societies will continue to generate legislation which will require more stringent regulations for maintenance of animal colonies for scientific research. Military veterinarians are solely responsible for these colonies within DoD. This legislation will require an increase in the number of laboratory animal medicine specialists.[20]

The threat of foreign animal disease to the United States economy cannot be overstated. Livestock diseases such as Foot and Mouth Disease, African Swine Fever, and Hog Cholera are endemic in most Third World countries where the United States has military installations or conducts exercises. Continued surveillance by military veterinarians has prevented introduction of foreign animal disease into the United States by the military.

Military veterinarians are trained by the U.S. Department of Agriculture to provide support during a foreign animal disease outbreak. Training in military logistics makes military veterinarians critical assets when an outbreak occurs. The threat of major foreign animal disease outbreaks will continue to increase in the United States as the level of international travel intensifies.

Demographic trends will have a major impact on the future of veterinary medicine. One trend is the increase in females in the veterinary profession.[21] The percentage of female graduates from U.S. veterinary schools increased from seven percent in 1967 to 55 percent in 1987. Figure B-3 shows the increasing percentage of females graduating from U.S. veterinary schools between 1979 and 1988. Although 15 out of 44 Corps accessions in FY88 (34 percent) were female and seven out of 37 applicants (19 percent) approved for entry into the Army Veterinary Corps in FY89 are female, the number of female applicants to the Army Veterinary Corps is not proportionate to the number of female veterinary graduates.

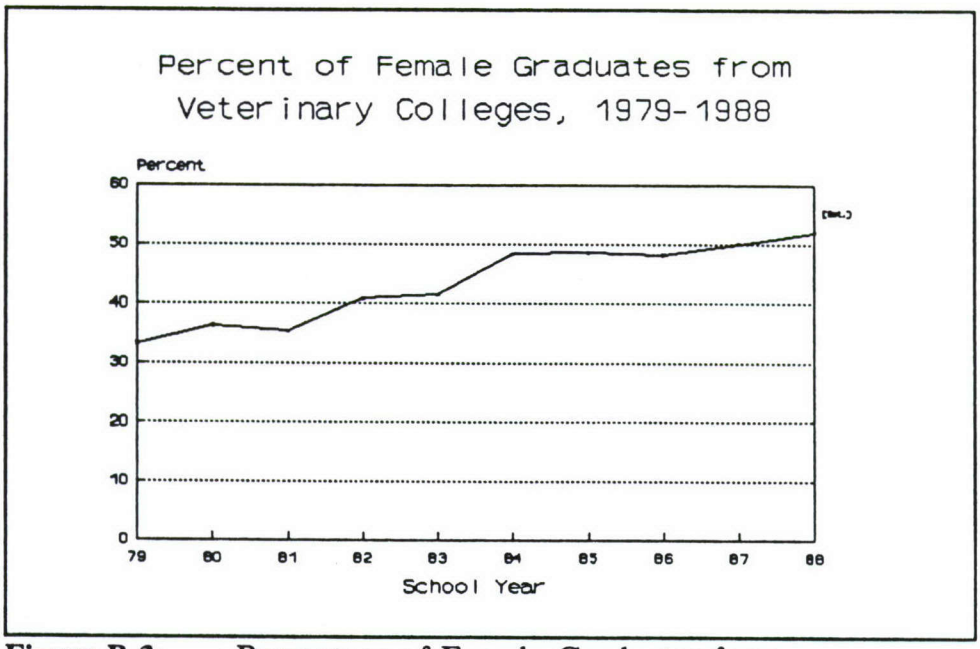


Figure B-3: Percentage of Female Graduates from Veterinary Colleges, 1979-1988

Source: **Future Directions for Veterinary Medicine, The Pew National Veterinary Education Program, 1988.**

Another trend in the veterinary profession is the marked decline in the number of veterinary school applicants. Figure B-4 shows the decline in applicants from 1981 to 1988. The decline, due in part, to the decreasing population between the ages of 18 and 22, is projected to continue through 1992. Continued decline in applicants will result in approximately 2,500 applicants in 1992, or one applicant per training position. Veterinary colleges may find it necessary to reduce the number of student positions in order to maintain quality. The American Association of Veterinary Colleges forecasts that the effect of declining applicants will begin to be felt by 1989. As the national supply of graduating veterinarians decreases in the next five to six years, competition for veterinarians is likely to increase, with civilian salaries rising accordingly. The Army must be able to compete effectively for new graduate veterinarians in the civilian marketplace.

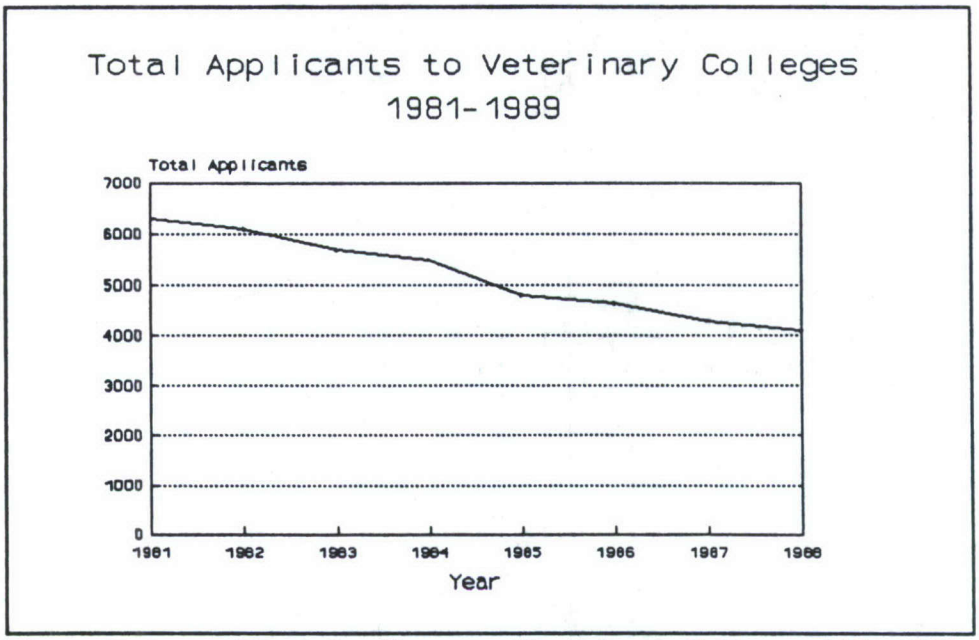


Figure B-4: Total Applicants to Veterinary Colleges, 1981-1989

Source: **Future Directions for Veterinary Medicine, The Pew National Veterinary Education Program, 1988.**

The American Veterinary Medical Association has initiated programs which will encourage veterinary students and recent graduates to pursue careers outside of the traditional clinical environment. Non traditional careers include careers in public service. The development of this aspect of veterinary service, with increasing availability of public service jobs, represents another source of competition with the military.

RECRUITMENT, RETENTION, AND PROBLEMS OF MILITARY VETERINARY MEDICINE

Recruitment

Historically, recruitment for the Veterinary Corps has been successful. In FY88 there were 68 applicants for 44 positions. Predictions for future recruitment may be unfavorable, however, due to fewer total projected graduates.

Retention

Figure B-5 shows continuation rates for the Army Veterinary Corps. For comparison, continuation rates for the administrative specialties of the larger Army Medical Service Corps are also displayed. The graph highlights attrition at four to five years of service when veterinary officers typically reach the end of their initial tour. There are also significant losses between seven and nine years of service. The Army uses selective continuation procedures, particularly for shortage specialties. Major losses also occur after 20 and 26 years of service due to retirement.

Although the Veterinary Corps is currently staffed above authorized levels, aggregate shortages are anticipated in the near future. Accelerated attrition at the early career decision points is anticipated as junior officers perceive decreasing promotion opportunities.

Loss of experienced senior officers is detrimental to accomplishment of the mission of the Veterinary Corps. Although increasing attrition is expected each year beyond the twentieth year of service, the Army Veterinary Corps needs to retain a high percentage of officers who reach twenty years of service. Rising civilian salaries are expected to increase attrition among officers eligible for retirement. The Corps has 66 officers with over 20 twenty years of service who are eligible to retire.

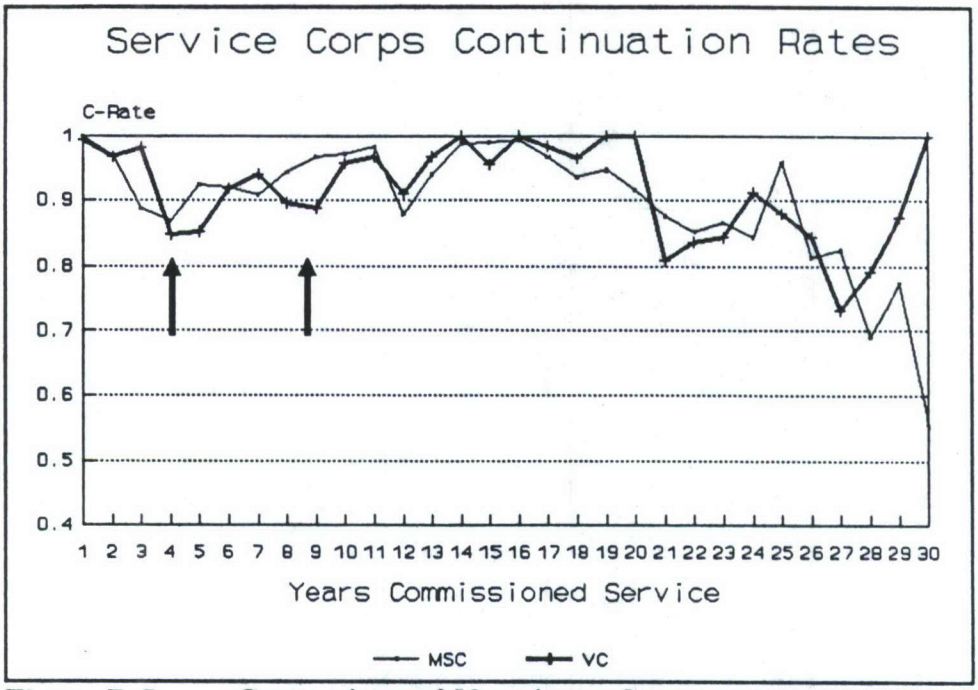


Figure B-5: Comparison of Veterinary Corps and Army Medical Service Corps Continuation Rates

Problems among specialty trained veterinarians are also anticipated. There are currently shortages in veterinary specialties which will increase during the next two years. Eleven out of 23 LAM specialists are eligible to retire in the summer of 1989. There may also be as many as four losses out of the 12 board certified VPath specialists in FY90.

Figure B-6 compares authorizations and inventory in four veterinary specialty fields. Reduced career opportunities currently projected for these officers under existing law is reducing the number of officers entering the specialty fields. Special attention must be given to retaining experienced specialty trained officers.

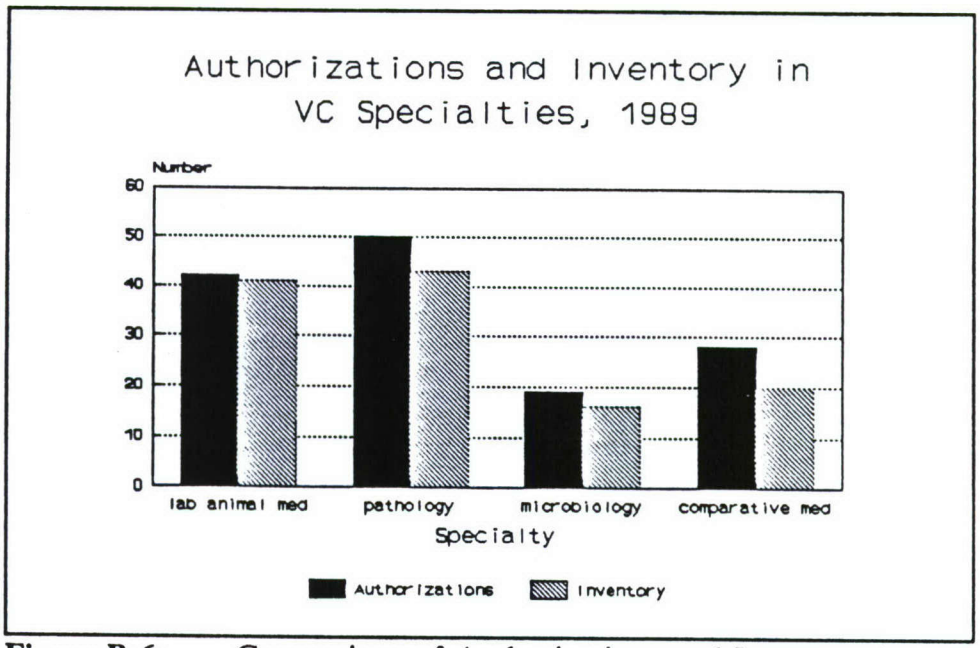


Figure B-6: Comparison of Authorizations and Inventory in Veterinary Corps Specialties, 1989

Problems of Military Veterinary Medicine

The existing requirements structure within the Army Veterinary Corps has a higher proportion of field grade requirements than the DOPMA force structure used to compute the DOPMA field grade ceilings in 10 U.S.C. 523. Furthermore, the preliminary analysis conducted in this study suggests that the currently approved requirements for field grade veterinary officers is lower than required to execute the mission of the Veterinary Corps. With field grade ceilings lower than Army requirements, determining how many should be allocated to each competitive category is a complex process. As Table B-2 illustrates, the Army has already allocated more field grade positions to the veterinarians than authorized under a fair share allocation. Assessments made by the Army Veterinary Corps indicate a requirement for an additional 47 field grade authorizations. Based on the results of this study, the Army is working with the Veterinary Corps to determine the best course of action which could include a proposal to exempt veterinarians from the DOPMA controlled grade ceilings.

Table B-2
Source of Field Grade Authorizations

Source	Field Grade Authorized
DOPMA	151
ARMY LOAN	72
TOTAL	223
VET CORPS NEEDS	270

Section 3353(b), 10 U.S.C. requires that Veterinary Corps officers be granted constructive service credit for their advanced education and experience in the same manner as Medical Corps and Dental Corps officers. The majority of veterinarians are appointed immediately following graduation from a School of Veterinary Medicine and are awarded constructive service credit requiring appointment in the grade of Captain (O-3). This advanced entry grade is not accommodated by the field grade table design which assumes appointment as a second lieutenant and significant attrition in the company grades.

Attempts to operate within DOPMA-imposed constraints have necessitated severe management actions such as reduced career selection rates, slower promotions, and restricted selective continuation policies. Additionally, the Army has discouraged experienced personnel from applying for active duty because they will be considered for promotion prior to accumulating a record competitive with peers who have served longer. As previously indicated, the Veterinary Corps has also been allocated additional authorizations from other Army competitive categories. However, due to requirements within the other competitive categories, retaining these authorizations could become a problem. Loss of the field grade authorizations transferred from other competitive categories would stop promotions within the Veterinary Corps for approximately the next three to four years. In spite of these efforts, the time required to promotion is longer than envisioned by the designers of DOPMA or achieved by other competitive categories.

The 1989 Veterinary Corps selection board for lieutenant colonel highlights problems with promotion and management in the Corps today. The board will evaluate thirteen officers for the second time. The selection board will evaluate another 17 officers for the first time. Of the 17 officers in the primary zone, eight have PhDs. This

represents 24 percent of all the PhDs in the Veterinary Corps. All of them are engaged in critical research. If special promotion quotas or relief from the DOPMA grade tables is not provided, the "pass-over" of these highly trained officers will continue. This fact, combined with rising salaries in the civilian sector and the demographic trends previously described, may generate a serious retention problem in the DoD veterinary service within the next three to four years.

The Corps needs special management consideration or exemption from DOPMA to allow flexibility in the senior field grades. The goal is not to promote all officers. However, increased field grade authorizations are needed in order to permit promotion of adequate numbers of officers to senior positions for mission accomplishment.

Figure B-7 compares the current objective force with a requirements-based objective force. The force was developed based on actual personnel requirements by years of service needed to accomplish the mission of the Veterinary Corps. The proposed requirements-based force allows normal career progression while producing the required field grade strength. The additional authorizations needed to reach the requirements-based force are small. An added advantage to reshaping the force is a 30 percent reduction in the number of required accessions.

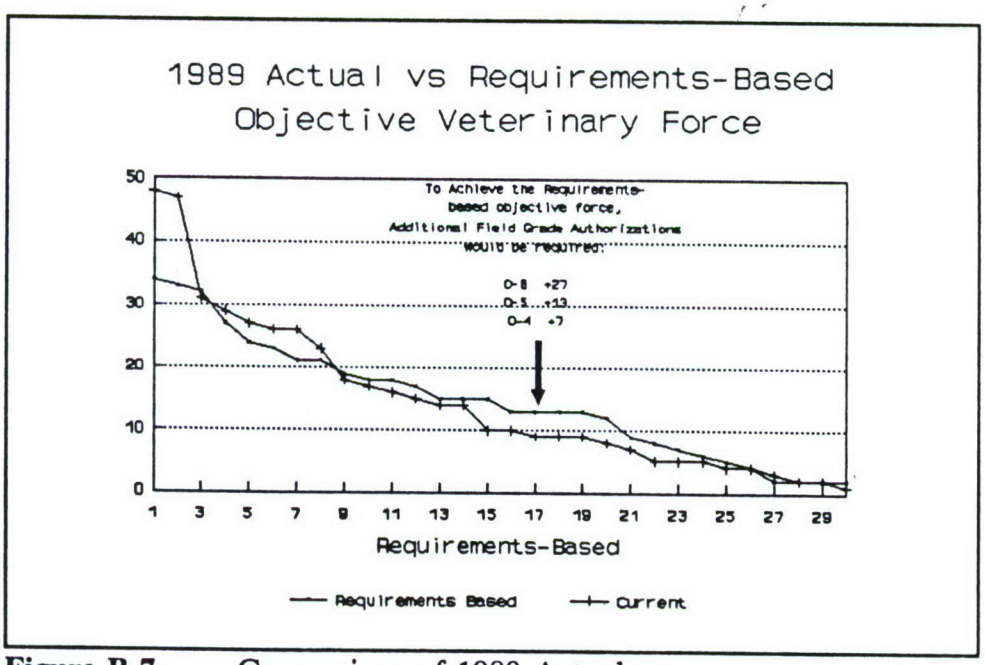


Figure B-7: Comparison of 1989 Actual vs. Requirements-Based Objective Veterinary Force

Need for Experienced and Board Certified Specialists

Veterinary medicine is becoming increasingly more sophisticated and specialized. These trends make experienced and board certified veterinary professionals increasingly valuable and necessary for mission accomplishment.

The Veterinary Corps needs to obtain full utilization of veterinary officers who have received specialty training in the military or through military sponsored civilian training. A typical pathologist or microbiologist completes specialty training with nine to ten years of service and a remaining six year active duty obligation. The typical career path includes duty in the specialty for four to five years, followed by a teaching role for an additional four to five years. At that point, the officer will have reached pay grade O-5 or may have been selected for promotion to pay grade O-6. This is the most highly productive period in a veterinarian's professional career. The Army requires retention of senior officers beyond the twentieth year of service, but does not have adequate incentives to create needed retention beyond the point of retirement eligibility. Incentive special pay would increase retention at 20 years by making military pay more competitive with civilian pay at that career decision point.

Board certification is becoming more important if veterinarians are to maintain proficiency in their specialty. This is particularly true if they are teaching or consulting. At least 35 percent of the Veterinary Corps is engaged in formal teaching. Ideally, all veterinary officers should become board certified in their specialty fields. The small Army Veterinary Corps protects the public health of 2.1 million military personnel and an equivalent number of family members. With only 442 officers authorized and a worldwide DoD mission, most veterinary officers serve in solo assignments. Board certification helps ensure that each veterinary officer has the knowledge and skills required in these demanding assignments. Figure B-8 compares the current number of qualified and board certified officers in the Army veterinary specialties.

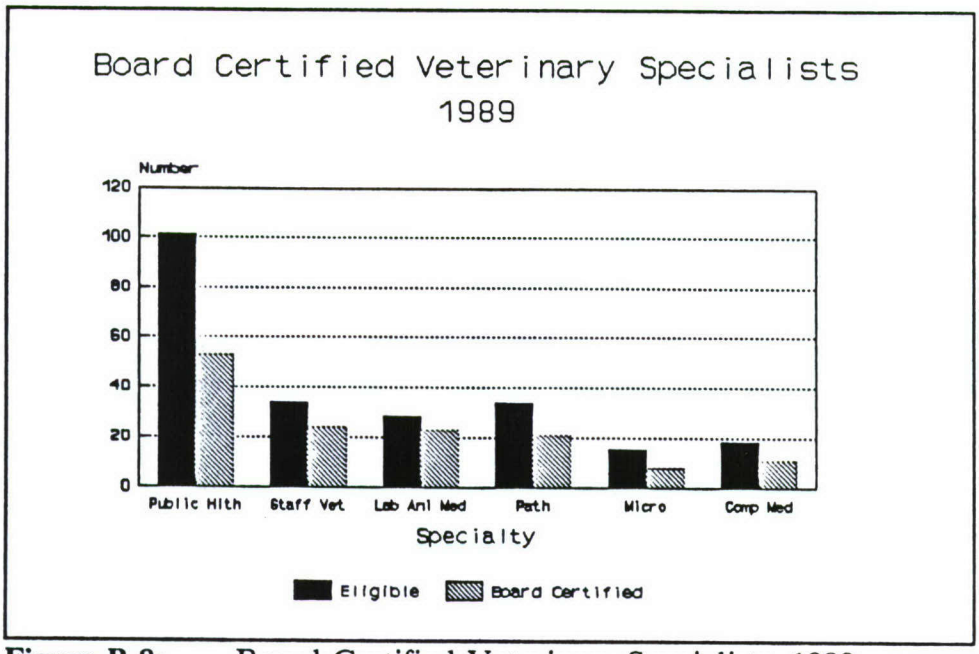


Figure B-8: Board Certified Veterinary Specialists, 1989

The use of incentive pay targeted at board certified specialists would reward excellence and increase retention of these highly qualified board certified professionals in the Veterinary Corps. It is warranted in order to provide a monetary incentive to the individual officer to become board certified and to assist the Army in retaining board certified specialists who are eligible to retire. Fifteen percent of all board certified officers in the Veterinary Corps are eligible to retire in FY89. The award of incentive pay would be a strong motivator for board certified officers to remain in the military beyond initial retirement eligibility, particularly in view of increasingly lucrative private sector salaries.

SPECIAL PAY FOR VETERINARY OFFICERS

In 1953, the Congress authorized special pay for veterinary officers in Public Law 83-84. It is an entitlement ($100 per month) of all veterinary officers paid in recognition of their professional status. The pay should be maintained as it has a positive affect on morale. In addition, it is considered by recipients as partial recognition of their eight years of self-funded professional education.

CONCLUSIONS AND RECOMMENDATIONS

The Army Veterinary Corps, although relatively small in number, plays a large role in maintaining the health of the fighting force of all the Military Departments. It also contributes substantially to the vitally important research conducted by the Department of Defense. Like medicine and dentistry, veterinary medicine has become highly specialized. Such specialization frequently requires advanced education beyond the eight years required for basic qualification as a veterinarian.

In order to retain a cadre of highly skilled health professionals, the Army must offer a viable career with reasonable expectations for promotion at appropriate career points. The Army and the Department will continue the evaluation and validation of Veterinary Corps requirements for field grade officers. Like the Medical and Dental Corps, the Veterinary Corps is composed entirely of non due-course officers who possess Doctoral Degrees. Exemptions from DOPMA controlled grade ceilings may be the final recommendation if there is no other viable alternative to provide adequate promotion and career management objectives.

Additionally, to retain the needed number of experienced specialists, the Army must have the ability to provide a monetary incentive above that currently authorized. Upon completion of specialty training and achievement of board certification, veterinary specialists possess a highly marketable, well compensated skill in the civilian sector. Incentive special pay targeted to board certified specialists would be utilized to retain those needed veterinary professionals.

Endnotes

1. Hubert H. Humphrey, U.S., Congress. Senate, Prepared for the Committee on Government Operations, Veterinary Medical Science and Human Health, 87th Cong., 1961.

2. H.J. Stafseth et al (ed), Military Veterinary Medicine, from Proceedings of the First Institute on Veterinary Public Health Practice, Oct 6-9, 1958, (Ann Arbor: School of Public Health, University of Michigan, 1960).

3. R.K. Anderson et al, A Description of the Responsibilities of Veterinarians as They Relate Directly to Human Health, (Minneapolis: School of Public Health, University of Minnesota, June 1976).

4. The authorization and inventory data used in this report does not include Air Force veterinarians.

5. A.V. Tennyson, "Veterinary Services in Disasters and Emergencies," Military Medicine 154 (1989): 1041.

6. R.J. Schroeder (ed), "Veterinary Services in Disasters and Emergencies," Journal of the American Veterinary Association 190 (1987): 701-799.

7. Department of the Army, The National Defense Strategy of Nation Building, 1989.

8. Department of Defense, Office of the Assistant Secretary of Defense for Health Affairs, Report on DoD Veterinary Services, (McLean, VA: Maximus, Inc. 1978).

9. C.W. Schwabe, Cattle, Priests and Progress in Medicine, (Minneapolis: University of Minnesota Press, 1978).

10. R.K. Anderson et al, A Description of the Responsibilities of Veterinarians as They Relate Directly to Human Health, (Minneapolis: School of Public Health, University of Minnesota, June 1976).

11. E.B. Miller, Lt Col, USAF, U.S. Army Veterinary Service in World War II, Office of the Surgeon General, 1963.

12. American Veterinary Association, American Veterinary Association 1989 Directory, (Schaumburg, IL: 1989).

13. American College of Veterinary Pathology, ACVP 1987 Salary Survey, (Kennett Square, PA: 1987).

14. S.P. Liebenberg and H.J. Reed, Results of the 1987 ACLAM and ASLAP Economic Survey, (Hershey, PA: American College of Laboratory Animal Medicine, Pennsylvania State University, 1987).

15. R.D. Ediger et al, ACLAM 1982 Economic Survey, (Hershey, PA: American College of Laboratory Medicine, Pennsylvania State University: 1982).

16. R.D. Ediger et al, ACLAM 1980 Economic Survey, (Hershey, PA: American College of Laboratory Medicine, Pennsylvania State University: 1980).

17. Committee on Veterinary Medical Research and Education, New Horizons in Veterinary Medicine, (Washington DC: National Academy Press, 1972).

18. E.H. Kampelmacher, "Present and Future Food Hygiene Concerns," Journal of Veterinary Medical Education, Vol. II, No. 3, (1983): 18.100-102.

19. National Research Council, Meat and Poultry Inspection: The Scientific Basis of the Nation's Program, (Washington DC: National Academy Press, 1985).

20. Pew National Veterinary Education Program, Future Directions for Veterinary Medicine, (Durham, NC: Institute of Policy Sciences and Public Affairs, Duke University, December 1988).

21. Ibid.

APPENDIX C

OPTOMETRY

EXECUTIVE SUMMARY

At the end of FY88 the Department of Defense was staffed at 85 percent of budgeted authorizations in optometry, representing a shortage of 84 optometrists. This shortage can be attributed to inadequate accessions and poor retention after initial obligation.

During our study of this specialty, we found that the national supply of optometrists is not matching demand. The resultant shortage is driving salaries in the civilian sector up, thus making military pay less competitive. Increased pay disparity inhibits DoD's ability to access and retain optometrists in sufficient numbers to provide the desired level of optometry care to both active duty and their beneficiary population.

The growing shortage of optometry care could be seen as an erosion of medical benefits offered as an incentive to all military members.

It is clear that the DoD optometry inventory is getting smaller. It is more difficult to access and retain qualified optometrists. Current constructive service credit authority should be modified to enhance recruitment. Bonuses for accession and retention after initial obligation are also indicated.

PROFILE OF MILITARY OPTOMETRY

History

Optometry has its roots in the spectacle merchants and dispensing opticians of 19th century America. At that time, the medical profession did not test for spectacles nor did they favor their use. This left an opportunity for opticians to test vision and supply spectacles. A rift soon developed within the optical business; some wanted to continue fabricating lenses and fitting frames, while others became interested in testing vision and studying the visual system.

Through education at proprietary schools and later within university systems, optometry evolved into a profession, awarding the degree of Doctor of Optometry (O.D.).

By the first quarter of the 20th century, the term "optometrist" had been legally recognized, and all states and the District of Columbia had statutes regulating the profession of optometry. Today, optometrists have become the major provider of primary eye care in America. They are a recognized independent profession who are regulated by state licensure standards.

Educational Requirements

The optometry program is a four-year, post baccalaureate, degree awarding program. There are 18 schools and colleges of optometry recognized by DoD. Fifteen are located in the continental US, two in Canada and one in Puerto Rico. Total enrollment is approximately 4,400 with nearly 1,000 graduating each year.[1]

Over eighty percent of all first year students at all schools and colleges of optometry have an undergraduate degree. The baccalaureate requirements for entering a school can be completed in an accelerated program in less than four years. However, this complicates the individual's ability to enter active duty as an O-3. Most optometrists enter active duty with four years constructive service credit for promotion to O-3. However, if a student enters optometry school with less than four years of undergraduate education or completes the undergraduate requirements in the first professional year (as some bright students do), less than four years credit is awarded, and the officer candidate enters at pay grade O-2. This constructive credit formula is different from that used for physicians and dentists who automatically receive four years credit for their undergraduate degree regardless of the number of years needed to complete it. This discrepancy makes military service less attractive to many of the brighter optometry graduates and creates a morale problem for those who enter the Service and are appointed at a lower grade than someone with whom they graduated. In FY88, fourteen percent of the total optometry accessions were O-2's.

Active duty optometrists are required to maintain a current state license. Continuing education credits are necessary for license renewal.

A 1987 survey of student indebtedness by the Association of Schools and Colleges of Optometry stated the average debt for graduating optometry students is approximately $34,000. This will increase to approximately $37,000 by 1990. This indebtness may be a factor in optometrist leaving the service after initial obligation.

Scope of Service

The evolution of the profession continues at a very fast pace. Schools and colleges of optometry are placing more emphasis on disease recognition and treatment modalities. Today 50 states allow optometrists to use diagnostic drugs and 23 states allow the use of therapeutic drugs. Since optometry was once labeled "the drugless profession", these changes in state laws are indicative of optometry's monumental steps in expanded patient care.

Private practice optometrists specialize in contact lenses, developmental vision, sports vision, low vision, pediatric and geriatric care.

With the explosion of technology in the eye care field within the last decade, optometrists need to stay abreast of the latest instrumentation and techniques. They must also employ highly trained technicians and assistants. The lack of adequate support has long been a source of dissatisfaction for active duty optometrists and impacts seriously on morale and retention.

Since most civilian optometrists maintain solo private practices, there is no facility accreditation. Optometrists practicing in an HMO are included in facility accreditation standards. The Council on Clinical Optometric Care is an accreditation body of the American Optometric Association that has begun to evaluate military optometry clinics. They have evaluated facilities in the Army, Air Force and Public Health Service. Active duty optometrists are credentialed in the same fashion as other military health care providers.

The only other health care provider that could be substituted for an optometrist is an ophthalmologist, since the two professions overlap in many areas. The reverse is also true to a limited extent.

Military Mission

Optometry is the primary eye care specialty in the Armed Services. The vision care of over 90 percent of active duty personnel is managed by optometrists. Optometry is the entry point into the Military Health Services System for nearly all eye and vision related problems. Optometrists also fit the majority of contact lenses used by the military.

Specialization includes developmental vision specialists assigned to Exceptional Family Member Program clinics, safety and environmental vision specialists, optometrists assigned to research laboratories (many with an additional Ph.D. in physiological optics), and optometric supervision of all DoD ophthalmic laboratories.

Optometry plays an important role in readiness preparation. A study conducted by the Army in 1969, showed 37 percent of all Army personnel required vision correction of some type. In the Air Force, where one expects instances of personnel requiring vision correction to be quite low, a study in 1983 conducted by the School of Aerospace Medicine revealed 20 percent of Air Force pilots and 50 percent of Air Force navigators required corrective lenses to fly. A follow-on study determined that 45 percent of the ground crews also required spectacles. Given these percentages, it is easy to see what profound effect the loss of a fragile piece of equipment like spectacles can have on fighting strengths. The active duty optometrist is also charged with the care of active duty dependents, retirees and their families.

The role of military optometry is rapidly expanding. New, highly sophisticated technological devices require unprecedented demands for optometric services. These devices include night vision goggles, ballistic and laser eye protection, and proposed contact lenses worn by submariners, tank crews, and fighter pilots are a few of these devices.

Optometrists in wartime continue the same role as in peacetime, but the scope is expanded. Army optometrists are assigned at the division level. Navy optometrists have requirements to staff fleet hospitals and hospital ships. Air Force optometrists may be practicing in air transportable hospitals and clinics.

Relationship of Optometry to Other Health Professions

Optometry is often a pipeline for referral of patients to other health care providers. A shortage of optometrists will impact on the surgical cases of ophthalmic surgeons and result in a reduced patient population in the ophthalmology clinic. Because many disease processes manifest themselves in the eye, optometrists co-manage patients with a myriad of practitioners such as neurologists, internists, and dermatologists.

Optometry is an independent yet integral part of the medical community and works with other providers on the health care team. Patients with symptoms that may be eye or vision related are most often referred to optometry for a vision and eye health screening before final diagnosis is made.

MILITARY AND CIVILIAN SALARY COMPARISON

Military optometrists receive $100 per month in special pay. This amount has not changed since established by Congress in 1971. A comparison of military and civilian optometrists income is presented in Figure C-1.

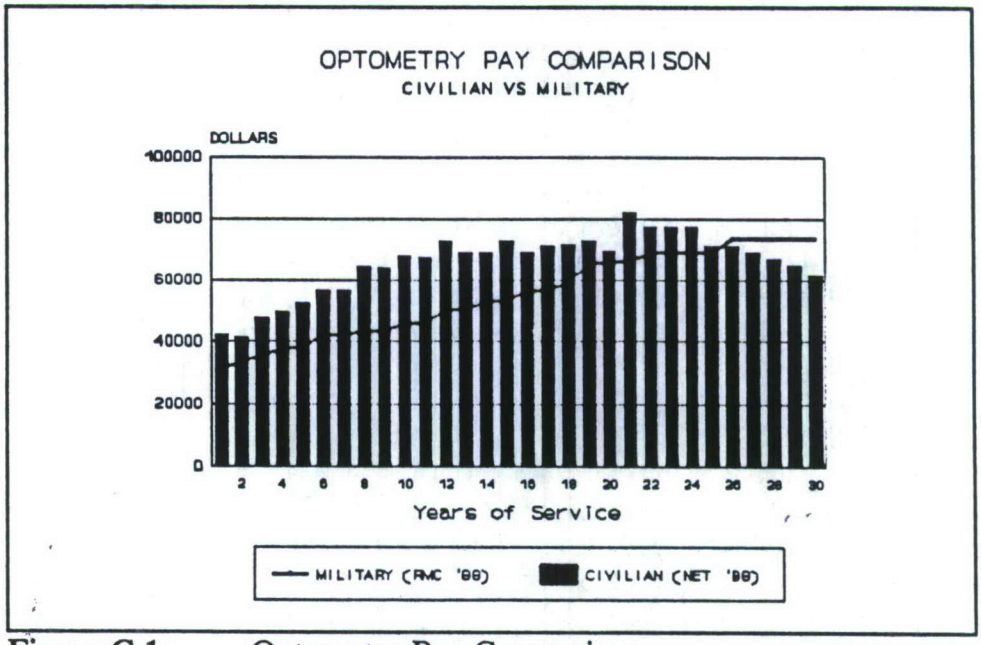


Figure C-1: Optometry Pay Comparison
Civilian vs. Military

Notes:

1. The civilian income indicates net income, i.e., after taking out for retirement, life insurance, health benefits package, etc. Civilian data furnished by the American Optometric Association.

2. Military pay is RMC plus the $100.00/mo. optometry pay.

As shown, civilian optometrists pay is higher in most instances than their military counterparts. Civilian income statistics do not yet reflect the recent parity of optometrists and ophthalmologists under medicare, which should increase optometrists' incomes.

SUPPLY AND DEMAND

In 1988, there were approximately 25,000 practicing optometrists in the United States. Of these, approximately 18,000 (72 percent) were in independent practice, 15 percent were in corporate settings (Pearle Vision, Lenscrafters, etc.), four to eleven percent in Health Maintenance Organizations and about two percent were working for physicians and the Armed Services.

Estimates of the need for optometrists by the year 2000 vary from 30,400 to 40,000. The current number of optometry graduates (1,000 per year) cannot meet this demand.

There are several other factors that may increase future demands for this specialty. For example, 90 percent of the increasing population over the age of 45 will require corrective lenses; increased market share in third party payment programs stimulated by optometry's recent qualifications under Medicare; and an expanded scope of practice, particularly in the use of diagnostic and therapeutic drugs.

FORCE STRUCTURE

Figures C-2, C-3, and C-4 depict the services' FY88 end strength by years of commissioned service compared to an ideal distribution. For the Navy and the Air Force, there is a high number of officers with three years of service. With a continuation rate for this group of 50 percent for the Army and Air Force, and 65 percent for the Navy, the Services will need a very high rate of accessions to maintain a viable force structure.

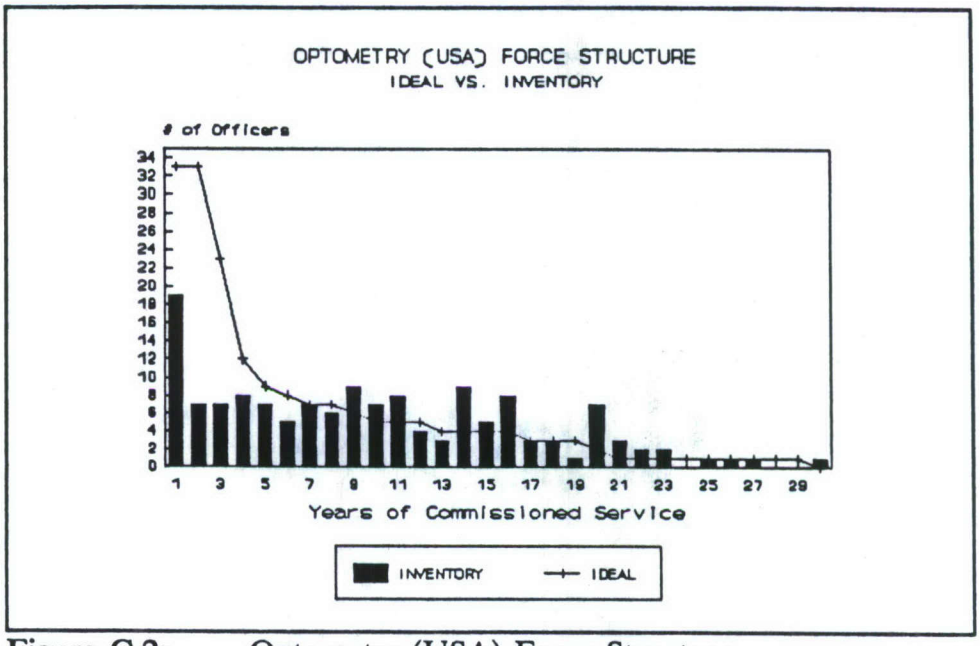


Figure C-2: Optometry (USA) Force Structure
Ideal vs. Inventory

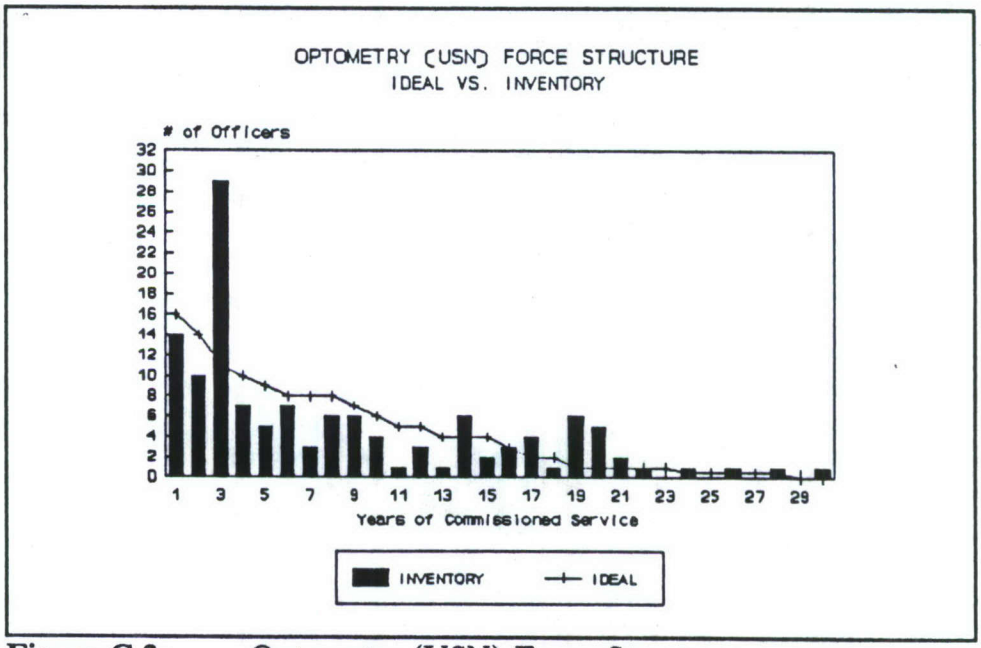


Figure C-3: Optometry (USN) Force Structure
Ideal vs. Inventory

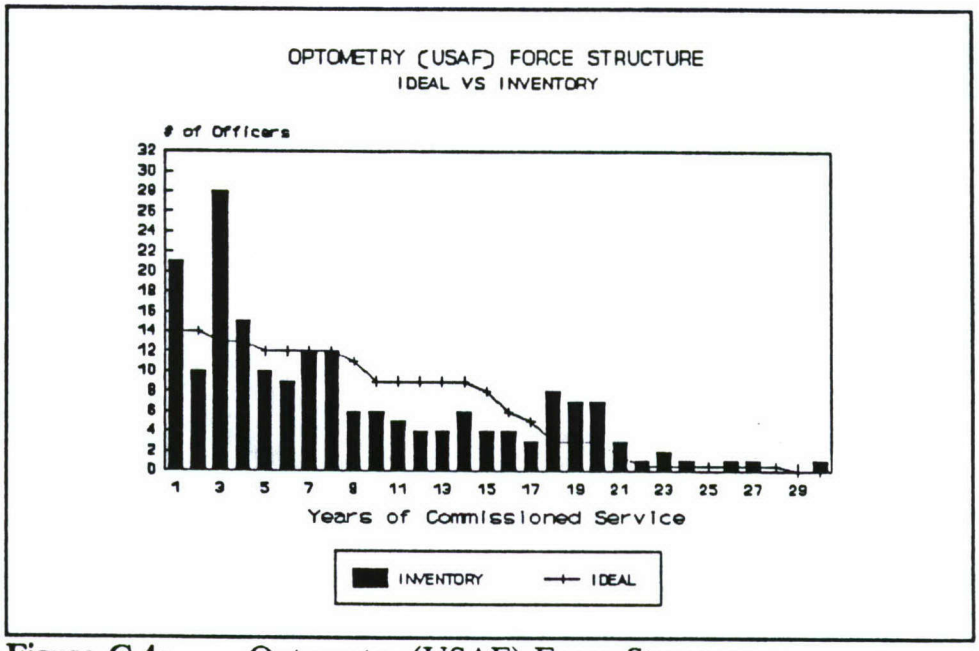


Figure C-4: Optometry (USAF) Force Structure
Ideal vs. Inventory

The ideal structures by grade versus the current inventory are depicted for each of the Services on Figures C-5, C-6, and C-7. Service-unique requirements mandate different structures, especially at the O-3 to O-5 level. For example, the Air Force (Figure C-7) has many medical treatment facilities at small, fairly remote locations, requiring only one optometrist. These billets should have experienced optometrists assigned; therefore, they are in the O-4 category. These grades roughly equate to the 8-12 years-of-service officers. The Air Force graph shows a shortage of officers in these year groups (Figure C-7). Conversely, the Army and Navy have the majority of their facilities concentrated in a few locations, and therefore need more O-3 positions supervised by O-5s and O-6s (Figures C-5 an C-6).

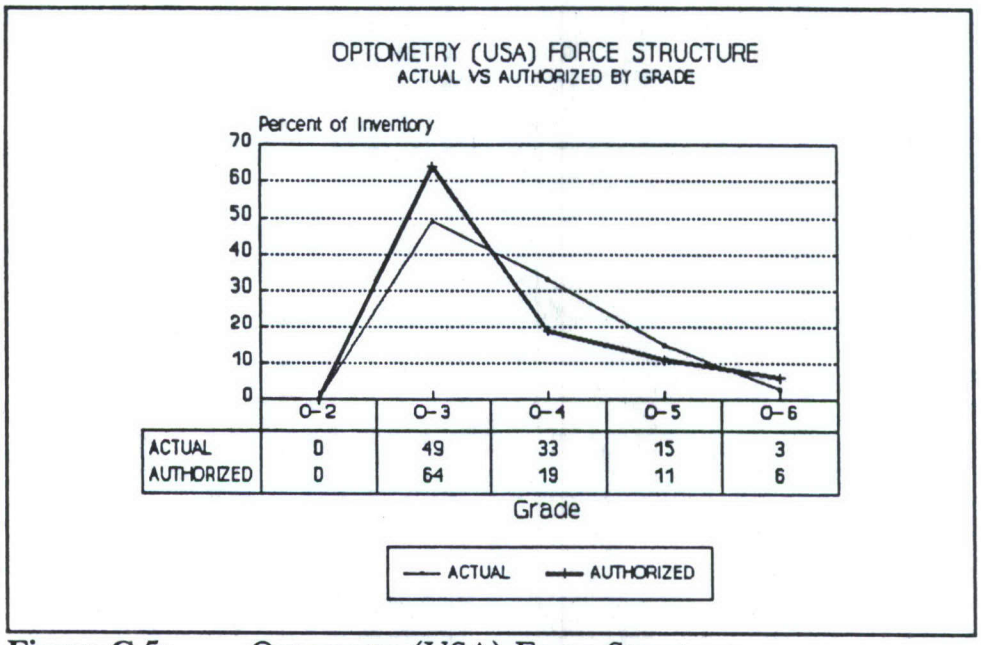


Figure C-5: Optometry (USA) Force Structure Authorized vs. Actual

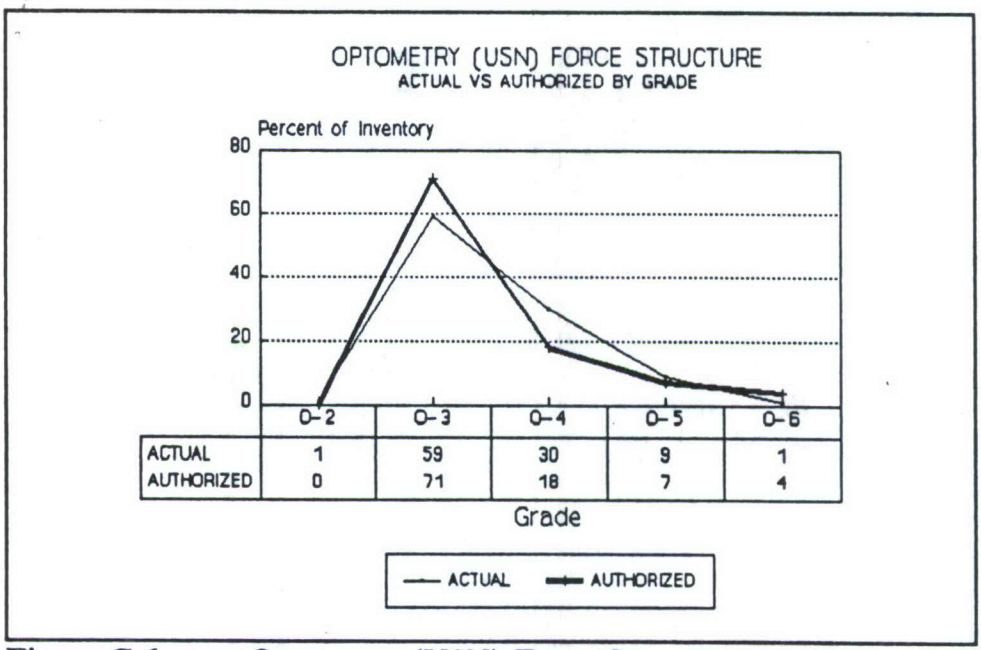


Figure C-6: Optometry (USN) Force Structure Authorized vs. Actual

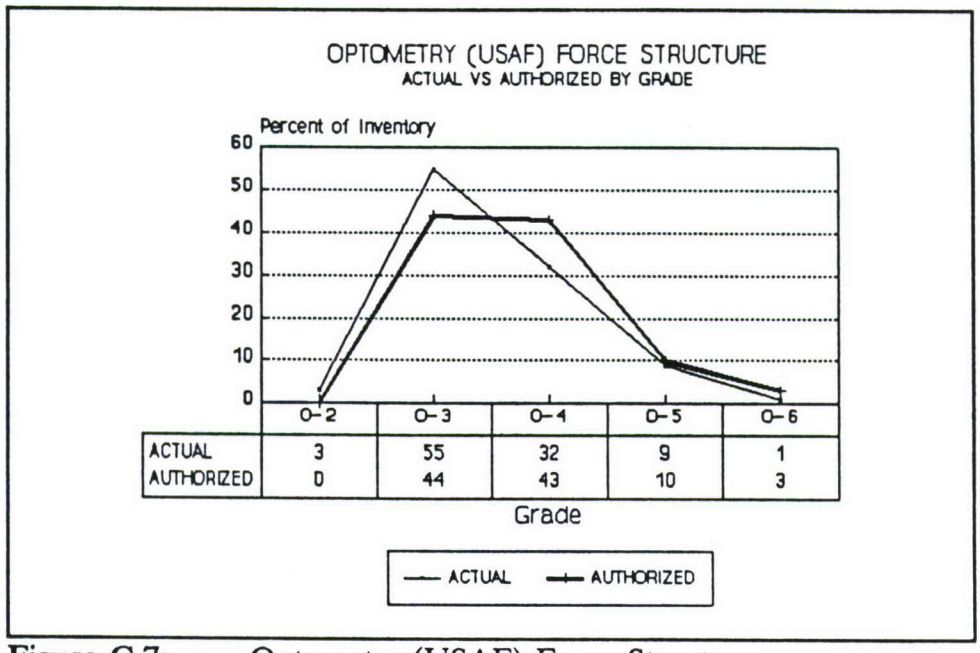


Figure C-7: Optometry (USAF) Force Structure
Actual vs. Authorized

Actual grade distribution in the Navy is adequate at the O-5 and O-6 levels. However, more officers are assigned at the O-4 level than the ideal would suggest, and a lesser number at the O-3 level. The Army is similarly staffed. The Air Force has fewer officers at the O-4 level than is needed, with a surplus of O-3s.

REQUIREMENTS

The budgeted authorizations and inventories for each service appear in Figures C-8, C-9, C-10, and C-11. Figure C-8 illustrates Army optometry's steady decline in inventory from 1983 to the present. Inventory has been below budgeted authorizations since 1986, resulting in a 33 percent manning deficit.

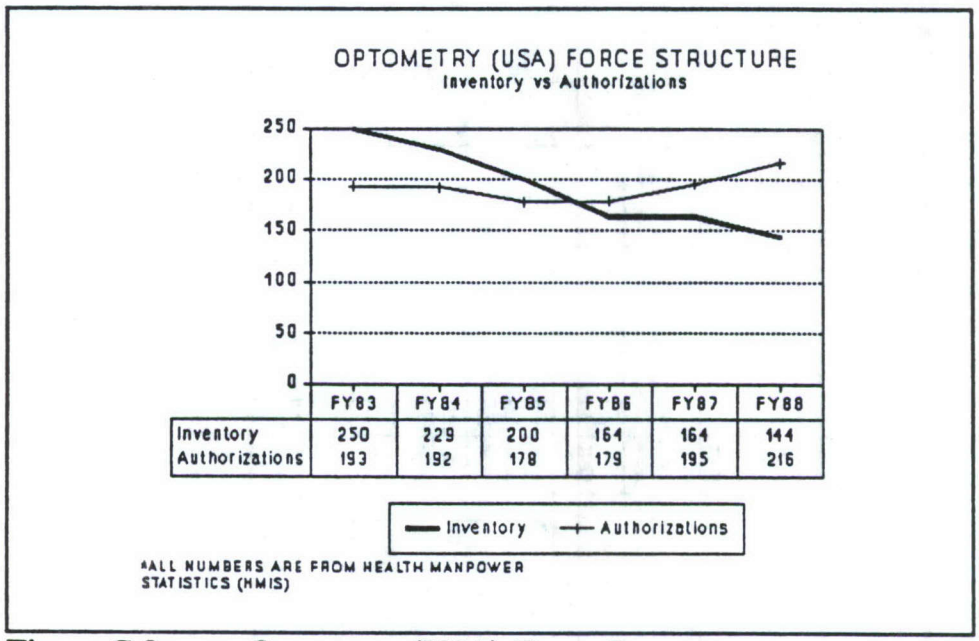


Figure C-8: Optometry (USA) Force Structure Inventory vs. Authorizations

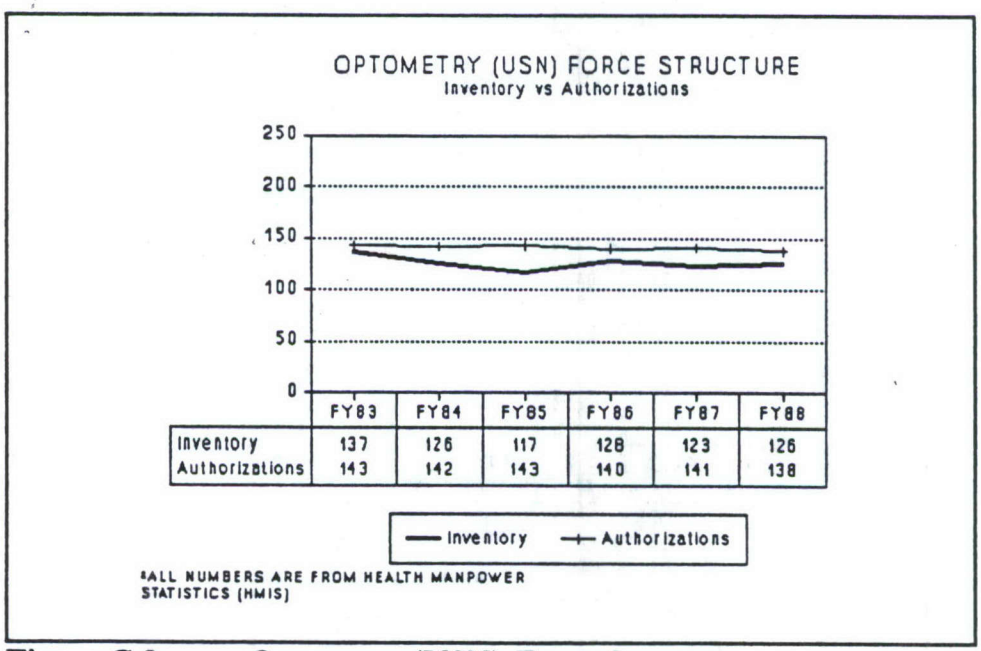


Figure C-9: Optometry (USN) Force Structure Inventory vs. Authorizations

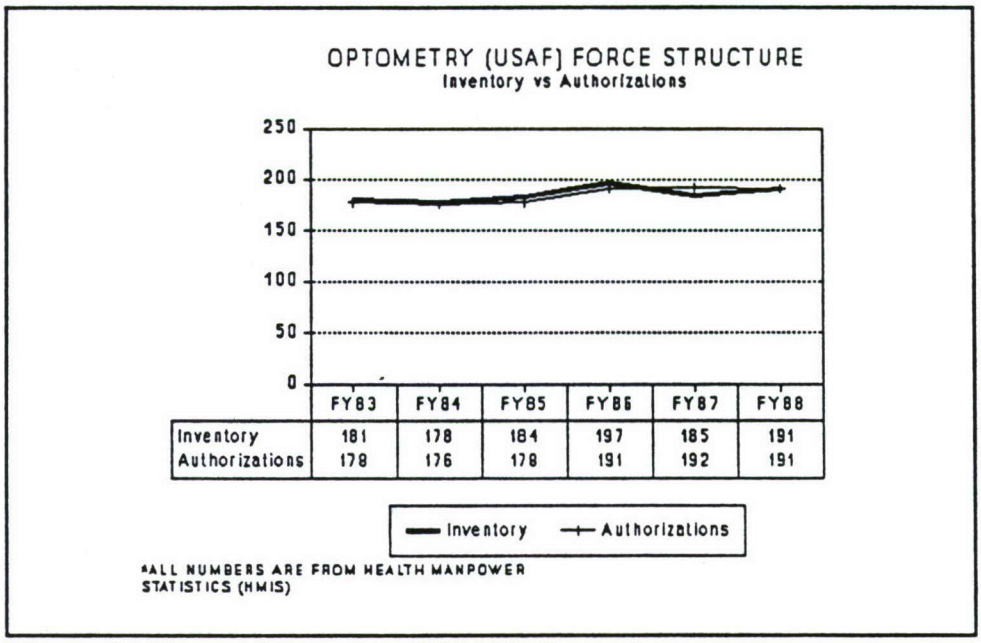


Figure C-10: Optometry (USAF) Force Structure Inventory vs. Authorizations

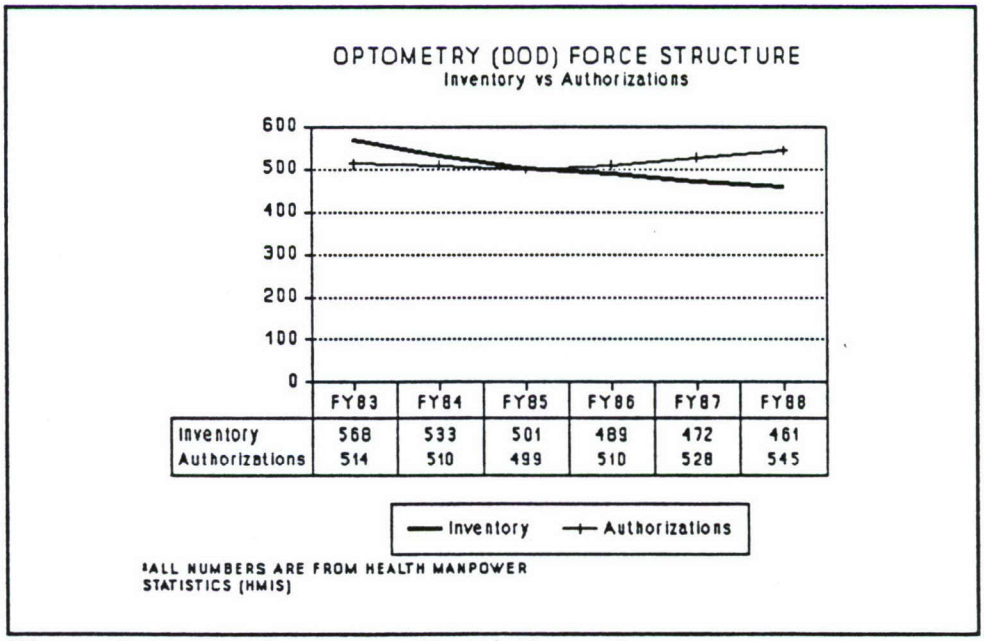


Figure C-11: Optometry (DoD) Force Structure Inventory vs. Authorizations

Figure C-9 displays a similar but less severe situation for the Navy. Inventory has been below budgeted authorizations since 1982. The 1988 deficit is approximately 10 percent.

Air Force budgeted authorizations and inventory have been fairly consistent throughout the reporting period (Figure C-10).

Differences in recruiting programs, attractiveness of individual services, award of constructive service credit, and management of authorizations account for differences between authorizations and end strength among the services. However, there has been a steady decline in the DoD ability to fill authorized, budgeted spaces since 1985. By the end of FY88, optometry vacancies constituted 15 percent of total authorizations.

Accessions

Army optometry recruiting goals were not established until 1988 (Figure C-11). The Army has seen an increase in the number of optometrists accessed; however, the magnitude of the increase is insufficient to make up for losses, resulting in a decreased Army end strength.

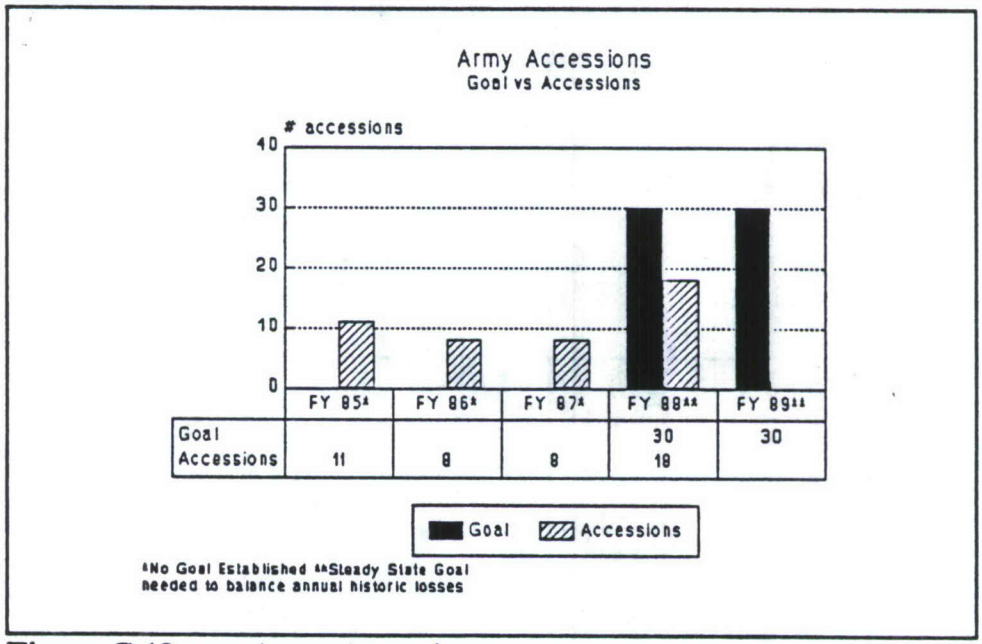


Figure C-12: Army Accessions
Goal vs. Accessions

The Navy has not met their recruiting goal or budget authorizations since 1984 (Figure C-12).

Accessions for the Air Force have, for the most part, kept pace with established goals (Figure C-13). In 1988 the Air Force recruiting goal was unconstrained. It is interesting to note that in the unconstrained recruiting environment, where any qualified applicant who wanted to join the service could have, DoD still fell short of what it needed. This may indicate that DoD is not an attractive employment opportunity for young optometrists.

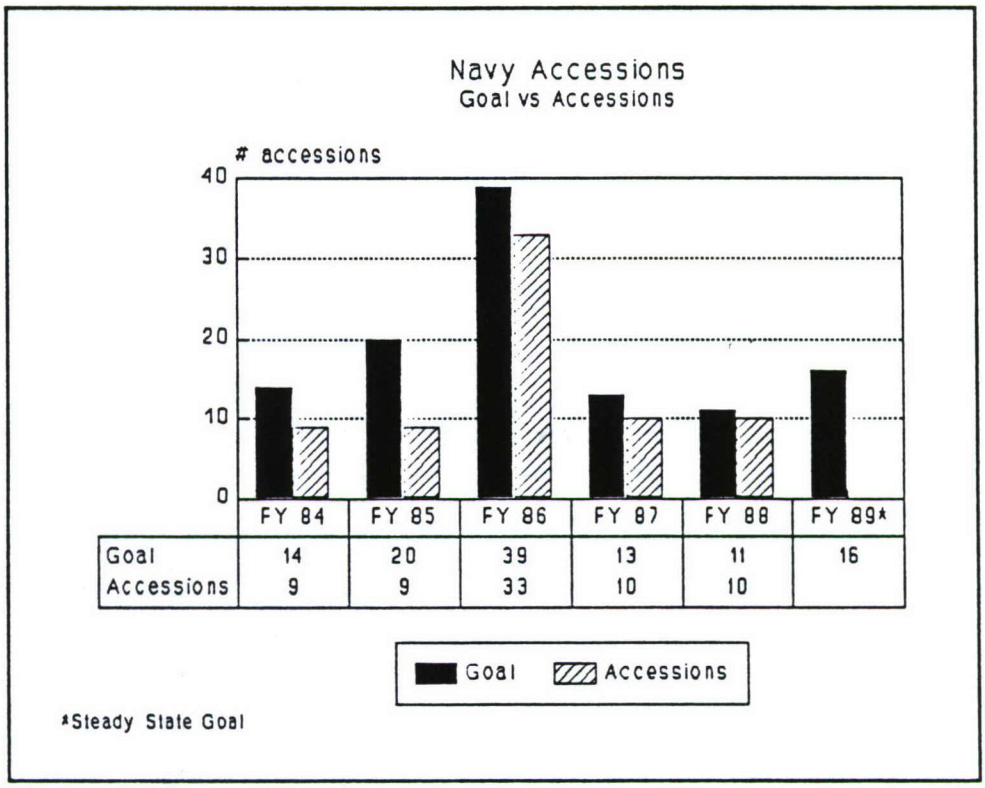


Figure C-13: Navy Accessions
Goal vs. Accessions

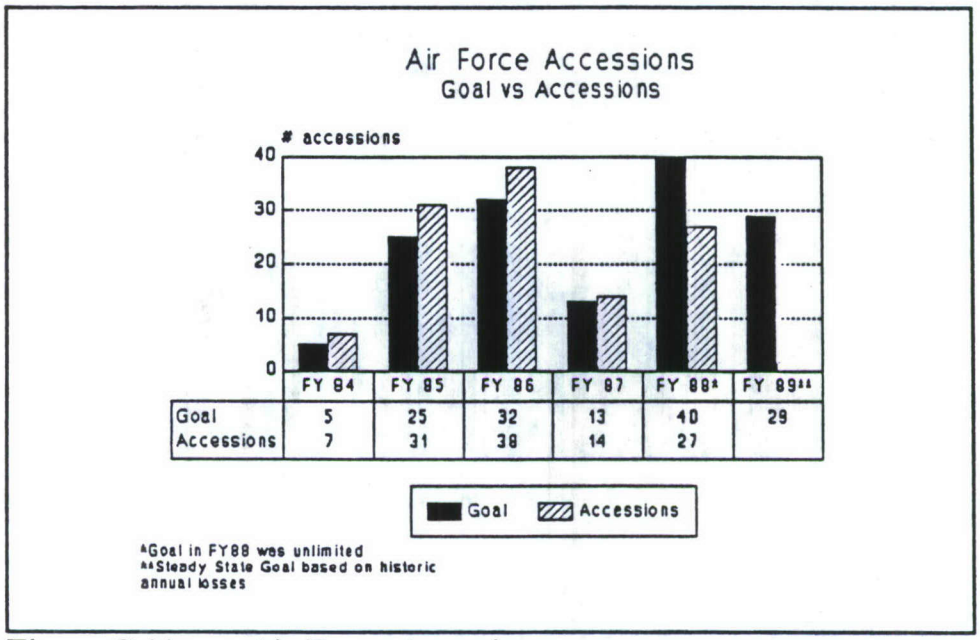


Figure C-14: Air Force Accessions
Goal vs. Accessions

From 1976 to 1980, the Armed Forces Health Professions Scholarship Program was the source of many quality optometrists. The program was eliminated in 1980, because the Services were projected to meet or exceed budgeted authorizations. The elimination of optometry from this program has had a negative impact on recruiting.

Continuation Rates and Retention

Continuation rates are presented in Figures C-14, C-15, and C-16. For the Army, even though rates for a few year groups exceed the total Medical Service Corps rates, the overall average is significantly below the total rate (Figure C-14). The years critical to building a quality force (years 3-8) are significantly below the overall rate. This trend is reflected in all three services.

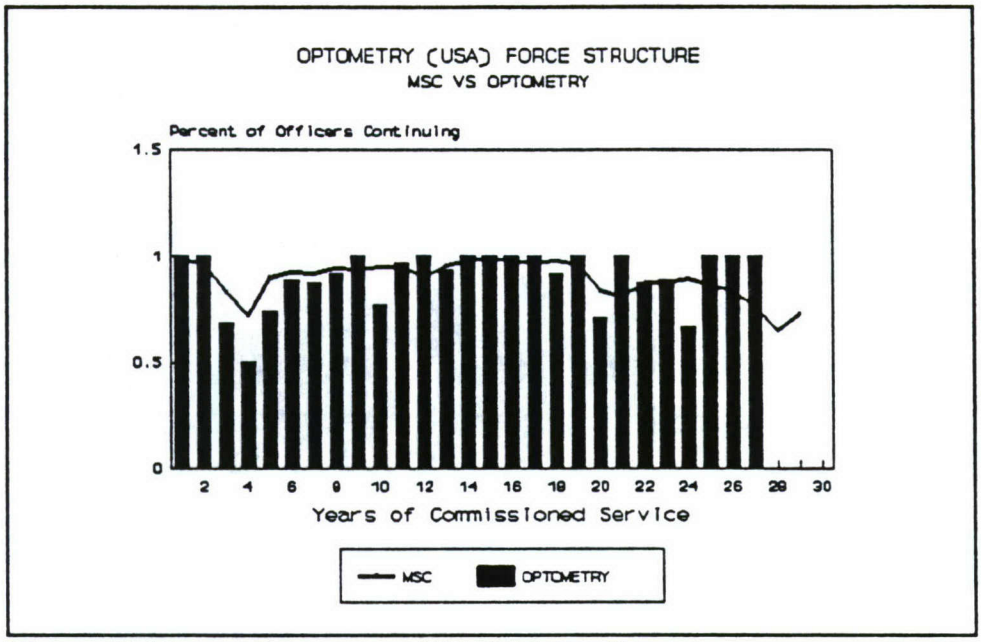


Figure C-15: Optometry (USA) Force Structure
Medical Service Corps (MSC) vs. Optometry

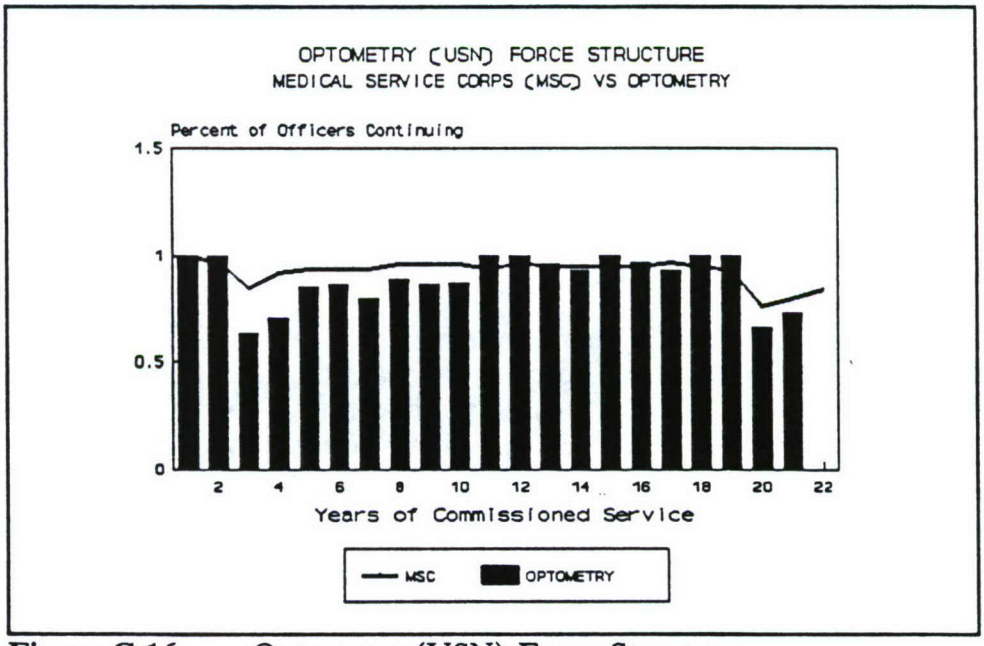


Figure C-16: Optometry (USN) Force Structure
Medical Service Corps (MSC) vs. Optometry

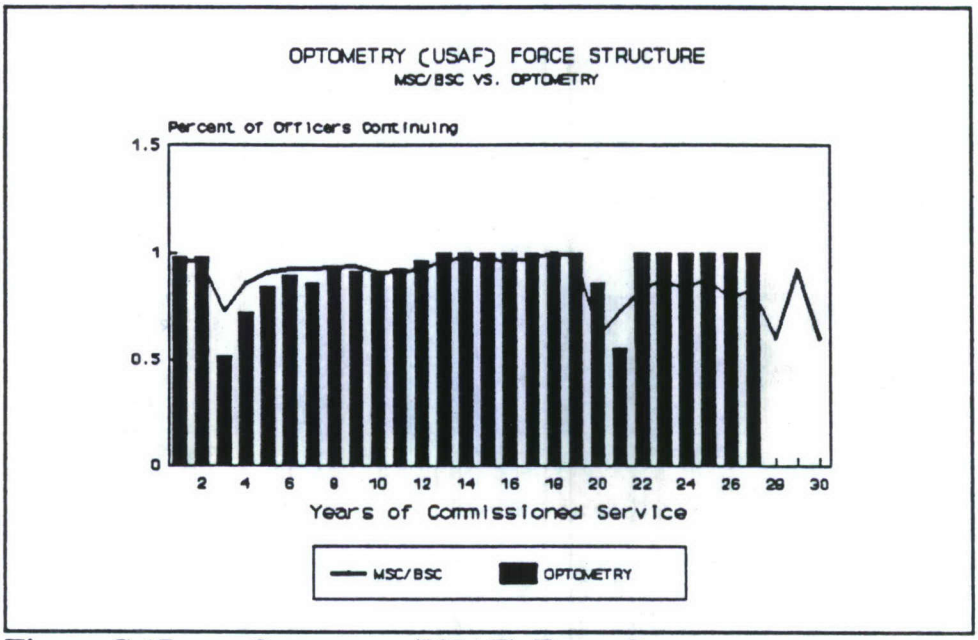


Figure C-17: Optometry (USAF) Force Structure MSC/BSC vs. Optometry

The Army retains slightly more than 25 percent of its optometrists at the end of their initial obligation (Figure C-18). This is the lowest retention rate in the Army MSC. In the Navy, optometry has one of the lowest retention rates of health care science officers in the Navy MSC (Figure C-19). The Navy retains an average of 56 percent of its optometrists after initial obligation. The Air Force retains 36 percent of its optometrists; the lowest retention of all the disciplines in the Biomedical Sciences Corps (Figure C-20).

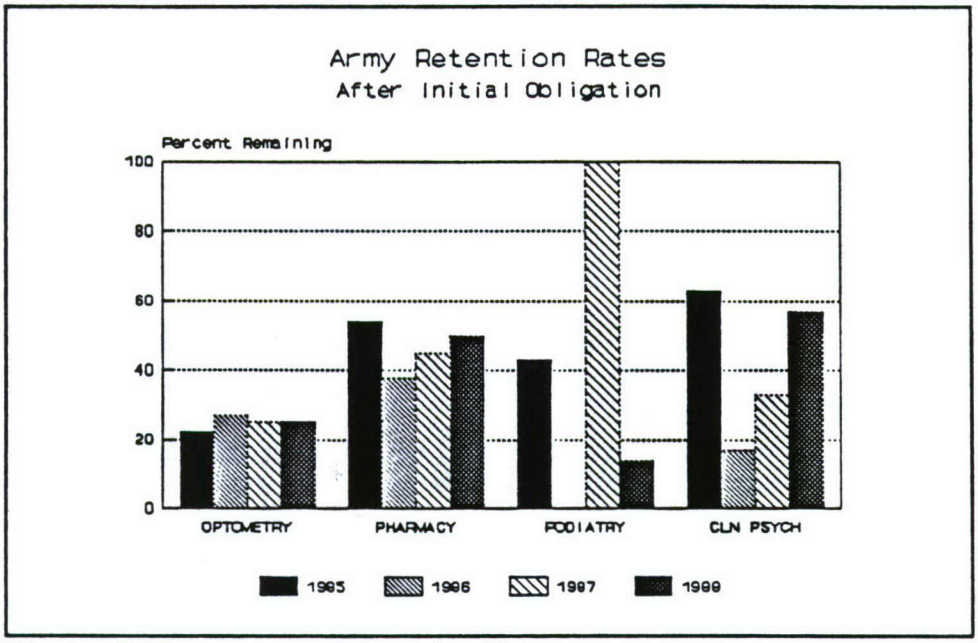


Figure C-18: Army Retention Rates
After Initial Obligation

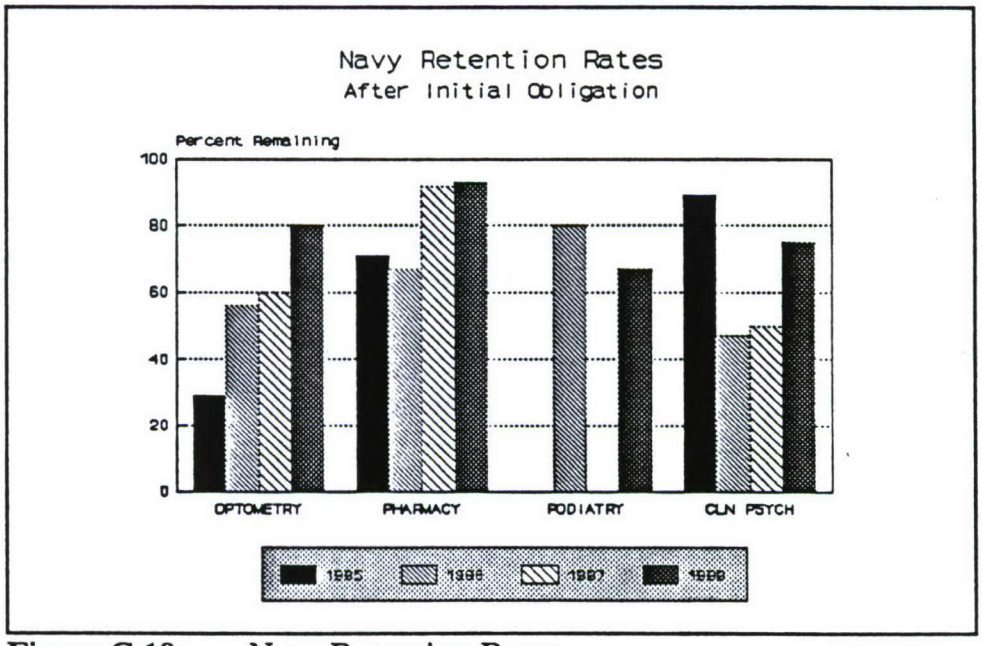


Figure C-19: Navy Retention Rates
After Initial Obligation

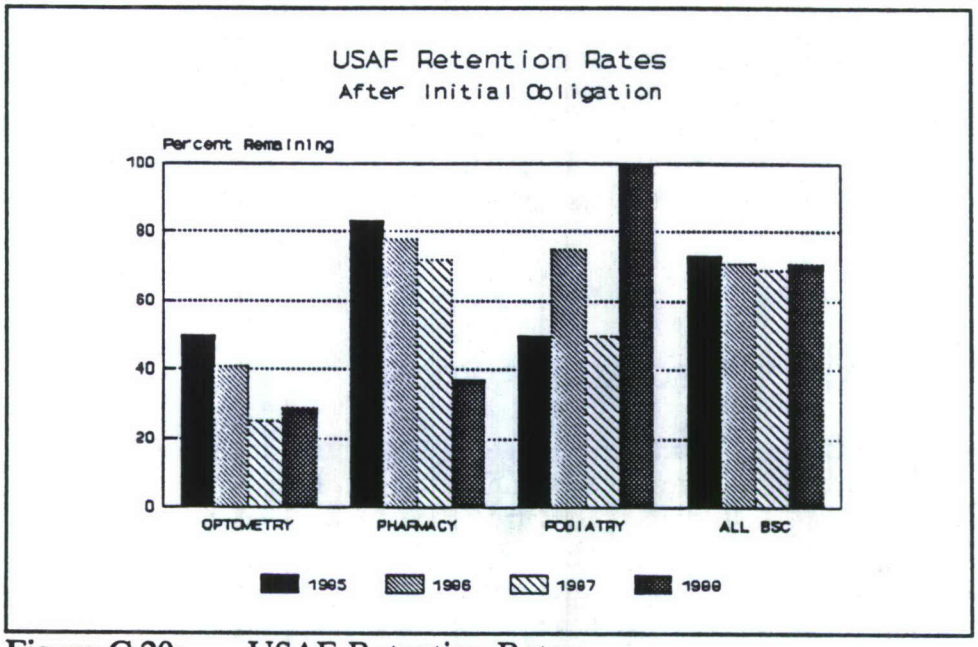


Figure C-20: USAF Retention Rates
After Initial Obligation

Since the average obligation is 3 years, and many student loans have an active duty waiver of 3 years, continuation and retention is poor at this career decision point. Optometry retention rates are comparable to some of the lowest experienced by physician specialties.

Many of the irritants that affect continuation or retention have already been discussed, but warrant more emphasis.

- Optometrists are not treated as independent health care practitioners in the military. If an ophthalmologist is on the staff, optometry is usually placed under ophthalmology even though the optometrist may be senior to them.

- Funds for continuing medical education are often difficult to obtain. Often they are not sufficient to allow the optometrist to attend quality education meetings without use of personal funds.

- Compensation does not match the civilian sector.

- Few opportunities exist at the local level to broaden a career because of demand for optometric services.

- o Inadequate support staff at times does not allow optometrists to be as productive as they could be.

Few medical treatment facilities can offer full scope optometric services to anyone other than active duty personnel. In the Army, for example, retirees and their family members are not being seen as patients because of the critical shortage of active duty optometrists.

CONCLUSIONS AND RECOMMENDATIONS

Optometry has been below budgeted authorizations since 1985 with a continuing erosion of inventory. There have been insufficient accessions to balance losses. In FY 1988 the Services assessed 51 optometry officers from the approximately 1,000 graduates from civilian optometry schools. Unfortunately, 62 losses to the inventory occurred that fiscal year. This trend will continue in FY 1989 given expected losses and projected gains. The Army and the Navy have been below budgeted authorizations for some time. In FY 1988 all three Services failed to meet recruiting objectives. Figure C-1 clearly demonstrates the difference between military and civilian pay. Conversations with numerous health professional recruiters indicate that entry level military pay is the largest roadblock for prospective applicants. This includes the current $100 monthly special pay. This health provider profession is ideal for targeting an accession bonus at entry level and incentive special pay focused at the end of initial obligation. Consideration should also be given to awarding four years constructive service credit for a professional degree, regardless of the actual number of years required to complete the degree. This would provide an additional accession incentive for a significant number of graduating optometrists.

Endnotes

1. Division of Disadvantaged Assistance, Bureau of Health Professions, Health Resources and Service Administration, and the American Optometric Association.

APPENDIX D

PHARMACY

EXECUTIVE SUMMARY

At the end of FY88 the Department of Defense was staffed at 91 percent of budgeted authorizations in this specialty, representing a shortage of 53 pharmacists. This shortage can be attributed to an imbalance of manpower gains and losses. Over the past two years, the military services have experienced increased difficulties in recruiting pharmacists. The average retention rate at the end of initial obligation for the last four years was 42 percent in the Army, 85 percent in the Navy, and 78 percent in the Air Force. Proliferation of the pharmacy profession in outpatient care areas has increased the demand and raised salaries making military service a less attractive alternative. Recruitment difficulties are expected to increase. The Services may need the ability to offer monetary incentives that will reverse this negative trend.

PROFILE OF MILITARY PHARMACY

History

Pharmacists have been associated with the U.S. Military since the Continental Congress authorized a single apothecary officer for the Army's first hospital in 1775. There are now approximately 517 pharmacists in the military.

Education

Commissioning as a military pharmacist requires a baccalaureate degree from an accredited school or college of Pharmacy in the United States, Puerto Rico, or the District of Columbia. Military pharmacists must also hold a valid state license. Licensure is contingent on passing the National Boards of Pharmacy examination.

Continuing education is a requirement for the pharmacist in most states. The services provide funding to attend civilian continuing education programs and also conduct training conferences.

Approximately half of the pharmacists in the military have advanced degrees including Masters in Pharmacy or Management, a masters level Doctorate in Pharmacy and a few PhD's. The Services have requirements for pharmacists with advanced degrees which are in positions as chiefs of service in hospitals or for clinical services. The Services use Ph.D pharmacists for teaching positions, health care studies and clinical investigations, medical product development, and retro-virus research.

Surveys of student indebtedness by the American Association of Colleges of Pharmacy reveal the average debt for pharmacy students was approximately $13,000 in 1985. The figure is projected to increase to $20,000 in 1990. Student indebtedness may be a factor in graduates not considering a lower paying federal position (see Figure D-1).

Scope of Practice

The nature of the pharmacy profession has changed, as most pharmacists are now employees rather than owners of pharmacies. The majority (68 percent) work in community pharmacies, with 60 percent employed by chain stores and 20 percent employed by hospitals. The focus of the profession has changed from merely distributing drugs to providing a broader spectrum of services including quality assurance, patient education in rational drug use and the reduction of adverse drug effects.[1]

According to standards of practice developed jointly by the American Pharmaceutical Association and the American Association of Colleges of Pharmacy, there are four major dimensions of the pharmacist's practice: general management and administration, processing the prescription, patient care functions, and education of health care professionals and patients.

Pharmacists verify the legitimacy of the prescriptions, their physical and therapeutic compatibility, and review the patient's medication profile before dispensing prescriptions. Services to patients include: insuring that the patient understands the dosage, providing information about the prescription, and advising of potential drug-related conditions.

Hospital pharmacists perform clinical functions such as drug product selection and prospective drug usage evaluation, as well as traditional aspects of patient-care activities, including drug preparation, drug distribution and control. Clinical functions often are performed in patient care areas in association with, or in support of, physicians and other health care practitioners.

Pharmacy functions are heavily dependent upon dynamic technology. New drug entities continue to have dramatic impact upon technological advances in equipment, devices, drug delivery systems, and automation.

Pharmacy in the Military

Pharmacists usually enter active duty as O-1s immediately upon receiving an undergraduate degree and a pharmacy license. Graduates from five or six year pharmacy schools qualify for one or two years constructive service credit. Constructive credit is also given for work experience. Those with constructive credit may enter the service at a grade of O-3.

Military pharmacists must provide comprehensive pharmaceutical services in support of air, land, and sea elements of the Armed Forces on a world wide basis in consonance with the health care delivery mission of each service. Pharmacy departments must meet all the Joint Commission on Accreditation of Hospitals standards for pharmaceutical services. Special practice institutional pharmacy and residency programs are accredited by national pharmacy organizations.

The pharmacist practices in an interdisciplinary setting along with the physician and nurse. Pharmacists in today's military setting can be seen preparing and administering chemotherapy and monitoring drug blood levels; providing drug information to patients and information regarding drug interactions and adverse reactions; or working in the critical care nursing units. The increased potency, complexity, and price of modern drugs, and a growing awareness of sophisticated protocols, have placed the pharmacists in a key role in drug therapy. Physicians, nurses and pharmacists work actively as a team in delivering drug therapy.

In addition to specialized institutional pharmacy programs in oncology, nuclear medicine, clinical investigation, allergen extract, and automation support, pharmacists must act as teachers for medical students, residents, and nurses. They also provide on-the-job training of military pharmacy technicians.

MILITARY AND CIVILIAN SALARY COMPARISON

Figure D-1 clearly depicts the disparity between civilian and military entry level pay. Civilian figures represent national averages before taxes and were provided by the American Journal of Hospital Pharmacy.

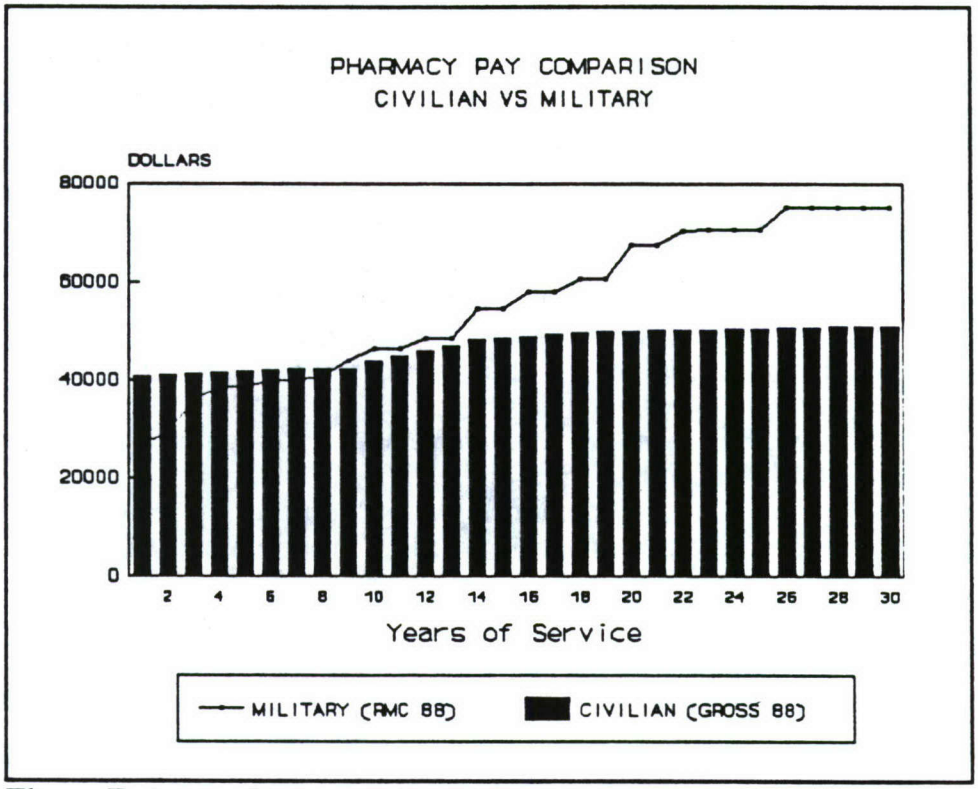


Figure D-1: Pharmacy Pay Comparison: Civilian vs. Military

SUPPLY AND DEMAND

The Bureau of Health Professions estimates requirements for pharmacists will increase to 170,600 in 1990 and 193,000 in the year 2000. The model forecasts continued growth in the demand for pharmacists beyond 2000 as the proportion of the elderly population increases and projects requirements for 226,500 pharmacists in the year 2020. Employment opportunities will increase with the expansion of pharmacy services into nontraditional settings such as grocery stores and department stores. These community pharmacies are aggressively recruiting new graduates.

There are 72 colleges of pharmacy. Enrollments appear to be increasing after sharp declines in the late 1970s and early 1980s. For example, the enrollment of students in 1985-86 showed an increase of 3.4 percent over enrollments in 1984-85.

A survey by the American Society of Hospital Pharmacists indicates a serious national shortage of hospital pharmacists and technicians[2]. The overall projected shortage of hospital pharmacists is equivalent to about one-third of new pharmacists who graduate annually. In recent years, only about one-fourth of new graduates have gone to

work in hospitals. In Spring 1985, 16 percent of all hospitals had at least one position open for a staff pharmacist.

The Bureau of Labor Statistics estimates that employment of pharmacists will grow by 1.6 percent annually. "The job outlook for pharmacists is expected to be excellent. If current supply-demand trends persist, shortages are likely in some communities and practice settings. Shortages may develop in States with large concentrations of elderly, for example. Employers unable to offer competitive salaries -- hospitals and Veterans Administration medical centers, in particular -- may experience continued difficulty attracting and retaining clinical pharmacists"[3] The military Services are experiencing increasing difficulty in the recruiting and retaining of pharmacists. Current military compensation does not provide the flexibility to remain competitive.

FORCE STRUCTURE

Figures D-2, D-3, and D-4 depict the Services' FY88 end strength by years of commissioned service compared to an ideal distribution. The shape of this specialty's force structure reflects the need to have large groups of young pharmacists enter the military each year.

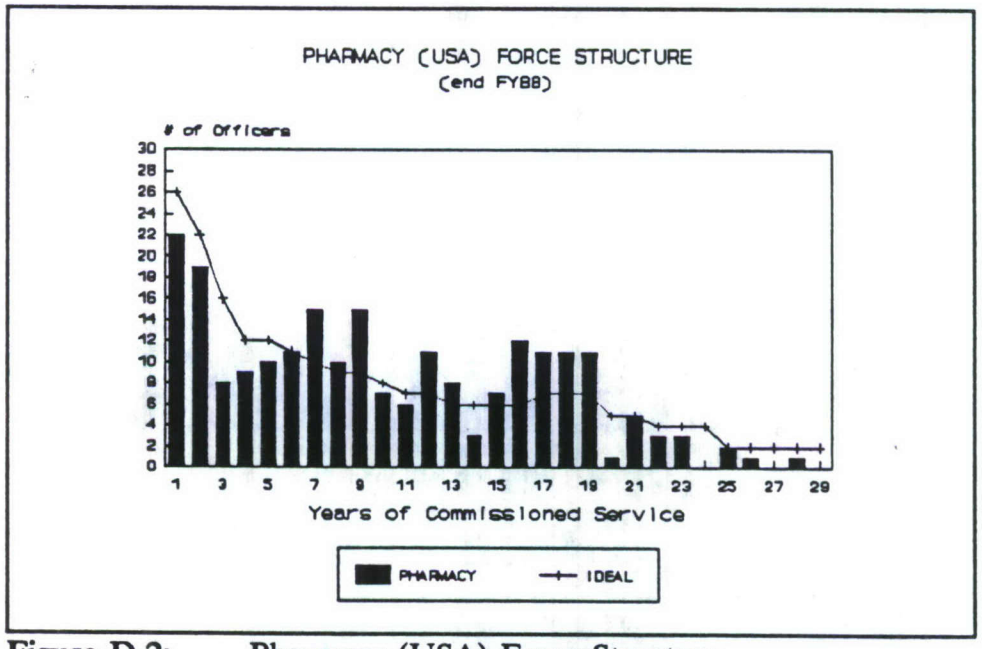


Figure D-2: Pharmacy (USA) Force Structure
Ideal vs. Inventory

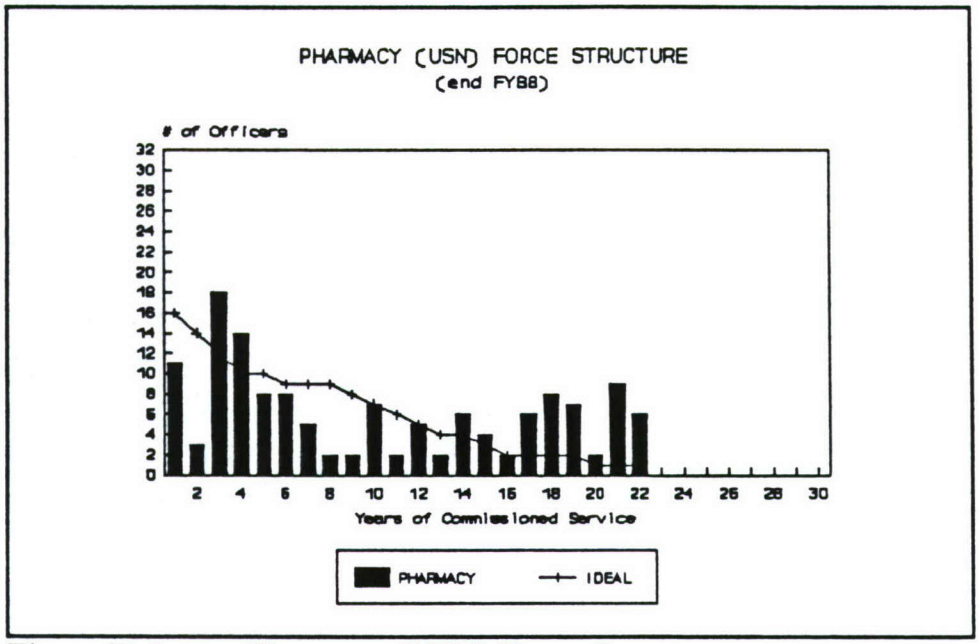


Figure D-3: Pharmacy (USN) Force Structure
Ideal vs. Inventory

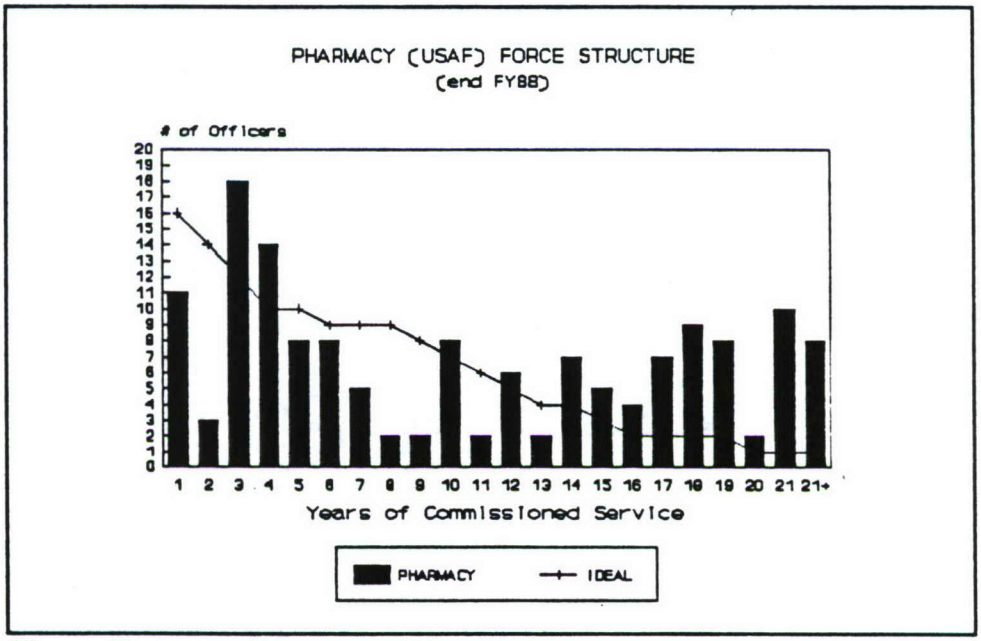


Figure D-4: Pharmacy (USAF) Force Structure
Ideal vs. Inventory

Recently, recruiting commands have reported great difficulty attracting qualified candidates. This is primarily attributed to the disparity in entry level pay. The Army does not anticipate reaching their 1989 goal of 23. The Navy did not meet their accession goal in FY88. Further, the Navy has received only four applications towards filling a FY89 goal of thirty. The Air Force has made recruitment of pharmacists a priority. This allows recruiting service to work and obtain over twenty candidates. Since the beginning of FY89, seven pharmacists have come on active duty. This is 50 percent of the amount obtained in the same time frame in FY88.

The large number of O-4s is necessary to provide sufficient experience for stand alone positions and supervision capability in the larger medical treatment facilities.

Retention

Average retention rates for the past four years were: Army 47 percent, Navy 81 percent, and Air Force 79 percent. A look at the average retention rates for the past two years shows Army 47 percent, Navy 92 percent and Air Force 63 percent. Although the year group numbers are small, there is a trend of poor retention in the Army and a possible downward trend in the Air Force.

REQUIREMENTS

The budgeted authorizations and inventory for all three Services and DoD appear in Figures D-5, D-6, D-7 and D-8.

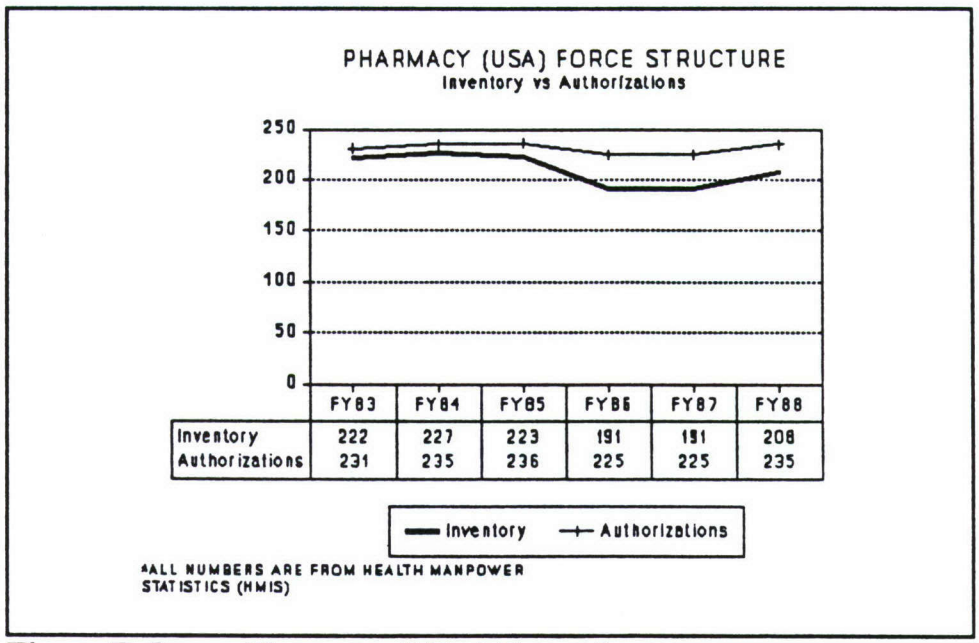


Figure D-5: Pharmacy (USA) Force Structure
Inventory vs. Authorizations

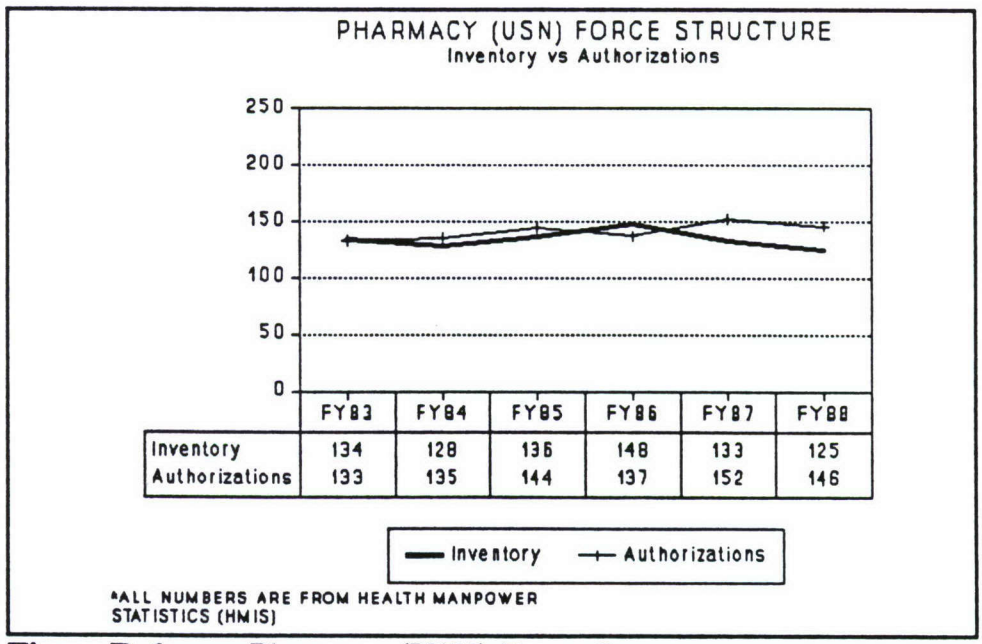


Figure D-6: Pharmacy (USN) Force Structure
Inventory vs. Authorizations

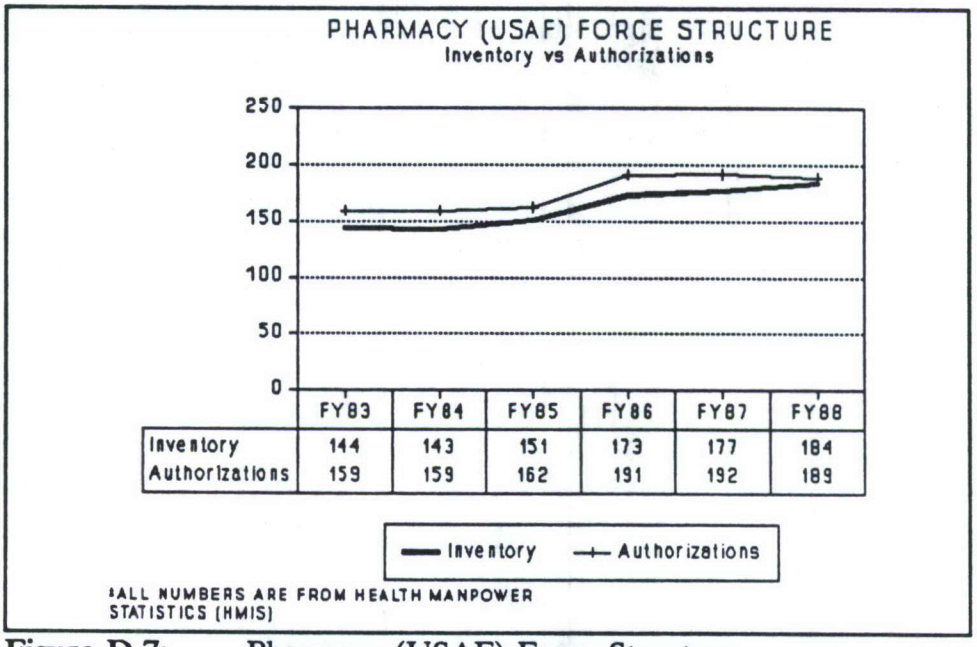


Figure D-7: Pharmacy (USAF) Force Structure
Inventory vs. Authorizations

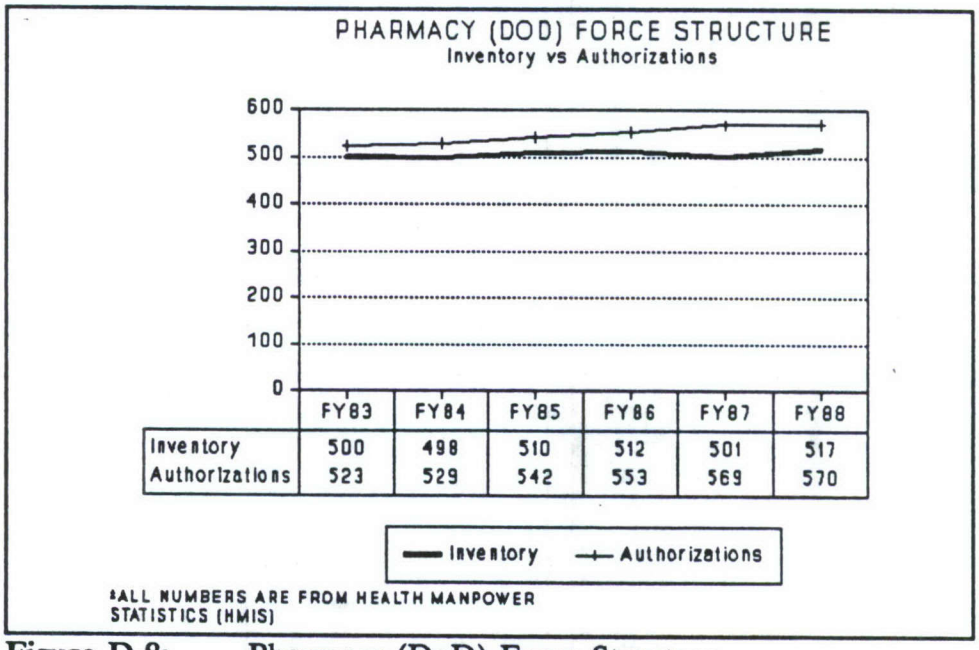


Figure D-8: Pharmacy (DoD) Force Structure
Inventory vs. Authorizations

CONCLUSIONS AND RECOMMENDATIONS

Rapid changes occurring in the health care professions are reflected in pharmacy. Increasing competition for pharmacists has driven entry level salaries up such that the military may no longer be an attractive alternative. Adequate force management is based on an adequate pool of candidates and the ability to assess these candidates. The supply of pharmacists is projected to grow slowly. The demand is at least equal to, if not greater than, the supply. The services are experiencing increasing problems in recruiting pharmacists. If the present trends continue, the Services will need to offer accession bonuses in order to remain competitive.

Endnotes

1. Sixth Report to the President and Congress on the Status of Health Personnel in the United States, (Washington, DC: U.S. Department of Health and Human Services, Public Health Service, Health Resources and Services Administration, June 1988) pp 8-10

2. American Journal of Hospital Pharmacy, Vol 42, 1985

3. "Dietetics, Nursing, Pharmacy and Therapy Occupations", Occupational Outlook Handbook, (Washington, DC: US Department of Labor, Bureau of Labor Statistics, 1988) pp 12

APPENDIX E

CLINICAL PSYCHOLOGY

EXECUTIVE SUMMARY

Our ability to maintain sufficient strength in clinical psychology is dependent on two major assumptions: established accession goals will be met and the retention rate will remain constant. Constant attention is required to maintain this delicate balance since this community is relatively small.

During the last five years, retention rates of military trained clinical psychologists, after initial obligation, have averaged 43 percent for the Army, 68 percent for the Navy, and 67 percent for the Air Force. The pattern shows that those who leave tend to leave the service as soon as they obtain their license. The average retention rate has been acceptable as long as an equal number can be accessed. This requires a sufficient pool of candidates from which to recruit to meet accession goals.

Due to the disparity of entry level income between newly trained civilian and military clinical psychologists, direct accession of fully trained people is rare. Expansion during the last several years of the military's clinical psychologist internship programs has been the primary method for meeting established accession goals.

These programs are beginning to experience difficulty in filling their quotas as the competition has increased for the limited number of internship applicants. For the second year, the Army was able to fill only 14 of their 16 training positions. The Air Force only filled 20 of their 23 positions. The Navy filled their eight positions, but only after asking 30 of 33 applicants. If internship training slots continue to go unfilled and the retention rate remains the same, the consequence will be a steady decline in inventory.

At of the end of FY88, the Department of Defense was staffed at 97 percent of budgeted authorizations in this specialty, representing a shortage of 12 clinical psychologists.

One of the major retention factors is the issue of pay disparity between psychologists and psychiatrists. As distinctions disappear regarding their scope of practice, the disparity in their military pay is predicted to become more significant.

Specific legislation designed to alleviate retention or requirement shortfalls is not considered necessary at this time.

PROFILE OF MILITARY CLINICAL PSYCHOLOGY

History

Clinical psychology has evolved rapidly in recent decades, and has undergone several phases:

1940-50s - Pre-professional Period - manpower management research, systems analysis, and some early clinical intervention.

1960s - Masters Degree Period - clinical role, predominantly as psychometrician and psychiatric extenders. Providers were trained at the masters degree level.

1970s - Professional Period - doctoral level psychologists become primarily involved in providing ambulatory care within psychiatry departments, directing alcohol rehabilitation units, and expand into staff opportunities and nontraditional/operational billets. Mixture of doctoral and masters trained personnel.

1980s - Expansion Period - continued increase in scope of practice and program management opportunities. Doctoral level training and state licensure is now the minimum requirement to practice in the military. Expansion has now moved into neuropsychology, behavioral health, aviation, and pediatric psychology.

Opportunities for nontraditional positions with the line community are increasing. The literature abounds with reports about predictable traumatic stress associated with the full continuum of tragedies (e.g. suicide of a shipmate; small or large aircraft, ground, or shipboard accidents with injury/death; acts of terrorism; limited conflict/police action; and sustained world conflict).

Education

Since November 8, 1988, psychologists have been required to be licensed in the military. Sixty-two percent of the Army, 95 percent of the Navy, and 98 percent of the Air Force clinical psychologists are licensed. Licensure requirements include a doctoral degree (Ph.D/Psy.D), successful completion of a national examination, and 2,000 hours of supervised post doctoral work experience.

Access to post doctoral training opportunities has become a major retention factor in the last five years. Similar to physicians seeking residency training, the trend among clinical psychologists is to specialize. In the military, three areas of specialization requiring one to two years of postdoctoral training are: child psychology, behavioral

medicine, and neuropsychological testing. Increased numbers of psychologists are seeking this specialized post doctoral training as a means of professional advancement. However, these opportunities are very limited.

There have been increased requirements for specialization from DoD, the line community, and the profession itself. Areas of greatest concern to the military are: domestic violence; addiction-food, illicit drugs, and alcohol; neuropsychological testing; educationally handicapped children (DoDDS) and other family members suffering from chronic illness or disease; disaster response for victims and family members, rescuers and caretakers.

Access to advanced training has been an important variable in the retention formula. With the increased focus on physician training, opportunities for full time out-service training have gradually eroded in the last several years. This has become a dissatisfier, negatively impacting on morale and retention.

Support for continuing health education to meet licensure requirements varies widely and is dependent on availability of local funding. Frequently, training funds are inadequate to allow funding of desired training.

Scope of Practice

Military psychologists are primarily generalists, performing the full array of services depending on duty assignment. In contrast, civilian clinical psychologists typically specialize in a particular area of service or population (e.g., neuropsychological testing or alcohol rehabilitation).

Core functions for a licensed clinical psychologist in the military are:

1. Clinical mental health assessment and diagnosis (apart from formal testing) of mental disorders.

2. Administration and interpretation of psychological tests.

3. Clinical interventions directed at identifying and correcting the emotional conflicts, personality disturbances, and skill deficits underlying a person's distress and/or dysfunction.

4. Health promotion services for training in smoking cessation, obesity control, relaxation, and stress management.

5. Military environment consultation.

6. Research.

Psychological services provided to the beneficiary population remain primarily the same as for the active duty. However, the numbers of beneficiaries is increasing dramatically as is the length of treatment time.

Most eligible beneficiaries are directed to seek mental health care from CHAMPUS or their own health insurance plan. Mental health is the single largest consumer of CHAMPUS dollars. In the 1987 psychologists accounted for 10 percent of the combined medical and paramedical costs. This was approximately $34 million ($31 million for outpatient and $3 million for inpatient services).

Role of the Clinical Psychologist in the Military

Historically, the greatest percentage of casualties among American combat forces has been non-battle injuries and disease. Casualties related to combat stress reactions are predicted to be in the range of 20 to 30 percent during a sustained combat scenario.[1]

Properly trained military mental health professionals can recover up to 75 percent of these casualties for return to full duty within 72 hours.[3,4] This is critical because of limited capabilities to obtain reinforcements.

In the continuum of tragedies, there are three populations (who may all be the same) needing care: victims/survivors, rescuers (e.g., fire fighters, body handlers), caretakers (e.g., medical and chaplains).

Appropriate and timely intervention is highly effective in the prevention of future stress-related problems (e.g., lost man hours and productivity, increased substance abuse, family violence, suicidal behavior, and voluntary separations from the service).

Relationship to Psychiatrist and Level of Autonomy

Psychiatrists are usually associated with providing inpatient treatment and medications while psychologists are identified with outpatient treatment and psychological testing. Areas once limited in the military to psychiatry have been or are being opened to psychologists. Some examples are: writing medical boards, evaluating conscientious objectors, admitting privileges to alcohol rehabilitation departments, functioning as department heads, and managing a wide variety of personnel management programs. The President's Executive Order (#12586), authorizing the use of clinical psychologists on various competency boards within the Department of Defense, is in the process of being implemented. The broadening of responsibilities to coincide with training had a direct positive impact on military psychologists and recruitment of new psychologists.

The Army and Air Force allow commanders to designate the most qualified officer as chief of mental health departments, regardless of discipline. In most Air

Force facilities, a clinical psychologist and a social worker are the mental health department, as no psychiatrist is assigned. Navy policy is moving in this direction. At some military training hospitals where there is a clinical psychology internship program, the psychology department is separate from the psychiatry department.

MILITARY AND CIVILIAN SALARY COMPARISON

The disparity between civilian and military income, reported in the Report to Congress on Nonphysician Health Care Providers-Senate Report No. 98-292, 1984, continues to be a major factor negatively influencing direct accessions of fully qualified clinicians and retention.

The earning power of a newly licensed clinical psychologist is much greater than that of an O-3 or O-4. The pay picture becomes more favorable later in the military psychologist's career. However, the limited opportunity for promotion to O-5 and O-6 restricts access to higher pay.

Clinical psychologists in individual practice are the closest comparable group to military clinical psychologists at the O-3 and O-4 level because of the similarity in scope of practice. The most comparable group of clinical psychologists to our O-5s and O-6s are the administrators of applied psychology.

Figure E-1 reflects the difference between civilian net median salary and Regular Military Compensation. With expenses ranging from 40 to 50 percent, gross median civilian salaries range from $63,000 to $98,000. The civilian data reflects the American Psychological Association's annual survey for 1987 (the last year of available data) of licensed doctoral-level psychologists in individual practice and administration of applied psychology. The 1987 figures have been factored using increases in the Economic Cost Index to reflect 1988 numbers. The military data is from the 1988 Regular Military Compensation Tables.

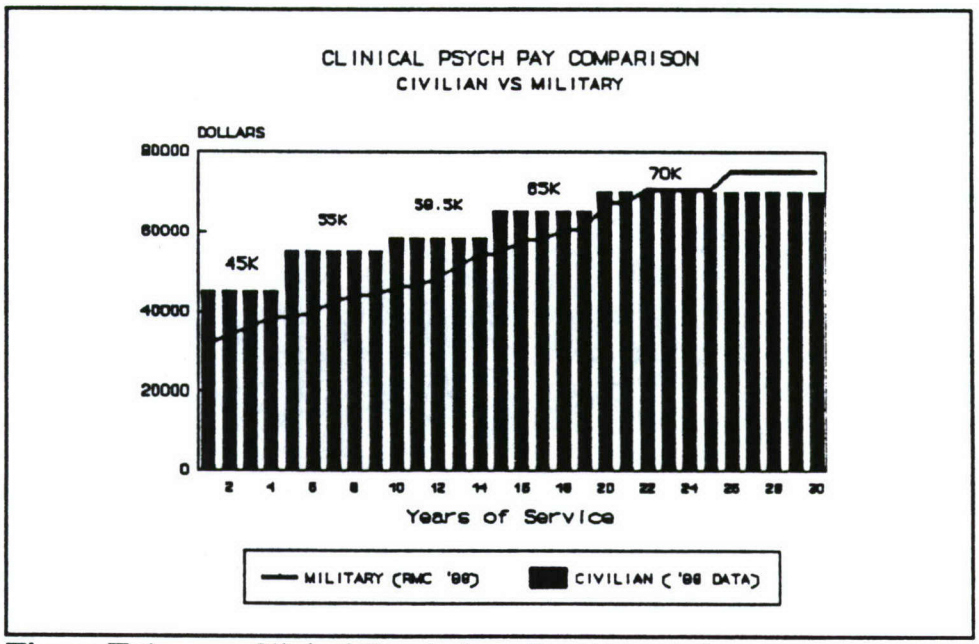


Figure E-1: Clinical Psychology Pay Comparison
Civilian vs. Military

SUPPLY AND DEMAND

Unemployment of clinical psychologists in the civilian market is essentially nonexistent. Psychologists have a strong attachment to their occupation - only a relatively small proportion leave the profession each year. Bureau of Labor Statistics forecasts the job market demand will increase by 27 percent to 39 percent for clinical psychologists by the year 2000.

Recruitment

Direct accessions of fully qualified licensed clinical psychologists are rare. This is primarily due to the disparity in amount of entry level income between a fully trained civilian and military clinical psychologist.

Under DOPMA, forty-eight months credit are given for doctoral level education. Therefore, clinical psychologists compete for O-4 at, or around, seven years of active duty. This means that only O-5s and above have tenure (i.e., they are "guaranteed" to retire despite two or more failures of selection to higher ranks). For the clinical psychologist, selection to O-5 comes about the 12 year mark. The military has directly accessed only a few fully qualified clinicians willing to take the chance of being "let go" after 12 years or more.

In 1988, the Army did not access a single licensed clinical psychologist. In previous years, they had an average of one per year. The Navy has had only one direct accession in the last three years. The Air Force also has had difficulties recruiting fully qualified licensed clinical psychologists.

Until the early 1980s, the Armed Forces Health Profession Scholarship Program was a major source of accessions. Today, the primary method to staff experienced clinical psychologists authorizations is through clinical psychology internship training programs. This has increased the probability of a stable and predictable flow of accessions. Without this mechanism to access clinical psychologists, recruiting goals will not be met.

Military clinical psychology internship training programs have been highly competitive with the civilian sector. A main draw of the military internships is for students who go to schools with extremely high cost and/or have a prior military background. Coupled with this is the fact that the internship is required for award of the doctorate in clinical psychology. The American Psychological Association predicts the competition for interns will become increasingly intense with the leveling of graduate school enrollees in clinical psychology and the simultaneous steep increase in the number of internship sites.

In 1987, the Army's clinical psychology internship program was able to recruit only 12 interns for 16 positions. In 1988, they recruited 15 interns for 16 positions, after the most expensive and intense media/recruitment campaign in its history. The Air Force, this year, has been unable to fill three of its 23 positions. The Navy contacted 30 of 33 possible applicants to fill their eight training positions. A new factor this year, influencing the attractiveness of military clinical psychology internship programs, is the requirement that new entrants, who complete their internship on active duty, must serve three years following their training.

Retention

A general model for retention contains several variables: job challenge, career satisfaction, opportunity for further education, opportunity for promotion, assignments received, attractiveness and clarity of career path, and spouse support.

Average retention after initial obligation, for the last four years, has been 43 percent for the Army, 68 percent for the Navy, and 67 percent for the Air Force. As long as there is a sufficient supply of accessions to replace losses, these retention rates were inadequate. However, difficulty recruiting fully qualified psychologists and the inability to fill internship programs has resulted in a steady erosion of inventory below budget authorizations.

Factors negatively impacting on morale and retention are being addressed. For example, scope of practice has expanded during the last few years. One of the major retention factors not yet resolved is the issue of pay disparity between psychologists and

psychiatrists. As distinctions disappear regarding their scope of practice, the disparity in their military pay is predicted to become more significant.

As mentioned previously, opportunity for postdoctoral training is increasingly important to 0-3s in their decision to continue beyond their initial obligation. Access to this training has been significantly constrained in the last couple of years.

FORCE STRUCTURE

Management of this specialty is predicated on monitoring several interrelated factors: retention rate level and stability; accession goals size and degree of attainment; and the recruiting population of eligible candidates.

The shape of the ideal force structure is determined by the nature of services required. Its size is a function of the amount and type of services required. Accession goals take into account continuation rates and promotion flow points. They are set at a steady state to increase the probability of having the inventory match the shape of the ideal force structure.

Figures E-2, E-3, and E-4 compare each Services' FY88 ideal force structure with its current inventory, in terms of years of commissioned service and number of officers. The shape of clinical psychologists' force structure is also influenced by the requirement to properly staff numerous military positions where there is only one clinical psychologist. Substantial experience, in both a clinical and military perspective, is required. The O-4 community best fulfills this requirement. Increased experience in this specialty has increased efficiency in the delivery of mental health care.

To have a large sufficient cadre of O-4s, an even larger O-3 pool is necessary. To accomplish this task, improving retention after initial obligation is critical. Maintaining the size of the O-4 group is essential, not only to ensure adequate delivery and supervision of patient care but also to have a sufficient cadre to draw from for promotion to O-5 and eventually to O-6.

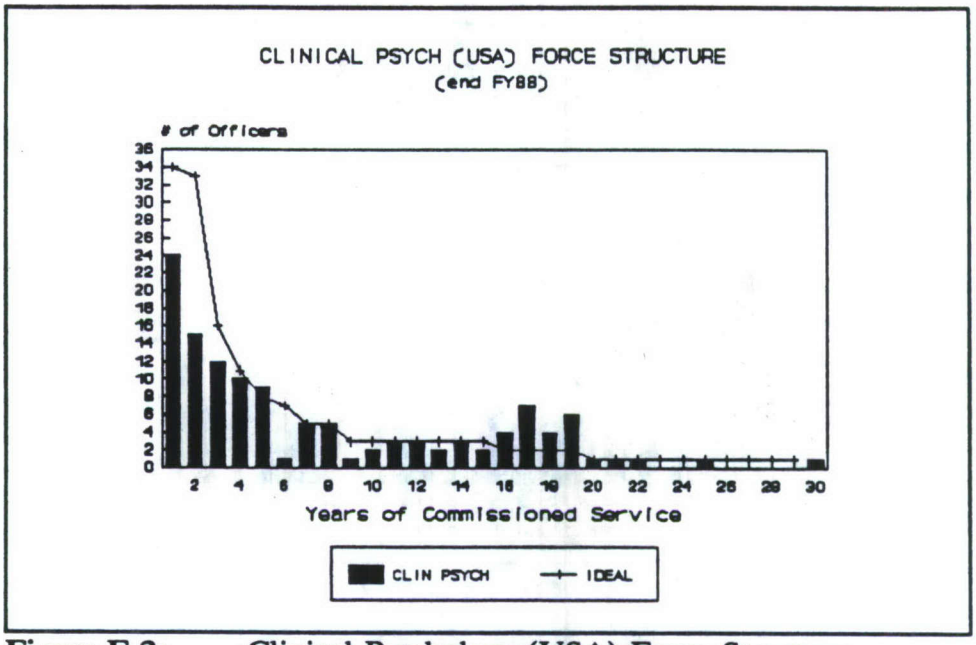


Figure E-2: Clinical Psychology (USA) Force Structure Ideal vs. Inventory

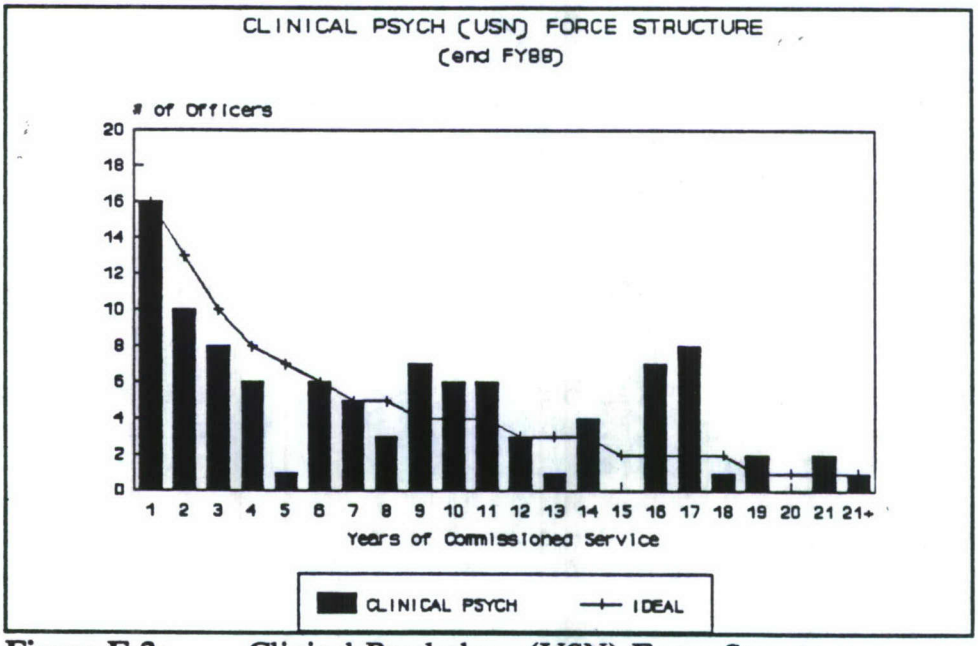


Figure E-3: Clinical Psychology (USN) Force Structure Ideal vs. Inventory

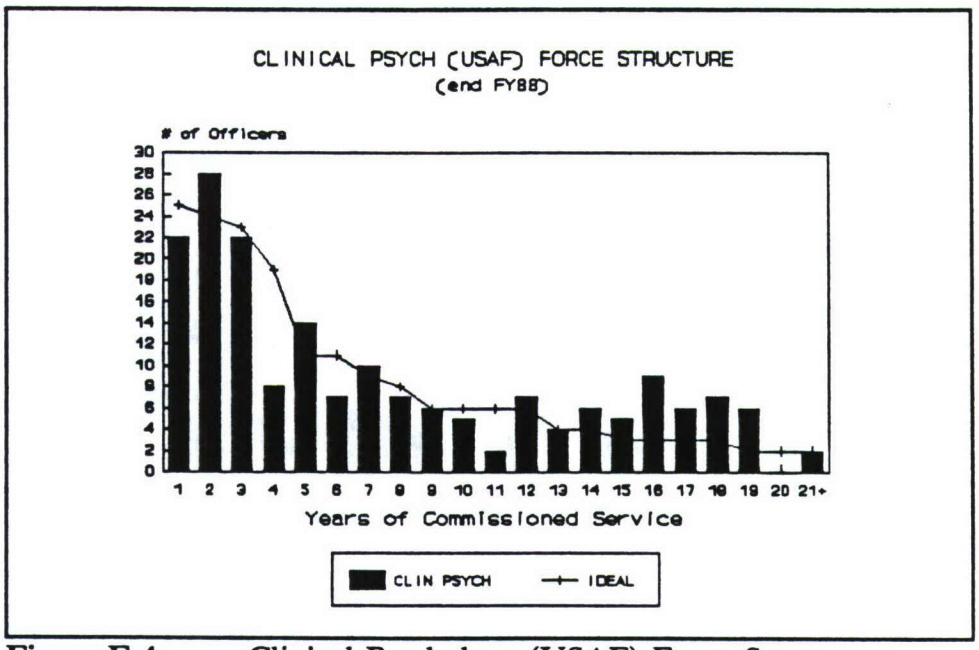


Figure E-4: Clinical Psychology (USAF) Force Structure Ideal vs. Inventory

REQUIREMENTS

A number of policy choices are necessary before accurate requirements can be determined. For example, consensus is necessary regarding the different mental health models necessary to meet the missions of military medicine.

Another issue is the size of a permanent cadre of mental health providers who must be maintained in peacetime to effectively treat casualties in the initial stages of a war before the reserves and drafted personnel arrive.

As stated in the Physician Health Professionals Special Pays Study, a decision is necessary as to the amount of health care to be performed in miliary medical facilities as opposed that in the private sector.

Peacetime requirements are being developed by the DoD Joint Healthcare Manpower Standards. These standards are anticipated to be completed by the end of FY91.

For this report, requirements are defined in terms of approved budget authorizations. Figures E-5, E-6, E-7 and E-8 display the Army, Navy, Air Force and DoD authorizations and inventory for the last six years. Authorizations and supply often correlate. As supply decreases, authorizations follow.

Figure E-5 describes the trend for Army clinical psychologists from FY83 to FY88. Expanded internship slots has helped to correct the situation. In FY88 the Army had 9 vacant authorizations out of a total 137 (a 7 percent shortage).

Figure E-6 portrays a steady decline of inventory in the Navy beginning in FY85. In FY88, the Navy has 15 vacant authorizations out of 118, (an 13 percent shortage). An average of eight annual accessions and normal attrition contributed to this situation.

To stop this decline, the Navy is doubling the output of its clinical psychology internship program (from eight to 16 authorizations), establishing a steady number of accessions, and improving recruitment efforts.

Figure E-7 demonstrates the Air Force's shortage of clinical psychologists for three-and-a-half of the last five years. The expansion of their clinical psychology internship training program to 23 has been the major factor in compensating for this decline. However, cyclical shortage patterns are likely to reoccur.

Figure E-8 displays the overall status of DoD as a whole and shows an overall shortage of 12 clinical psychologists.

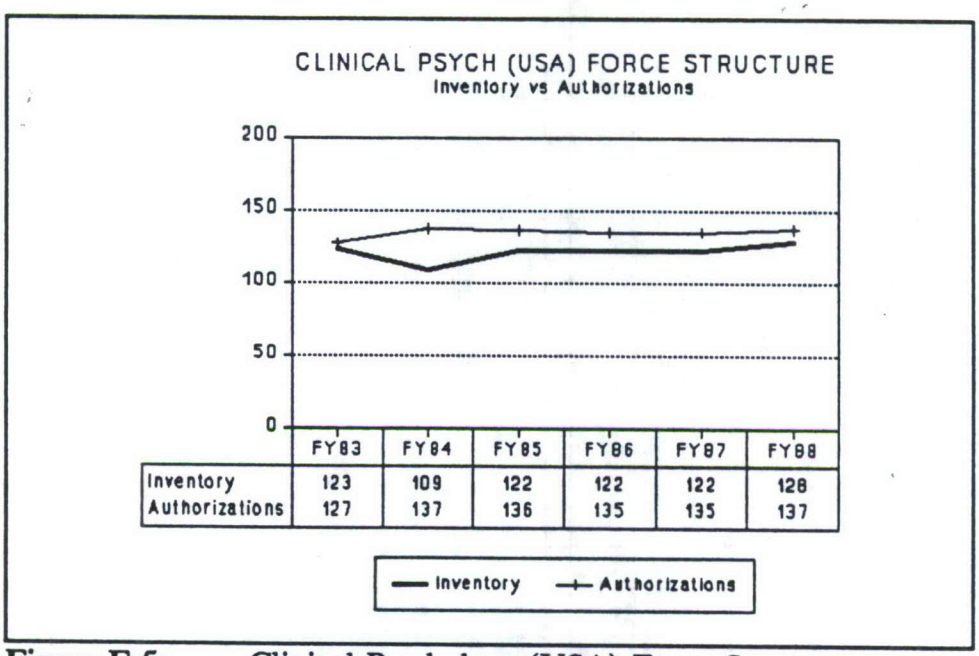


Figure E-5: Clinical Psychology (USA) Force Structure Inventory vs. Authorizations

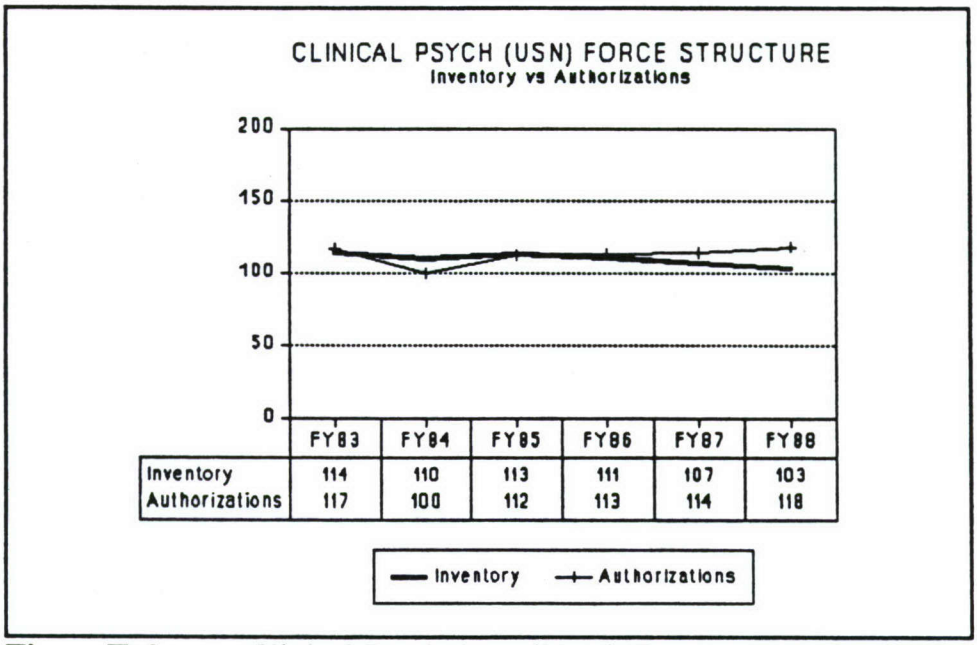


Figure E-6: Clinical Psychology (USN) Force Structure Inventory vs. Authorizations

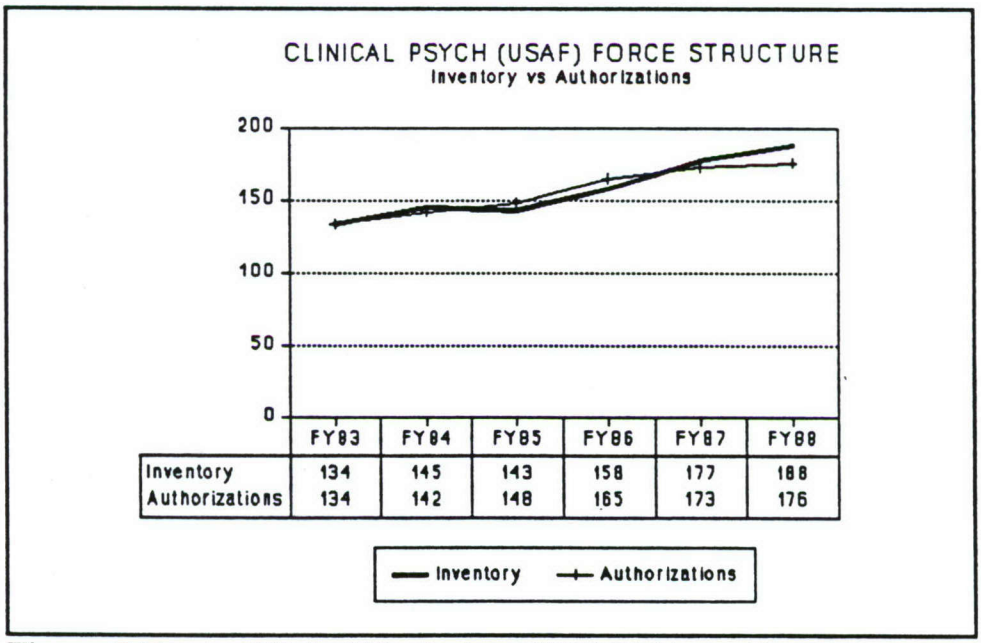


Figure E-7: Clinical Psychology (USAF) Force Structure Inventory vs. Authorizations

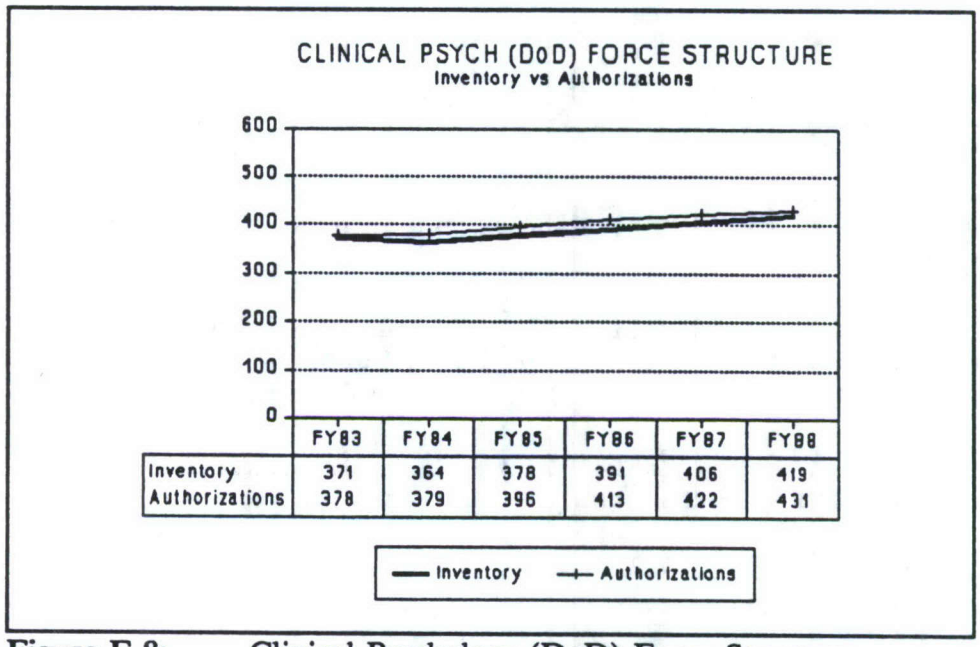


Figure E-8: Clinical Psychology (DoD) Force Structure Inventory vs. Authorizations

CONCLUSIONS AND RECOMMENDATIONS

Mental health is the single largest consumer of CHAMPUS dollars. In 1987, mental health accounted for 10 percent of the combined medical and paramedical costs. This was approximately $34 million ($31 million for outpatient and $3 million for inpatient services).

As of the end of FY88, the Department of Defense was staffed at 97 percent of budget authorizations, representing a shortage of 12 clinical psychologists.

The Services have primarily assessed psychologists through internship programs. Recently, there has been difficulty in filling the quotas for these programs. This is attributed to increased competition with the civilian sector for a limited supply of applicants. Direct accessions of licensed clinical psychologists are rare due to the disparity of civilian and military incomes.

Until recently, retention of psychologists was adequate. However, if difficulties in obtaining sufficient interns to fill quotas continues, increased retention is needed to fill authorized levels. Special pays are not required for clinical psychology at this time.

Endnotes

1. Bellenky, G. L., Solomon, Z., & Noy, S. Battle Stress: The Israeli experience. Military Review, 28, (1985) 28-37.

2. Department of the Army. Field Manual FM 26-2, Management of Stress in Army Operations, 1986.

3. Noy, S., Stress and personality as factors in the causality and prognosis of combat reaction. Paper presented at the Second International Conference on Psychological Stress and Adjustment in Time of War and Peace, Jerusalem, Israel. (June, 1987).

4. Williams, T. (Editor). Post-Traumatic Stress Disorders: a handbook for clinicians. Disabled American Veterans Headquarters Office, 1987.

APPENDIX F

PHYSICAL THERAPY

EXECUTIVE SUMMARY

Military physical therapy is beginning to experience difficulties accessing therapists and retaining them past initial obligation. Civilian demand for physical therapy is projected to grow faster than for any other health care profession (87 percent growth between 1986 and 2000). Vacancy rates in hospitals may be higher for physical therapists than for nurses.

The problems are service specific. The Air Force has averaged 5.7 percent below budget authorizations from 1986 until the present. Difficulty accessing fully qualified therapists apparently creates this shortage. Therapist shortages and military/civilian entry level pay disparity may create an even greater accession problem. The Army does not have a significant accession problem because of their training program. The Navy has obtained positions in this program because of problems recruiting therapists.

The Army's retention past initial obligation was inadequate to maintain needed numbers of experienced therapists for the past four years. Pay, promotion timing, and workload were the major dissatisfiers on an exit survey. Workload data support these results showing that the military therapist sees more patients per day than the civilian therapist (26.5 vs 11.5 respectively).

The current accession and retention trends make physical therapy a likely candidate for future accession bonus and targeted incentive special pay.

PROFILE OF PHYSICAL THERAPY

History

Physical therapy began in World War I when the Army trained "reconstruction aides" to work with injured soldiers to shorten convalescence and return them to battle. The casualties of World War II again demanded this specialty. Thirteen hundred therapists served in every theater of operation with two therapists becoming prisoners of

war. Subsequent conflicts in Korea and Vietnam again resulted in military physical therapy officers serving in both field and evacuation hospitals.[1]

In today's military, the physical therapist's wartime role is in third echelon care. They will perform musculoskeletal assessment, plan and administer treatments, provide burn and wound care, and reassess and document changes in patient condition.

Today's rapid advances in medicine parallel the physical therapy profession in several ways. First, the expanding body of knowledge resulted in a movement by the American Physical Therapy Association to have a masters degree as the standard entry into the profession. Second, these expanding roles and increased educational requirements resulted in specialization within the profession. Physical therapy recognizes six specialty areas: cardiopulmonary, clinical electrophysiology, neurology, pediatrics, orthopaedics and sports physical therapy. The American Board of Physical Therapy Specialties sets standards and provides specialty certification in these areas. These advances in the profession have led to legislation in 21 states where physical therapists may treat patients without physician referral.

Education

A student has three choices of educational programs: baccalaureate; certificate (for students who already hold a bachelors degree in another field); or two year masters degree. The American Physical Therapy Association (APTA) projects that by 1995 all programs will be at the masters entry level. When the masters degree requirements become effective, the supply of new practitioners may become more constrained.

Changes in the number of programs, graduates, and faculty from 1980-1988 are as follows:[2]

	1980-85	1985-88
Programs	+19%	+ 9%
Graduates	+43%	+16%
Faculty	+27%	- 1%

Currently, ten schools are developing new physical therapy degree programs. However, future growth is limited to expansion of current class sizes because of the shortage of faculty shown above.[3]

Licensure

All states regulate physical therapy through mandatory licensure. Licensure is based on successful completion of both an APTA accredited degree program and a licensing exam.

In addition to licensure, there is a trend in the state legislatures requiring annual proof of continuing education and active practice. The availability of continuing health education is essential in the acquisition and retention of therapists.

Military Physical Therapy

In today's military medicine, the physical therapist's scope of practice varies with the mission of each service. The physical therapist frequently serves the dual roles of primary care provider and consultant. In the military medical community where specialist physicians are a premium, the need for improved patient access requires the increased use of physical therapists in the physician extender role.

As primary musculoskeletal screeners, therapists are credentialed to evaluate patients, order x-rays, outline and implement treatments, and refer to medical specialists as needed. This role greatly alleviates the orthopedic surgeon's routine workload and allows him more time to perform surgery. Further specialization occurs, especially in the Navy, where physical therapists provide the majority of electromyographic testing.

Frequently, physical therapists are stationed in solo positions in military treatment facilities where, due to the lack of orthopedic surgeons, they may be the resident expert in musculoskeletal evaluations. Therapists in these positions require a high degree of professional and management expertise.

In their role as consultants and direct providers, physical therapists are key support personnel to the physicians. Ninety-five percent of all orthopedic surgeries require specific rehabilitation programs outlined and monitored by the physical therapist.

Therapists evaluate and treat patients referred from not only orthopedics but also neurology, cardiology, pediatrics, internal medicine specialties, surgical specialties, anesthesia and oral surgery. Insufficient physical therapy staffing results in decreased quality care and also is a contributing factor to military physician dissatisfaciton.

MILITARY AND CIVILIAN SALARY COMPARISON

Civilian entry level salaries have risen dramatically in response to the shortage of physical therapists. Military entry level pay has not kept pace. The Sixth Report to the President and Congress on the Status of Health Personnel in the United States notes:

> "Competition for new (Physical Therapy) graduates is driving up starting salaries, with amounts of up to $30,000 being offered for those with little or no experience. For therapists changing jobs, bonuses of up to $5,000 may be offered. Therapists with advanced degrees for teaching positions are in especially short supply. Governmental institutions without

flexibility in salaries or conditions of employment are now typically understaffed."[4] (underline added for emphasis.)

Salaries in hospitals, which are lower than many other physical therapy work settings, have risen nearly 5 percent annually over the past five years.[5]

Salary disparity was the key factor in creating critical shortages of therapists in the Veterans Administration. This prompted the VA to request and obtain permission to offer $1.0 million in scholarships for physical therapy students in 1988.

Table F-1
Military-Civilian Pay Differences at Decision Points

Decision Points	MIL	CIV	DIF
Accession[1]	$22,286	$25,656	-$3,370
Initial Obligation[2]	$34,483	$34,118	+$ 365
0-4 Promotion[3]	$44,574	$44,428	+$ 146

[1] 1988 RMC for an O-1 under 2 years of service (YOS) is compared with civilian starting salary per a 1988 American Physical Therapy Association Survey.
[2] RMC pay for an O-2 over 3 YOS and an O-3 over 4 YOS is averaged since these are the points at which initial obligations end for military physical therapists. Civilian pay is the average staff salary for a hospital employed therapist in 1988.
[3] RMC pay for an O-4 over 10 YOS is compared with averaged civilian pay for directors of sports medicine/physical dysfunction departments who have an average of 11 years of experience.

Table F-1 above shows that with the exception of starting salaries, military physical therapists receive comparable pay to their their salaried civilian counterparts. These civilian amounts understate true incomes because civilian benefit packages may include: sign-on bonuses; medical, life, and disability insurance; payment of professional dues and license fees; and lucrative continuing education allowances.

The comparability of military/civilian physical therapist's pay does not extend to private practice. The mean gross income for a self-employed therapist is $72,088, according to a 1986 APTA survey. Applying the increase in civilian wages as measured by the ECI to private practice; results in an 1988 salary approximation of $79,286.

The majority of therapists work in other than hospital settings.[6] They are either self-employed or part of a physician group. Reformation of the health industry and favorable third party reimbursement policies are projected to result in rapid growth in private practice opportunities.[7] The military physical therapist, with his/her professional

practice autonomy and expertise as a musculoskeletal screener is attracted to the higher paying private practice settings. This is confirmed by inadequate retention past initial obligation for Army therapists, and results of an exit survey (see Annex A).

SUPPLY AND DEMAND

The Bureau of Labor Statistics (BLS) forecasts physical therapy as the fastest growing health diagnosing and treating profession in the United States. An 87 percent growth (53,500 new jobs) is expected between 1986 and 2000.[8] The greatest increase will be in the private practice settings.[9] Though demand for therapists is rising, the supply of new graduates remains nearly constant because of a shortage in physical therapy faculty.[10] The shortage of therapists was more than 500 at the start of 1987.[11]

This rapid growth, combined with a relatively stable inflow of therapists, has resulted in a nationwide shortage. Preliminary results of the 1988 American Hospital Association Survey on Health Care Human Resources found 48 percent of the hospitals had difficulty recruiting physical therapists. Second to nurses, this was the most difficult profession to fill.[12]

A July 1988 survey by the Metropolitan Chicago Health Care Council found a 14.4 percent physical therapy vacancy rate. This was higher than the registered nurse vacancy rate of 9.6 percent. The APTA estimates in 1987 there were about 60,450 licensed physical therapists practicing nationwide to fill 61,000 physical therapy positions.[13] This is a growth of 4,500 positions since 1985.

Demand for physical therapy is also reflected in the military health care system. Between 1984 and 1988, physical therapy authorizations grew 32 percent in the Navy and 25 percent in the Air Force. The Army experienced less growth since their requirements were considerably larger to begin with. Increased authorizations, coupled with the civilian shortage of qualified personnel, heightens competition for qualified physical therapists. The Army primarily accesses therapists through their Academy of Health Sciences Graduate Program in Physical Therapy. It annually produces approximately fifteen masters degree physical therapy officers. In 1987, the Navy, faced with increased recruiting problems, obtained three allocations per year in the Army's program.

Traditionally, the Air Force has been able to fill its requirements through direct recruiting of fully qualified therapists. However, this year, the Air Force is experiencing difficulty in meeting recruiting goals for physical therapists.

FORCE STRUCTURE

Figures F-1, F-2, and F-3 display the actual versus the ideal force structure for physical therapists for each Service.

The ideal force structures were based on target end strength, field grade ceilings, and historic retention and accession data to project a 20 year force. Field grade force structure is verified against recommendations from the FY89 Army Medical Specialist Corps Pilot Study on Force Structure, which considered type and quantity of workload, required professional knowledge and experience, advanced training requirements, supervisory responsibilities, and training programs. Service-wide, more therapists with 5 to 10 years of experience are needed to fill solo positions which require professional and military mid-management experience. In the Navy, 14 of 35 medical treatment facilities having physical therapy are solo therapist positions. In the Air Force, 38 of 66 facilities having physical therapy are solo therapist positions.

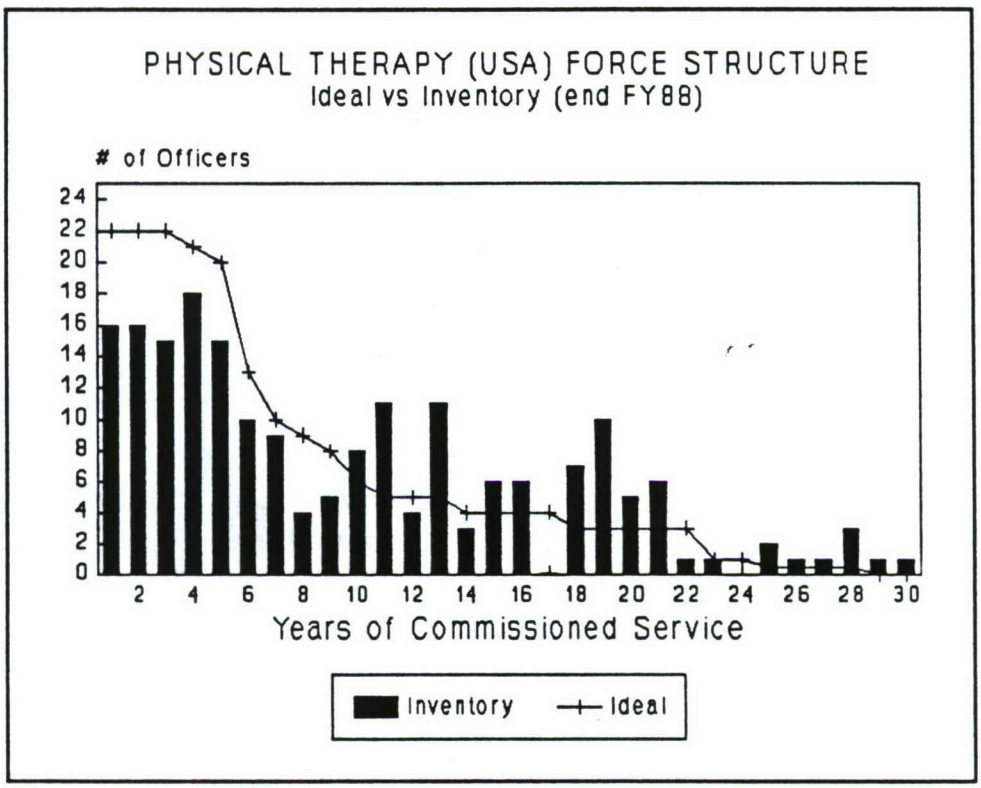


Figure F-1: Physical Therapy (USA) Force Structure Ideal vs. Inventory

Figure F-1 is FY88 inventory data. In FY89, the Army will experience a significant inventory loss at the 5 year point when 10 of 15 therapists leave the Service upon completing their initial obligation.

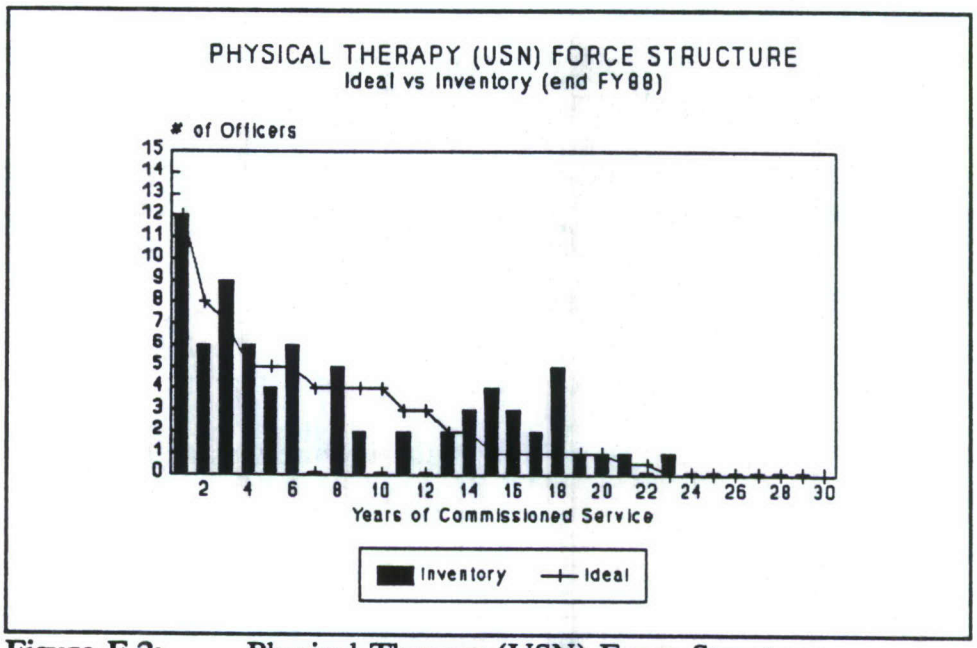


Figure F-2: Physical Therapy (USN) Force Structure
Ideal vs. Inventory

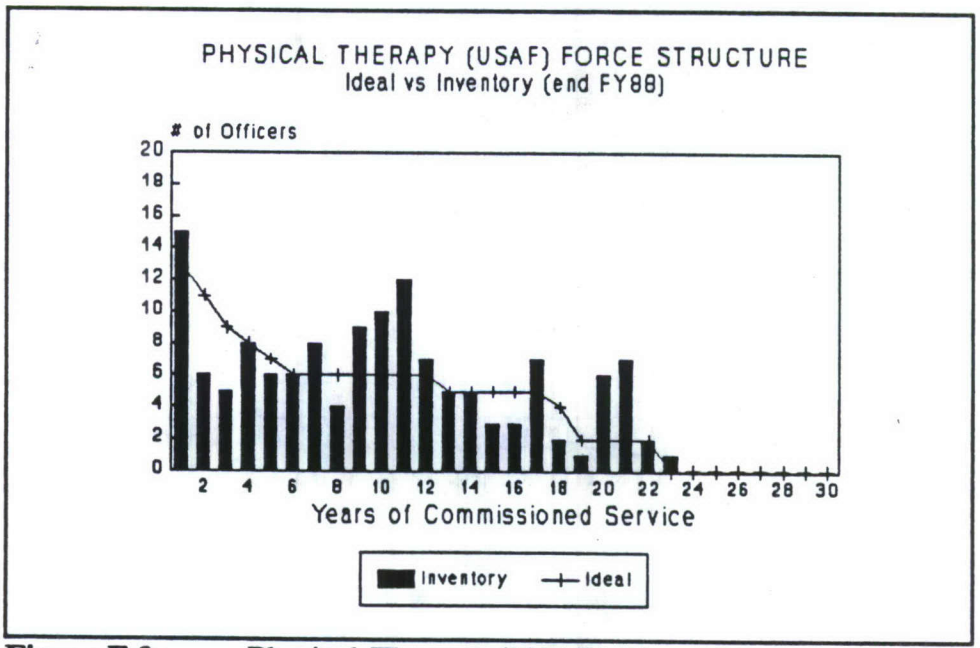


Figure F-3: Physical Therapy (USAF) Force Structure
Ideal vs. Inventory

REQUIREMENTS

The Medical Expense and Performance Reporting System (MEPRS) reported 2,879,538 visits to physical therapy in 1987. CHAMPUS costs for physical therapy in FY88 were $2,067,774. This cost suggests a significant number of dependents and retirees were not treated by military therapists because services were not available. Recapturing this CHAMPUS workload by increasing military physical therapy force may be a cost effective action.

There is no current DoD Joint Health Care Manpower Standard for Physical Therapy. (A joint standard is scheduled for development in 1990). The information presented below reflects the Services' current budget authorizations and inventories.

Figures F-4, F-5, F-6, and F-7 report the inventory vs authorization comparisons for each service.

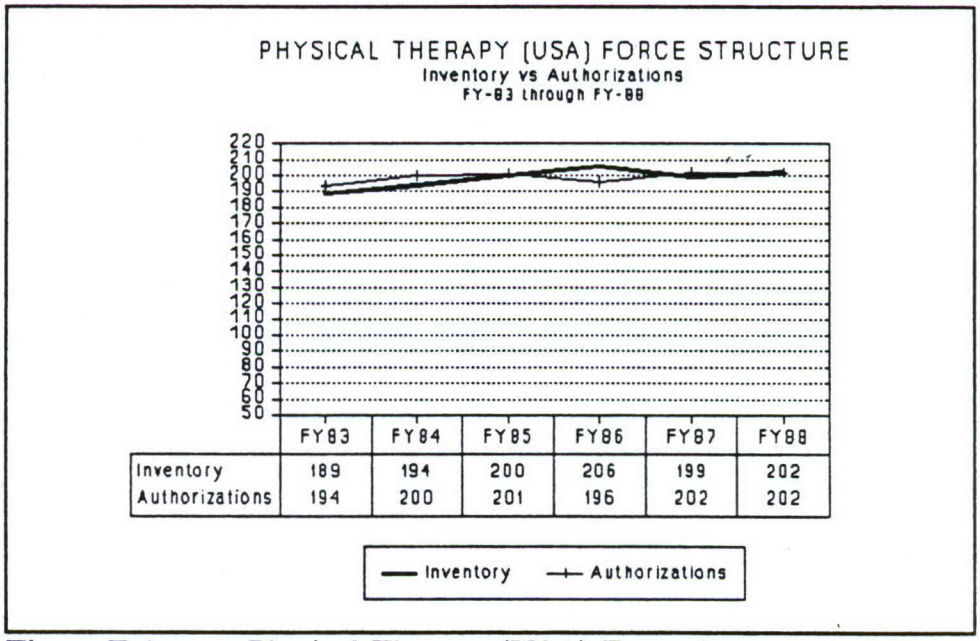


Figure F-4: Physical Therapy (USA) Force Structure Inventory vs. Authorizations

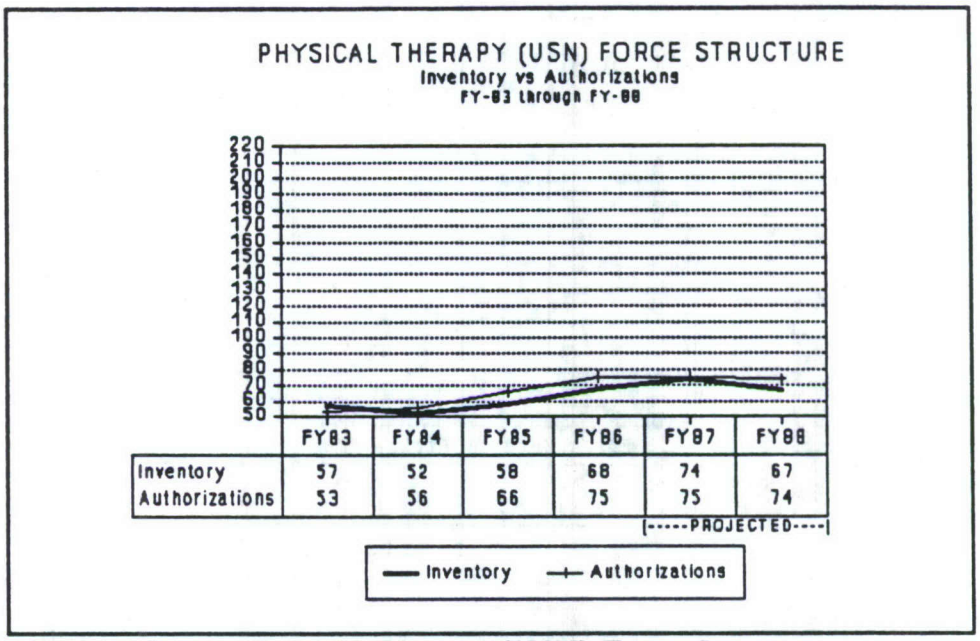


Figure F-5: Physical Therapy (USN) Force Structure
Inventory vs. Authorizations

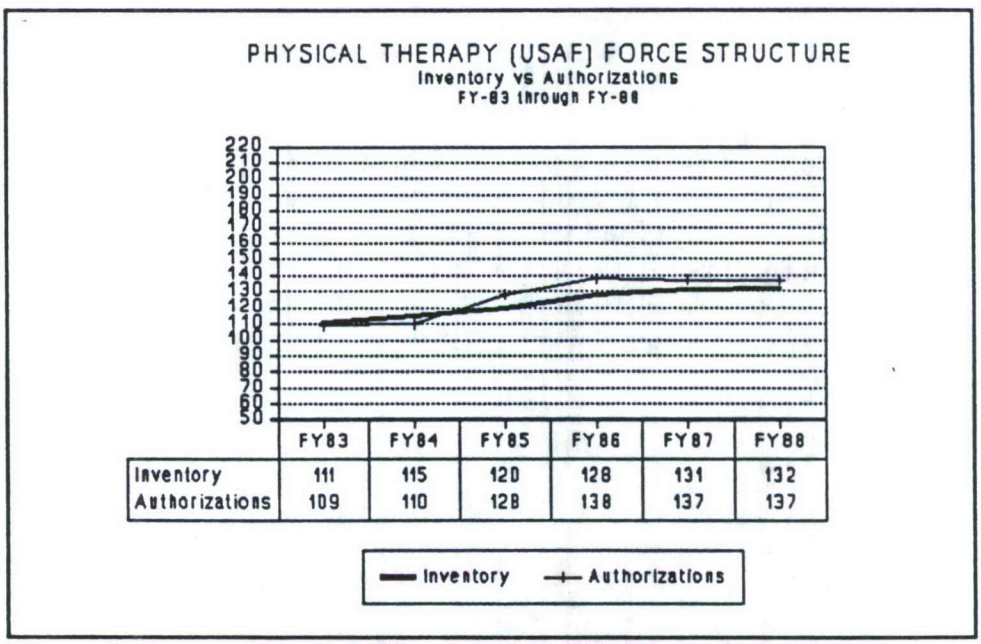


Figure F-6: Physical Therapy (USAF) Force Structure
Inventory vs. Authorizations

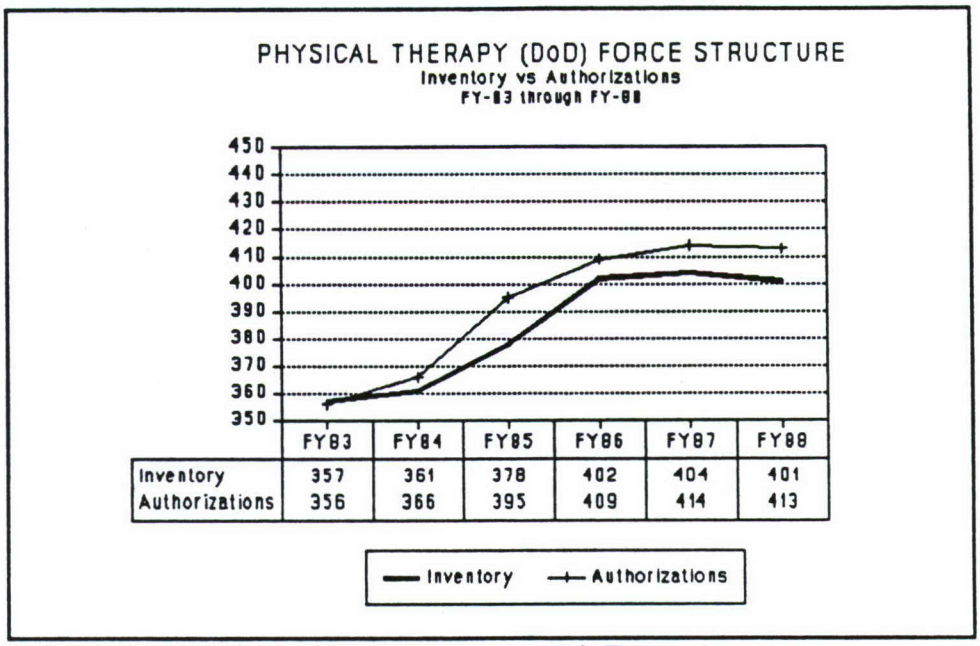


Figure F-7: Physical Therapy (DoD) Force Structure Inventory vs. Authorizations

Accessions

Until recently, physical therapy experienced no significant problems in achieving recruiting goals. However, over the past two years, the Air Force has experienced increasing difficulties in recruiting therapists. The Army's Academy of Health Sciences Graduate Program in Physical Therapy is highly successful as a recruiting tool and is their main source of accessions (see Figure F-8). Although the Navy began using this school in 1987, the school does not meet all their accession needs.

PHYSICAL THERAPY ACCESSIONS
FY 84-FY 88

	1984	1985	1986	1987	1988
Navy	4	8	11	9	9
Air Force	12	18	11	11	19
Army					
Student Prg	15	16	16	14	14
ROTC	2	3	3	5	3
Direct Acsn	6	5	1	0	1
Total Army	23	24	20	19	18
Service Total	39	50	42	39	46

The Army student program is an entry level masters

Figure F-8: Physical Therapy Accessions

Retention

To maintain an ideal force structure, the Army must retain 60 percent or about 12 of 20 therapists past initial obligation. The actual retention at this point is shown in Table F-3 below.

Table F-3
Retention Rates Past Initial Obligation (Expressed in Percent)

Year	USA	USAF	USN
1985	47	75	75
1986	16	93	0
1987	34	80	83
1988	33	60	100

The Army is experiencing the most difficulty with retention. The wide range in Navy retention rates occurs because of their small force size of 75. The 0 and 100 percents in 1986 and 1988 each represent one therapist leaving or staying.

An exit survey conducted by the Army Medical Specialist Corps showed the three highest dissatisfiers to be promotion process and timing, pay and workload (see Annex A). Workload data (Army Health Services Command, 1988) support the results of this

survey, showing that the Army therapist sees more patients per day than civilian therapists. This data is based on the numbers of patients seen in large, medium-sized and small Army Hospitals. The civilian data is based on an APTA membership survey of hospital workload. The comparison shows an Army physical therapist sees an average 26.5 patients per day while a civilian therapist sees 11.5.

CONCLUSIONS AND RECOMMENDATIONS

The problems in physical therapy are not yet severe enough to create critical shortages. However, the recent trend of therapists leaving the service immediately following the end of their obligation is resulting in the loss of mid-level experienced physical therapists needed to fill required positions. Insufficient accessions in the Navy and Air Force create these same gaps. As the shortage year groups move forward, there will not be enough therapists at the senior levels to provide adequate supervision, meet training needs, or fill senior consultant/branch chief positions. The physician extender role in support or orthopedics will be decremented and smaller facilities may not be staffed.

It will become increasingly difficult to access more civilian therapists given the growing civilian shortage of physical therapists and the disparity between civilian and military entry level pay. In addition, the Army's main source of accessions is the Academy of Health Services Masters Program, which presently cannot accommodate more than 20 students. Their inability to expand is based on staff and physical space limitations. Since the cost of graduate education is about $23,000 per student with a 45 month obligation, retaining students past initial obligation would be more cost effective than increasing enrollment and would provide mid-level experience where shortages now exist.

If accession goals and retention requirements for physical therapy continue to be unmet, the DoD will need the ability to offer monetary incentives such as accession and retention bonuses.

ANNEX A

ARMY MEDICAL SPECIALIST CORPS QUESTIONNAIRE

POSSIBLE REASONS FOR SEPARATION:	DEGREE REASON INFLUENCED DECISION 0 - No impact 5 - Heavily Influenced	RESULTS
PROMOTION PROCESS/TIMING	0-1-2-3-4-5	3.27
CAREER POTENTIAL WITHIN SPECIALTY/CORPS	0-1-2-3-4-5	3.26
WORKING CONDITIONS (Support, staff, facility, equipment, workload)	0-1-2-3-4-5	3.09
BETTER JOB OPPORTUNITY	0-1-2-3-4-5	2.63
PAY	0-1-2-3-4-5	2.27
PROFESSIONAL DISSATISFACTION (Type of duties)	0-1-2-3-4-5	2.18
ARMY LIFE-STYLE (Military Training, additional duties, military demands)	0-1-2-3-4-5	2.18
MOVES - DID NOT WANT SPECIFIC LOCATION	0-1-2-3-4-5	2.09
PROFESSIONAL DISSATISFACTION (Degree of Responsibility)	0-1-2-3-4-5	1.81
PROFESSIONAL EDUCATION (Lack of Opportunities)	0-1-2-3-4-5	1.72

ARMY MEDICAL SPECIALIST CORPS QUESTIONNAIRE

POSSIBLE REASONS FOR SEPARATION:	DEGREE REASON INFLUENCED DECISION 0 - No impact 5 - Heavily Influenced	RESULTS
FAMILY - CIVILIAN SPOUSE (Employment, dislikes Army life-style)	0-1-2-3-4-5	1.88
MOVES - MOVING IN GENERAL	0-1-2-3-4-5	1.54
FAMILY - CHILDREN (Pregnancy, do not want to relocate schools, special problems)	0-1-2-3-4-5	1.5
FAMILY - MILITARY SPOUSE (Joint domicile problems, career incompatible)	0-1-2-3-4-5	1.0
RECOGNITION AMONG PROFESSIONALS	0-1-2-3-4-5	0.81

*This Exit Survey is based in 14 responses and was taken from officers who did not apply to continue past initial obligation or stated they were leaving the Service. All but two have left.

Endnotes

1. Robert S. Anderson, The Army Medical Specialist Corps, (Washington DC: Office of the Surgeon General, Department of the Army, 1961).

2. R. S. Myers, PT, PhD., "The Health Care Practitioner Supply/Demand Dilemma" (Address to the American Hospital Association Conference, 1989).

3. Ibid, p. 3.

4. David N. Sundwall, MD, Sixth Report to the President and Congress on the Status of Health Personnel (Washington DC: US Dept. of Health and Human Resources, Public Health Service, Health Resources and Services Administration, Bureau of Health Professions, 1988), p. 12-9.

5. "National Survey of Hospitals and Medical Schools", (University of Texas Medical Branch, Galveston, Texas, 1983-1988).

6. "Dietetics, Nursing, Pharmacy, and Therapy Occupations", Occupational Outlook handbook, (Washington, DC: US Dept. of Labor, Bureau of Labor Statistics, 1988) pp. 14-15.

7. Ibid., pp.14-15.

8. George T. Silvestri and John Lukasiewicz, A Look at Occupational Employment Trends to the Year 2000, (Washington DC: US Dept. of Labor, Bureau of Labor Statistics, 1987) p. 51.

9. "Dietetics, Nursing, Pharmacy, and Therapy Occupations", p. 14.

10. American Hospital Association in Conjunction with the Human Resources Office, Legal and Regulatory Affairs, "Survey of Human Resources", (Washington DC, 1988).

11. American Physical Therapy Association, Department of Practice, "Occupational Outlook of Physical Therapy", (Alexandria, VA, 1987), p.1.

12. Ibid., p.1.

13. R.S. Myers, p. 2.

APPENDIX G

OCCUPATIONAL THERAPY

EXECUTIVE SUMMARY

This appendix defines the mission of the occupational therapist, provides an analysis of force structure, discusses current and projected supply, and makes a recommendation to increase accessions and improve retention.

Military occupational therapists are used and staffed differently in each service. In the Army, this specialty has grown through an expanded mission of upper extremity screening in a physician extender role. Navy occupational therapy primarily supports orthopedics, and the Air Force focuses on mental health.

In FY88 there were 88 Army, 5 Navy and 31 Air Force occupational therapists (OTs) assigned.

Historically, the Army has met its accession goals through an internship program. Over the last 5 years, internship applications have decreased by 40 percent and retention after the initial obligation has dropped. Applications for direct accessions have decreased by 79 percent. The pool of graduating occupational therapists has grown by only two percent over the last three years; yet, the number of positions in the profession is projected to increase 52 percent through the year 2000. This combination of decreased accessions, declining retention and expanding civilian positions foreshadow a future shortage of occupational therapists.

The Air Force is experiencing neither accession nor retention problems and, prior to 1987, was properly manned. However, a shortage of five therapists existed in 1987 and five in 1988.

PROFILE OF MILITARY OCCUPATIONAL THERAPY

History

Rapid growth occurred during World War I, as occupational therapy began treating soldiers with physical disabilities as well as mental health problems. In 1917, the American Occupational Therapy Association (AOTA) was formed. The Federal Industrial Act of 1923 required all general hospitals treating industrial accidents to institute occupational therapy programs.[1]

Occupational therapy became part of the Army Medical Department in 1917, the Navy in 1952, and the Air Force in 1947. Current active duty strengths are 91, 6, and 32 respectively. In 1979, the Navy attempted to civilianize all occupational therapy positions. This attempt was unsuccessful due to non-availability of civilian therapists and the inability of the civilian workforce to perform the wartime mission. In 1985, the field returned to active force but with a total force of only five officers.

Education

Entry into occupational therapy is via baccalaureate, post-baccalaureate or masters degree programs and completion of a six-month internship program. These programs must be accredited by the AOTA in collaboration with the American Medical Association's Committee for Allied Health Education and Accreditation. Certification also requires passing the American Occupational Therapy Certification Board Exam. Presently 34 states, the District of Columbia and Puerto Rico require licensure of occupational therapists.

Sixty six accredited occupational therapy schools graduated 2,299 students in 1988. The number of graduates rose 10 percent between 1983 and 1985 and only 2 percent from 1986 through 1988.

Scope of Practice

Occupational therapy involves directing selected tasks (occupation) to diminish or correct pathology, instruct in daily living/leisure habits, and to maintain and promote health. The profession works with either mentally or physically disabled patients. Occupational therapists teach patients with psychosocial disorders life skills, stress and time management. They instruct on the use of therapeutic equipment, fabricate custom designed devices and equipment, and assist the physically disabled patient to adapt to his/her home and work environment.

Occupational therapists work in hospitals and psychiatric treatment facilities, rehabilitation centers, half-way homes, nursing homes, public schools, outpatient clinics, community mental health centers, and private practice. They specialize in gerontology,

spinal cord injuries, prosthetics, hand rehabilitation, developmental disabilities, brain injuries, mental health, burns and work evaluation.

Role of Occupational Therapy in the Military

Military occupational therapy serves all the practice areas in psychosocial and physical dysfunction for all age groups. Therapists must be versatile and maintain a broad spectrum of skills so that they are ready for mobilization. Since the number of therapists is small, they are often assigned to isolated locations and must be proficient in all general skills. All three services provide screening, evaluation and treatment to handicapped family members in DoD Dependent Schools.

The primary distinction of Army occupational therapy is their upper extremity screening mission. This requires therapists to be primary evaluators of upper extremity problems with emphasis on hands. They order x-rays, lab tests, do primary evaluation, and recommend and implement treatments.

The military therapist has multiple roles in treatment of battlefield injuries, including care of the physically disabled and soldiers with psychosocial dysfunction. Army occupational therapists are members of combat stress control teams as far forward as the division rear. Activities, in conjunction with a systemic regime of hygiene, eating, rest and sleep, will be orchestrated to facilitate the soldier's early return to duty. More involved, prolonged care will be performed at reconditioning centers. The evaluation of upper extremity injuries will be a major role for Army therapists and will assist orthopedic surgeons with this responsibility.

Therapists will provide extremity positioning to prevent deformities for those soldiers evacuated back to the U.S. They will also treat burn patients and assist in determining the disposition of psychiatric casualties.

The goal of occupational therapy in war is to expedite return to duty or to quickly determine the work capacity of the injured.

MILITARY AND CIVILIAN SALARY COMPARISON

Military occupational therapists receive pay comparable to their civilian counterparts. According to the AOTA, the average salary of a civilian occupational therapist was $29,247 in 1988. Entry level salary rates rose 31 percent between 1981 and 1986.[2] Entry level pay for a military therapist (0-1 under 2 years of service) was $22,286 in 1988. The average income of self-employed therapists averaged $35,000 in 1988. Table G-1 compares military and civilian salaries.

TABLE G-1

Comparison of Military-Civilian Pay at Decision Points

	MIL	CIV	DIFF
Accession[1]	22,286	23,102	- 816
Initial Obligation[2]	31,957	26,687	+4,401

[1] Military pay based on RMC pay for an 0-1 under two years of service.
[2] End of initial obligation is pay (RMC) for an 0-2 over three years of service.
Source of Civilian Pay Data: American Occupational Therapy Association 1986 Salary Survey. 1986 figures were extrapolated to 1988 using ECI increases in civilian wages.

SUPPLY AND DEMAND

The Bureau of Labor Statistics predicts a 52 percent growth in job requirements in occupational therapy between 1986 and 2000.[3] The projected growth in the profession is based on the following:[4]

- o recent inclusion as a reimbursable rehabilitation service under Part B of Medicare
- o role in caring for our increasing aging population
- o growth as a profession in the hospital setting
- o role in caring for increased numbers of head injuries and developmental disabilities
- o the effect of Public Law 99-457 which makes more federal funds available to state health and education systems for treating handicapped children

The disparity between the decreased rate of growth (2 percent growth in graduating students over the last three years)[5] and increasing civilian demand has a clear impact on the number of therapists available to be recruited into the military. Applicants have decreased from 15 in 1983 to 9 in 1989 for the six Army internship positions available annually. At least four applications for each intern position is desirable to insure high quality accessions.

FORCE STRUCTURE

The ideal Army force structure is based on a target endstrength of 91, current field grade ceilings and historic retention/accession data. Field grade force structure is verified against recommendations from the Army Medical Specialist Corps Pilot Study on Force Structure. This study evaluated positions against type and quantity of workload, professional knowledge and experience required, advanced training requirements, supervisory responsibilities and training responsibilities. (See Figure G-1).

The ideal structure assesses eight therapists per year - six students and two fully qualified therapists. Based on the retention data from FY83 through FY88, a minimum of eight accessions is required to ensure an adequate structure through the senior grades (20 years of service). Optimal retention at the end of the initial obligation period (3 years of service) is 75 percent (6 of 8 accessions). It is expected that two more losses will occur from the fifth through the ninth year of service, bringing four officers in the promotion zone for O-4. This attrition is based on loss patterns over the last three years. However, even if these losses did not occur, there would be six officers in the promotion zone for O-4 which might result in a lower promotion opportunity. The ideal structure retains three occupational therapists after the O-4 promotion point (11-12 years of service). These three therapists are adequate to support the field grade structure. From 16 through 20 years of service, attrition occurs due to the retirements of officers with prior service.

The Air Force ideal force structure, which is plotted against its inventory, does not show significant year group shortages. The Army is short year groups four through nine. (See Figures G-2 and G-3).

The Navy does not have an ideal force structure because it has few OT authorizations.

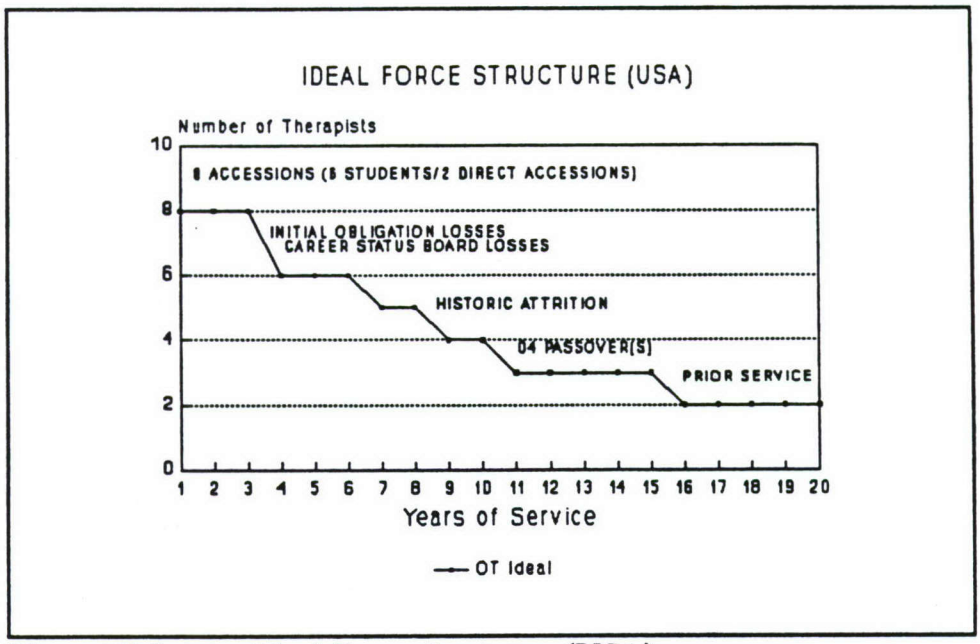


Figure G-1: Ideal Force Structure (USA)

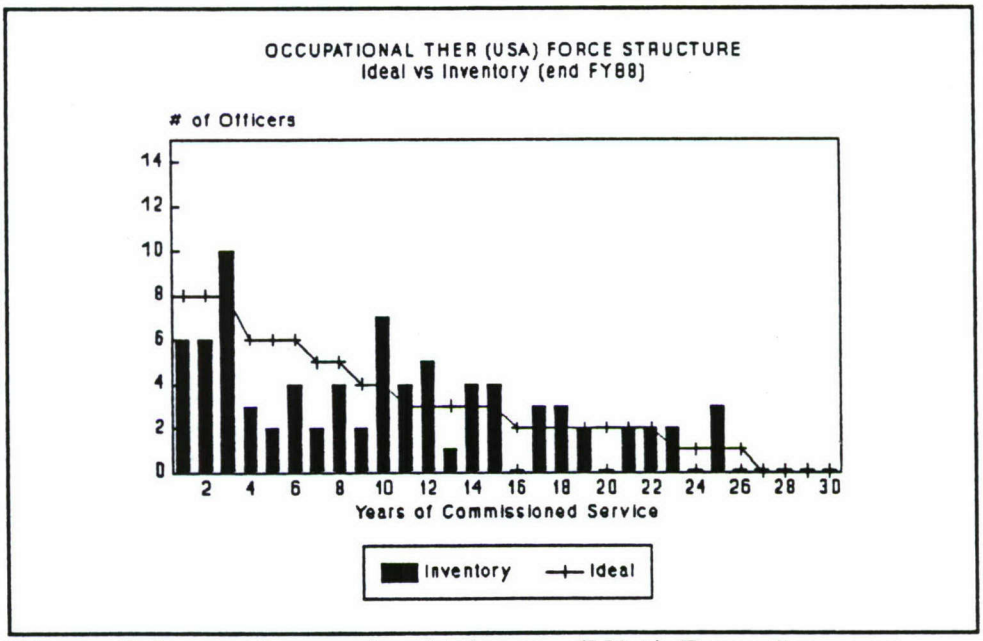


Figure G-2: Occupational Therapy (USA) Force Structure (Ideal vs. Inventory)

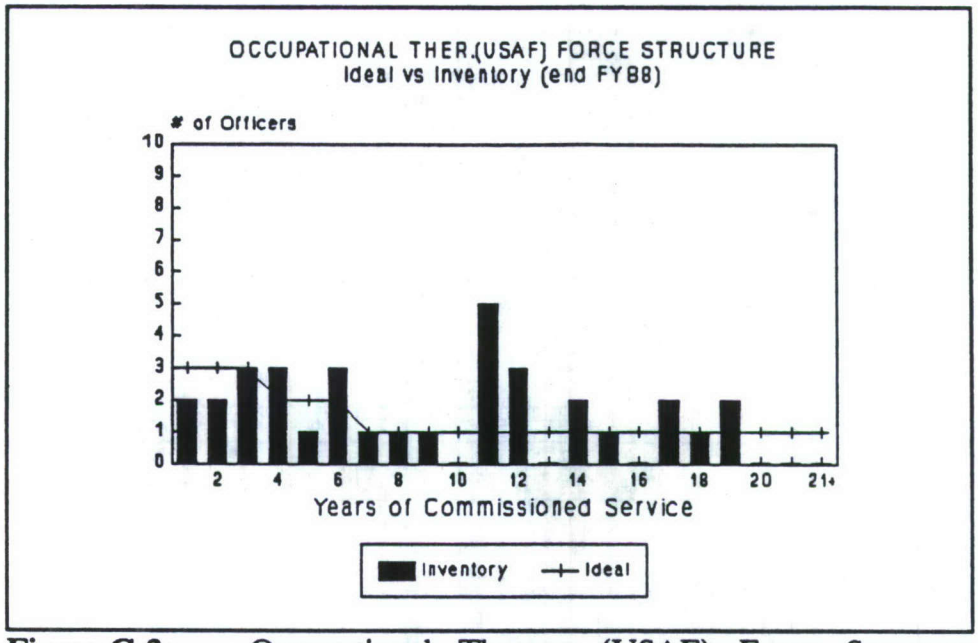


Figure G-3: Occupational Therapy (USAF) Force Structure (Ideal vs. Inventory)

REQUIREMENTS

Figures G-4 through G-7 show budget authorizations and inventory for each service and for DoD.

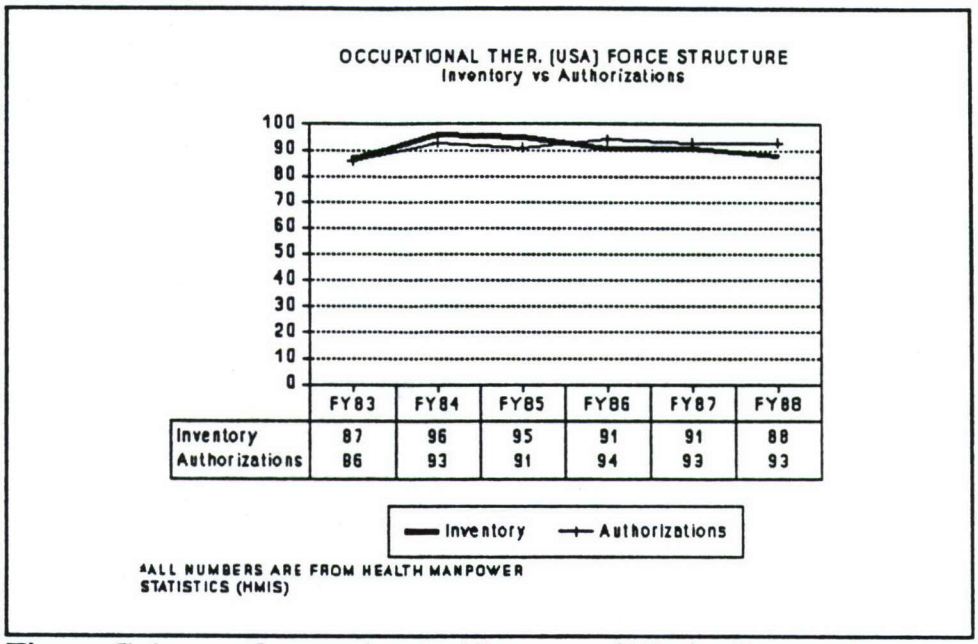


Figure G-4: Occupational Therapy (USA) Force Structure (Inventory vs Authorizations)

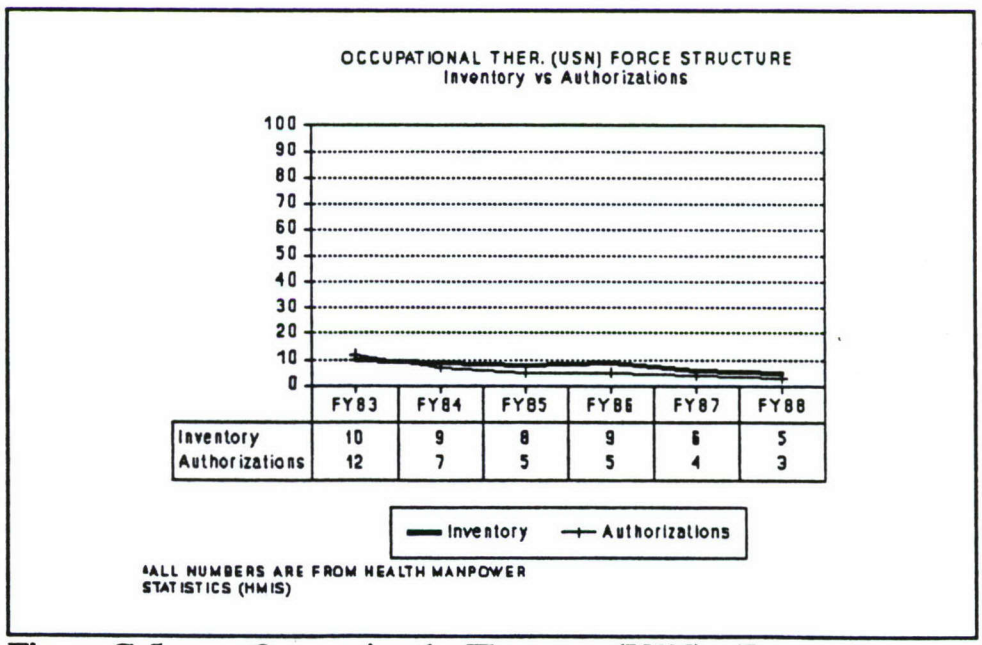


Figure G-5: Occupational Therapy (USN) Force Structure (Inventory vs Authorizations)

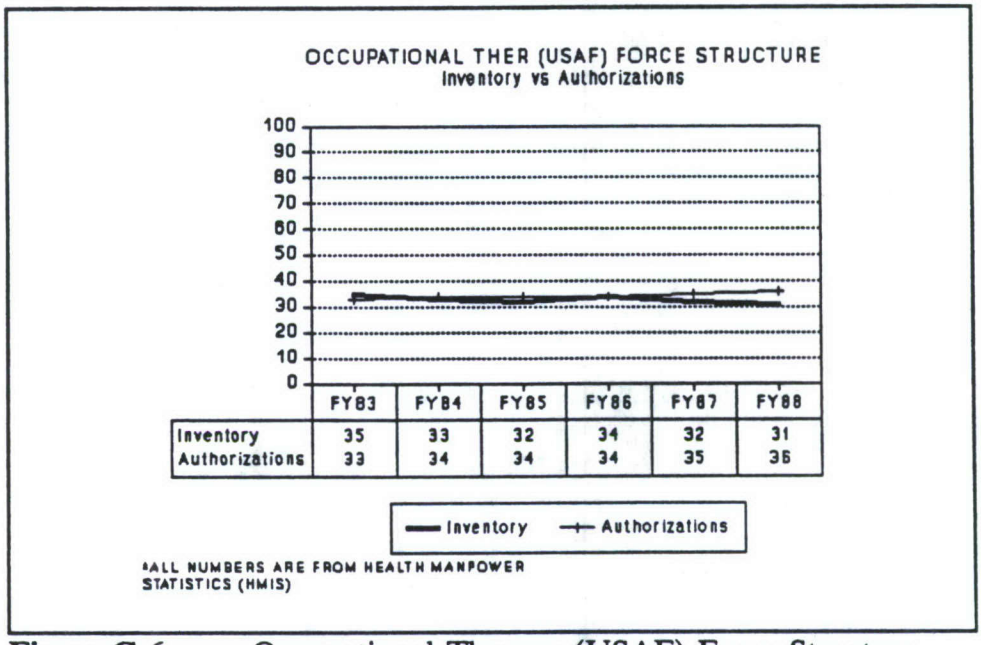


Figure G-6: Occupational Therapy (USAF) Force Structure (Inventory vs Authorizations)

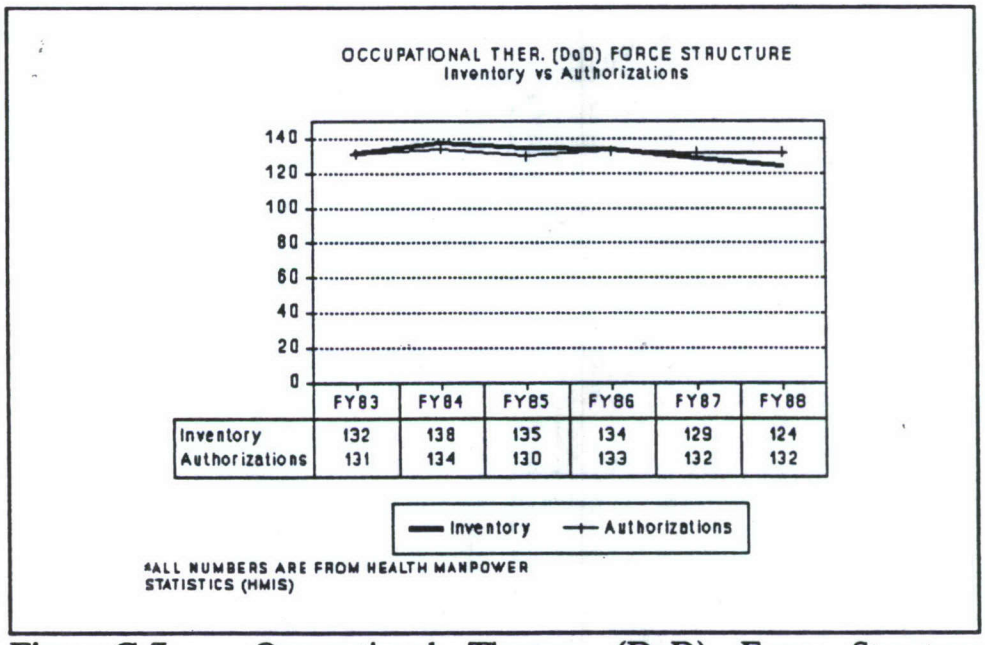


Figure G-7: Occupational Therapy (DoD) Force Structure (Inventory vs Authorizations)

Accession\Retention

The availability of occupational therapists, both new graduates and those experienced, is declining. From 1983 to 1985, there was a 10 percent increase in graduating students. From 1986 to 1988, there was only a two percent increase.[6] The number of applications and the applicant/space ratio for the Army Occupational Therapy Internship has decreased. This program is the source of 80 percent of Army occupational therapist accessions. (See Table G-2).

Table G-2

Occupational Therapy (USA) Internship Applications

FY	# Applicants	# Spaces	Ratio
83	15	4	3.75
84	15	4	3.75
85	13	6	2.16
86	12	6	2.00
87	9	5	1.80
88	10	6	1.67
89	9	6	1.50

The current ratio of student applicants to available training slots is far below optimal. The quality of the applicants has also declined. In 1988, there was one academic failure from the program. Currently, there are two students on academic probation. No academic failures occurred prior to 1988.

A recent survey of AMSC recruiters indicates that, although occupational therapy recruiting goals have been met the past four years, less overall interest in the Army Internship program exists. Negative perceptions about the internship program include the three year service commitment, lack of freedom, ambivalence about the role of women in the Army (95 percent of all occupational therapy graduates are female), and lack of choice of specialization.

The Army is also having difficulty accessing fully qualified occupational therapists. Applications for these therapists have decreased 79 percent since 1983. (See Table G-3).

Table G-3

Occupational Therapy (USA) Fully Qualified Applicants

FY	# Fully Qualified Applications	# Selected
83	19	2
84	21	4
85	10	4
86	2	1
87	5	2
88	4	3

Although a decrease in endstrength of 4-5 therapists seems an insignificant number, these shortages fall at the O-2 to O-3 level where 27 percent of the positions are for one therapist clinics. These shortages cannot be easily absorbed, and loss of the therapist means complete loss of services and programs within that treatment facility.

In order to meet ideal force structure/mission requirements, the Army must retain those officers who complete the internship program. Optimal retention at the three year service point is six therapists (75 percent retention rate). If both the 54 percent retention trend of the last five years and the waning interest in accession/internship continues, the practice of military occupational therapy will suffer. As the shortage year groups move forward, there will be insufficient senior therapists to provide adequate supervision, meet training needs or fill consultant/branch chief positions. The support which the occupational therapist now gives the orthopedic surgeon (ie., upper extremity screening) will dwindle, and smaller facilities will no longer offer occupational therapy services. This decrease in support to orthopedic surgeons, a critically short wartime skill, would contribute to their dissatisfaction.

RECOMMENDATIONS AND CONCLUSIONS

Both the Army and Air Force had a shortage of five occupational therapists in 1988. Trends toward inadequate accession and retention appear likely to create a more severe shortage. The national supply of occupational therapists appears inadequate to meet the growing demand for this specialty. This may make future recruiting for the services more difficult. If this specialty continues to experience accession and retention deficits, the DOD may need the ability to offer monetary incentives targeted at accessing and retaining occupational therapists.

Endnotes

1. Robert S. Anderson, The Army Medical Specialist Corps, (Washington DC: Office of the Surgeon General, Department of the Army, 1961).

2. National Academy of Sciences, Institute of Medicine, Division of Health Care Services, Allied Health Services: Avoiding a Crisis, Report of a Study. (Washington DC: National Academy Press, June 1988), pp. 4-33.

3. National Academy of Sciences, pp. 4-33.

4. Ibid., pp. 4-28ff.

5. Phone Conversation with the Director of Education, American Occupational Therapy Association, February 1989.

6. Ibid., pp. 4-28.

APPENDIX H

AUDIOLOGY/SPEECH PATHOLOGY

EXECUTIVE SUMMARY

At the end of FY88, the Department of Defense was manned at 103 percent of budgeted authorized strength for audiologists and speech pathologists. Although the level of experience of many of the new accessions to these specialties is lower than DoD would prefer, there is currently no significant problem in recruiting or retention. Military pay is comparable to civilian incomes.

PROFILE OF MILITARY AUDIOLOGY/SPEECH PATHOLOGY

History

Diagnostic audiology evolved in the 1920s after the advent of vacuum tubes, when pure tone air and bone conduction audiometers were developed. These technological advances gave the first quantitative information about the status of the auditory system. Discoveries in neurophysiology, combined with advances in electrical circuitry during World War I, led to speech audiometry and higher function testing. Today's audiologists diagnose diseases of the central auditory pathway (i.e., brainstem tumors, and demyelinating disorders) and also conduct intraoperative monitoring with ear, nose, throat, and neurosurgery teams.

Speech pathology began as an outgrowth of the military aural rehabilitation centers of WWII and the pre-war university speech and hearing centers. These centers evaluated children with speech problems, typically articulation, hearing impairment, and fluency disorders. Speech pathology has evolved into a professional discipline, providing diagnostic evaluations and therapy for complex medical conditions requiring procedures such as tracheoesophageal puncture in laryngectomies; videostroboscopy for vocal fold disorders and tumor diagnosis; videofloroscopy for craniofacial anomalies and dysphagia; and cognitive language disorders for CVA and phovological disorders. Although all three Services have audiologists, only the Air Force has uniformed speech pathologists.

Education

The American Speech-Language Hearing Association (ASHA) is the regulatory and governing body for audiology and speech pathology. Before earning national board certification from ASHA, the candidate must have successfully completed a masters degree, a clinical internship year, and the national certification examination. State licensure is also required in order to practice. Licensure requirements are comparable to national certification requirements. The Air Force requires both certification and licensure. The Army requires certification and course director certification by the Council of Accreditation in Occupational Hearing Conservation (CAOHC) and is moving toward licensure. The Navy requires one or the other. Requirements for continuing health education for licensure vary among the states. Frequently, the provider must fund the training to maintain licensure.

Audiologists and speech pathologist are accessed as O-2s or O-3s depending on level of education and work experience. The constructive credit allowance is necessary to support recruiting efforts, because it helps offset the financial difference at entry level.

Scope of Practice

Military audiologists evaluate disorders of hearing and vestibular function patients, ranging from neonates to geriatrics. They diagnose middle ear pathologies, acoustic neuromas, sensorineural hearing loss, disease of the brainstem and central auditory pathway disfunction, and central processing disorders. They also fit hearing aids and provide follow-up rehabilitation. In hearing conservation, they are responsible for noise surveys, acoustical engineering benefits, monitoring audiometry, fitting of hearing protection, and educational/motivational programs designed to prevent hearing loss.

Audiologists also perform research and development evaluating: hearing protection devices, communication noise interference, signal detection, health hazard assessments, hearing loss and performance measures, quiet vehicle programs, blast over pressure, and environmental annoyance.

Air Force speech pathologists perform duties within a comprehensive medical center environment. The speech pathologist interfaces with hospital staff and consultants. They evaluate, train, and provide therapy for patients of all ages. In rehabilitation settings, speech pathologists provide cognitive therapy as well as speech language rehabilitation. In larger Air Force facilities, the speech pathologist often tends to specialize in areas such as head and neck, neurologically related problems, swallowing, organic voice, or laryngeal injury/removal disorders of speech and language.

Level of Autonomy

In the private sector, audiologists function in medical centers, medical schools, private practice, and industry. In nearly all cases, they function autonomously. They accept physician referrals and consults on request and also accept patients on a self-referral basis. The audiologist evaluates, diagnoses and determines the course of intervention or makes additional referral, if necessary. As in private practice, audiologists in the military function as professional consultants in the medical center and in the environmental health and research arenas.

Private sector speech pathologists function in school settings, medical centers, medical schools, and in private practice. In nearly all cases, they function completely autonomously within the department in which they are assigned. They take physician referrals and consults on request, and also accept patients on a self-referral basis. After the initial contact with the referral agency, the speech pathologist evaluates, diagnoses and determines the treatment course. Only in cases with vocal pathology, cancer, dysphagia, and neurological pathology do they have more frequent contacts with the physician and, only then, on a professional consultant basis (i.e., the physician or referral agent does not at any time determine the type, intensity, or duration of therapy). In multidisciplinary group situations, the speech pathologist functions as a team member, often jointly scheduling patients with other professionals. Diagnosis and treatment for speech, hearing, and language problems are solely the responsibility of the speech pathologist. Speech pathologists refer and send consultants to any medical or school specialists as appropriate. Within the military environment, speech pathologists are generally assigned to ENT clinics or to Exceptional Family Member Programs. They function independently of other team members, providing their services much the same as in civilian practice. They are afforded the same privileges as other medical care providers, with the exception of prescribing medications and ordering lab tests and radiological studies. Air Force speech pathologists function as professional consultants in the medical center environment.

Use of Assistants/Aids

Within the Army, some enlisted medical technicians are trained to conduct routine audiometry, assist in hearing conservation monitoring programs and assist in other administrative functions. They perform all duties under supervision of an audiologist. No other personnel - including nurses; ear, nose, and throat technicians; hearing conservation technicians; or ear, nose, and throat physicians - are suitably trained or credentialed to perform the functions of an audiologist.

Dependence on Technology

Audiology is a complex, technical profession which depends heavily on modern technology for evaluation and differential diagnosis. Military audiologists maintain technical expertise with complex diagnostic audiometers, brainstem-evoked response

units, electrocochleography machines, immittance audiometers, electronystagmography, posturography, sound analyzers, insert gain analyzers and computer driven audiometers. The minimum investment to establish an audiology clinic is over $110,000 for diagnostic equipment and $220,000 to establish a complete audiology treatment facility.

Speech pathology is facing new technological developments. With the application of modern technology and human engineering, improved diagnostic procedures and therapies have been devised, using computer-assisted programs as well as procedures for videofloroscopy, videostroboscopy and visi-pitch. Cost to equip an office with this technology is over $150,000.

Relationship of Audiologists to other Health Professionals

Audiologists consult with otolaryngologists, neurologists, radiologists, pediatricians, neurosurgeon, plastic surgeons, psychiatrists, and flight surgeons. They independently assist in the diagnosis of injury or disease of the ears and central auditory pathway.

Audiologists assigned to hearing conservation programs interface with environmental health nurses on a consultant basis. Audiologists work with dentists, oral surgeons, mental health personnel, members of the exceptional family member team (developmental pediatrician, psychiatrist, pediatric neurologists, geneticists, occupational therapists, physical therapists, and psychologist), bioenvironmental engineers, and environmental health officers.

MILITARY AND CIVILIAN SALARY COMPARISON

Figure H-1 compares military pay (RMC) with salary data for audiologists working in hospitals and in private practice. Data are provided by the American Speech nd Hearing Associatio and the Breau of Labor Statistics (BLS).

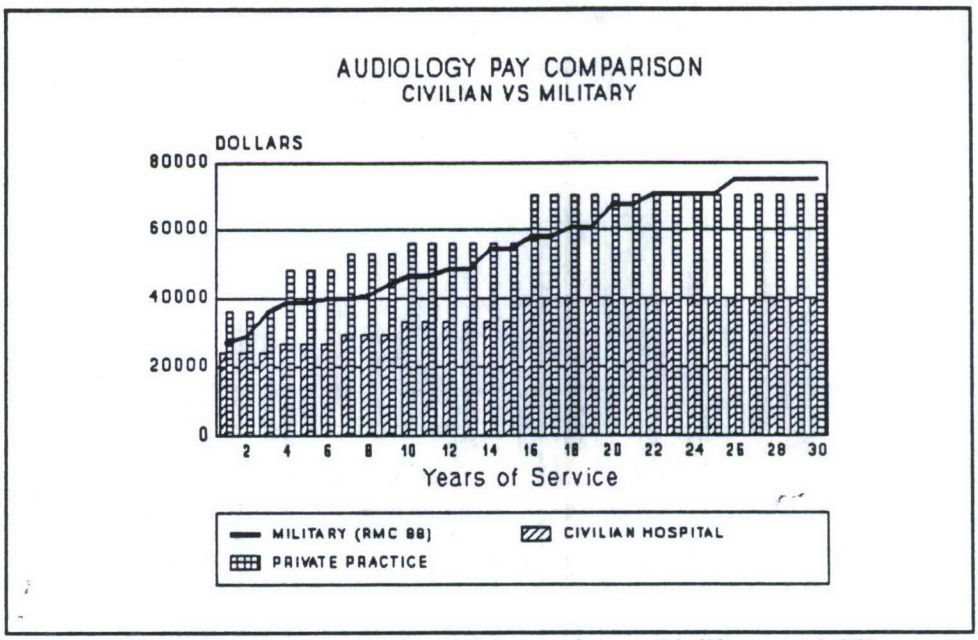


Figure H-1: Audiology Pay Comparison: Civilian vs. Military

ASSESSING SUPPLY AND DEMAND

In October 1987, the American Speech Language Hearing Association indicated that national population growth will exceed the supply of trained audiologists. Position vacancies are dependent upon location and compensation.

The Bureau of Labor Statistics predicts an additional 15,500 jobs for audiologists by the year 2000. This represents an increase of 34 percent with the greatest area of growth in the health care setting and private practice. The rising cost of hearing compensation for U.S. workers exposed to hazardous noise is creating new demands for audiologists. There are increasing needs for audiologists to assist with intraoperative monitoring during surgical procedures.

REQUIREMENTS

Figures H-2, H-3, and H-4 reflect the comparison between each Services' audiology inventory and authorizations.

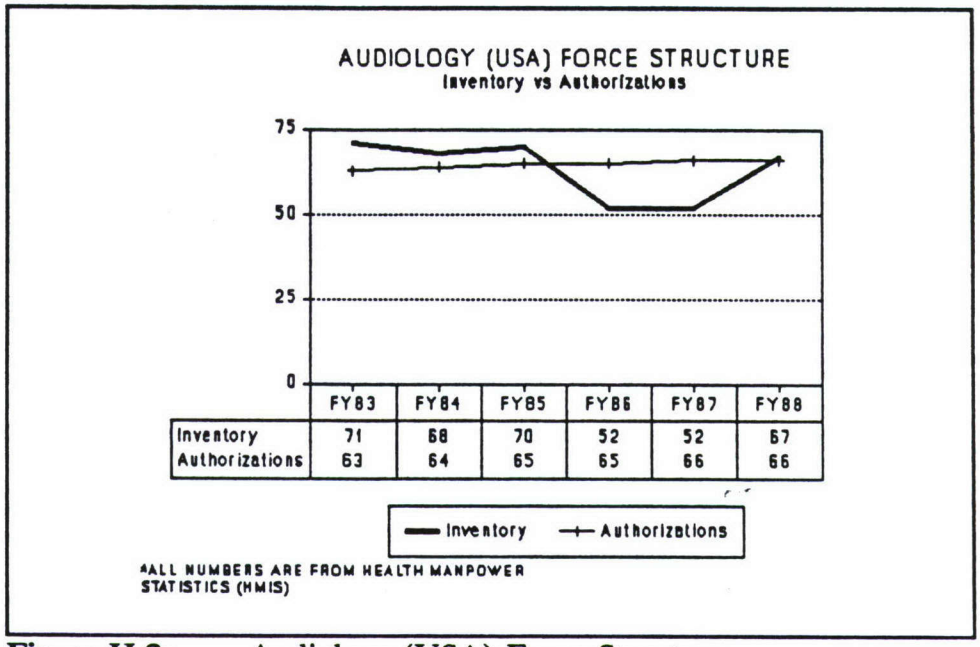


Figure H-2: Audiology (USA) Force Structure Inventory vs. Authorization

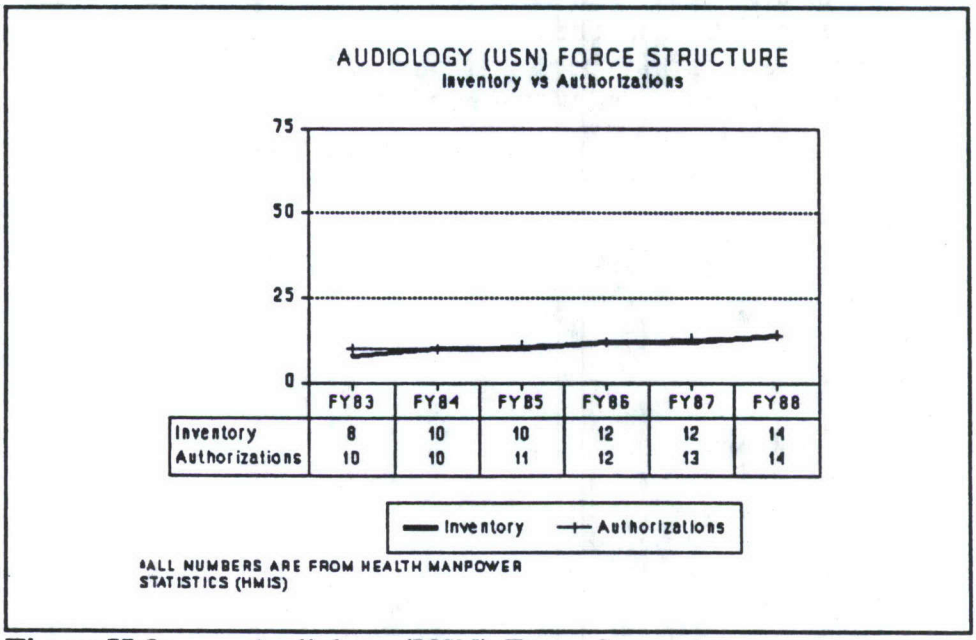


Figure H-3: Audiology (USN) Force Structure Inventory vs. Authorization

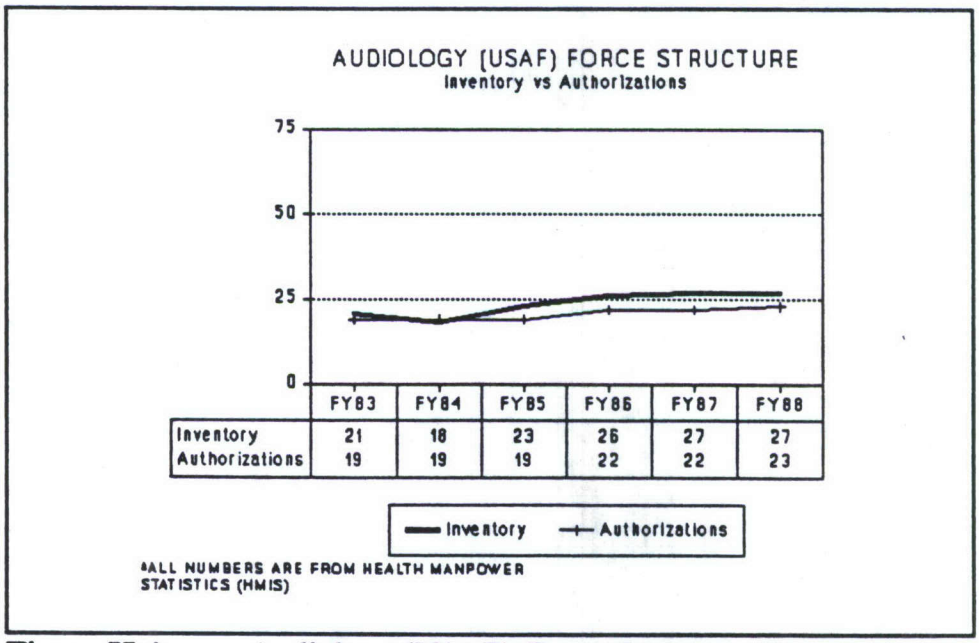


Figure H-4: Audiology (USAF) Force Structure Inventory vs. Authorization

CONCLUSIONS/RECOMMENDATIONS

A review of the inventory in these two specialties indicates that DoD is able to fill its budgeted authorizations. The Air Force has been consistently over strength in audiology but under strength in speech pathology. The minor problems that do exist are Service specific and can be solved within existing Service programs.

APPENDIX I

PODIATRY

EXECUTIVE SUMMARY

Since 1984, the Department of Defense has been staffed at 90 percent of budgeted authorizations in the podiatry specialty. This represents an annual average shortage of 10 podiatrists. The DoD presently has authorizations for 92 podiatrists. The majority of vacant billets are in the Army. Since 1985, Army has been staffed at 81 percent of authorizations, which represents an average shortage of eight podiatrists.

Recruiting goals are being met by all Services; however, the Army retains insufficient numbers of podiatrists to maintain an adequate experience base. Since 1985, the average retention at the end of initial obligation was 33 percent in the Army, 74 percent in the Navy, and 65 percent in the Air Force. Inability to repay student loans and poor promotion opportunity are factors contributing to low Army retention.

Special pay incentives for podiatrists should be considered in an effort to retain qualified podiatrists past their initial obligation. An accession bonus may be needed in the future if residency trained podiatrists cannot be accessed.

PROFILE OF MILITARY PODIATRY

History

Podiatric medicine began in the early 1900s and was first known as chiropody. In 1950, the profession changed its name to podiatry and is now called podiatric medicine. The first school of chiropody was in New York in the early 1900s. Podiatry became part of the Army in 1955 and part of the Navy in 1954. Podiatrists entered the Air Force in 1970.

Education

Most podiatrists obtain a four-year undergraduate degree prior to admission to a college of podiatric medicine. Colleges of podiatric medicine award a Doctor of Podiatric Medicine (DPM) degree after completion of four years of training. Most

states require at minimum a one-year podiatry residency prior to licensure. There are seven colleges of podiatric medicine graduating 685 podiatry students each year.

Continuing Medical Education (CME) credits are a requirement for state licensure. Time is made available for the podiatrist to acquire necessary CME credits.

The average student loan for college or podiatric medicine is $58,000. Podiatrists entering the military receive a three-year loan deferment. Interest does accrue on these loans during this time, and payback begins after three years. One reason military podiatrists leave the Service after their three-year initial obligation is to increase their income so they can repay student loans.

Podiatrists are granted four years of constructive credit towards promotion and enter the Service as an O-3.

Degree of Regulation: Licensure and registration requirement

A podiatrist must have a Doctor of Podiatric Medicine degree and an active state license to be commissioned. The Army and Air Force also require a one-year residency prior to commissioning.

Scope Practice

Podiatrists are licensed by state regulatory bodies to independently assess, diagnose, and treat, through medical and surgical means, diseases and disorders of the foot. Military podiatrists' scope of practice is based on experience, training and Joint Commission for the Accreditation of Health Organizations credentialing guidelines.

Specialization certification is available from the following boards: the American Board of Podiatric Surgery, the American Board of Podiatric Orthopedics and the American Board of Podiatric Public Health. Military podiatrists are encouraged to obtain board certification during their initial obligation.

Level of Autonomy and Substitutability

A podiatrist shares the privilege with the Doctor of Medicine and Doctor of Osteopathy to independently treat patients with disorders of the foot and ankle. A podiatrist can act as first surgical assistant in all surgical specialties and function as a member on all disaster teams.

Role of Podiatry in the Military

The following are the mission statements for the individual Services:

Army - The primary role of the podiatrists in wartime is to assist the Orthopedic Surgeon. The Podiatrists should be staffed at Echelon 3 at the Combat Support Hospital in the Theater of Operations (Corps Support Area). Emphasis is on return to duty of active duty personnel.

Navy - Podiatrists support the overall U.S. Navy Medical Service mission by providing care necessary to reduce loss of life and limb, prevent undue suffering and conserve the military strength by aiding in the return of casualties to duty as soon as possible. The podiatrist will treat emergencies, injuries, and conditions of the human food/ankle and also perform assigned adjunctive medical/surgical tasks as directed by the Chief of Surgery and/or Orthopedics. Medical readiness training can enable podiatrists to be designated as first surgical assistants to Orthopedic and General Surgeons for the trauma and injury likely during war.

Air Force - In the event of mobilization, podiatrists will support the overall Air Force Medical Service mission by providing care necessary to reduce loss of life and limb, prevent undue suffering and conserve the military strength by aiding in the return of casualties to duty as soon as possible. The podiatrist will treat emergencies, injuries, and conditions of the human foot/ankle and also perform assigned adjunctive medical/surgical tasks as directed by the Chief of Surgery and/or Orthopedics. Medical readiness training can enable residency trained podiatrists to be designated as first surgical assistants to Orthopedic and General Surgeons for the trauma and injury likely during war.

MILITARY AND CIVILIAN SALARY COMPARISON

In 1986, the net income of a newly licensed civilian podiatrist with less than four years experience was $35,000. Applying the increases in wages as computed by the ECI results in a 1988 income of $37,493. The pay of a military podiatrist in the grade O-3 with two years service is $32,841 (RMC) which is $4,672 less than his civilian counterpart.[1]

In 1986, the median net income for civilian podiatrists was $63,000. Applying increases in ECI results in a 1988 net income of $67,487. The pay of military podiatrist in the grade of O-4 with 10 years of service is $44,575 (RMC) which is $22,912 less than his civilian counterpart.[2]

SUPPLY AND DEMAND

As of 1988, there were over 12,000 podiatrists in the U.S. This number is predicted to grow to 17,400 by the year 2000. About 685 podiatrists will be entering the work force each year. Future demand for podiatric medicine is uncertain. However, the increasing age of the population is expected to increase demand.

REQUIREMENTS

Accessions

Recruiting goals for podiatrists are normally met by all Services. The adequate civilian supply of podiatrists, and the fact that podiatrists may defer payment of student loans upon entering the Services, may account for this success.

Retention

Because of the small numbers of podiatrists, the retention rates from 1985 to 1988 were averaged. At the end of initial obligation the retention rates were 33 percent for the Army, 74 percent for the Navy, and 65 percent for the Air Force. Of the 10 podiatrists leaving the Army after their initial obligation since 1985, all of them reported leaving the military to work in higher paying civilian practice so that they could pay back student loans.

Since 1985, 10 percent of Army podiatrists (2 out of 13 in the zone) were selected for promotion to O-4. This is well below the Army MSC rate of 53.8 percent. In the Air Force 54 percent (7 out of 13) were selected for promotion to O-4 compared to the Air Force BSC rate of 68.9 percent. Navy promotion selection has been adequate.

The Service-wide shortage of podiatrists has averaged 8.3 percent below authorizations over the past six years. In 1988, a 5.4 percent short existed. Most of the shortage occurred in the Army. Since 1985, Army podiatry has operated at an average of 81 percent of authorizations, varying from 74 percent in 1986 to 90 percent in 1988. The Navy and Air Force have remained close to 100 percent of authorizations. Figures I-2 through I-5 show authorizations, versus end strengths, of each Service and DoD.

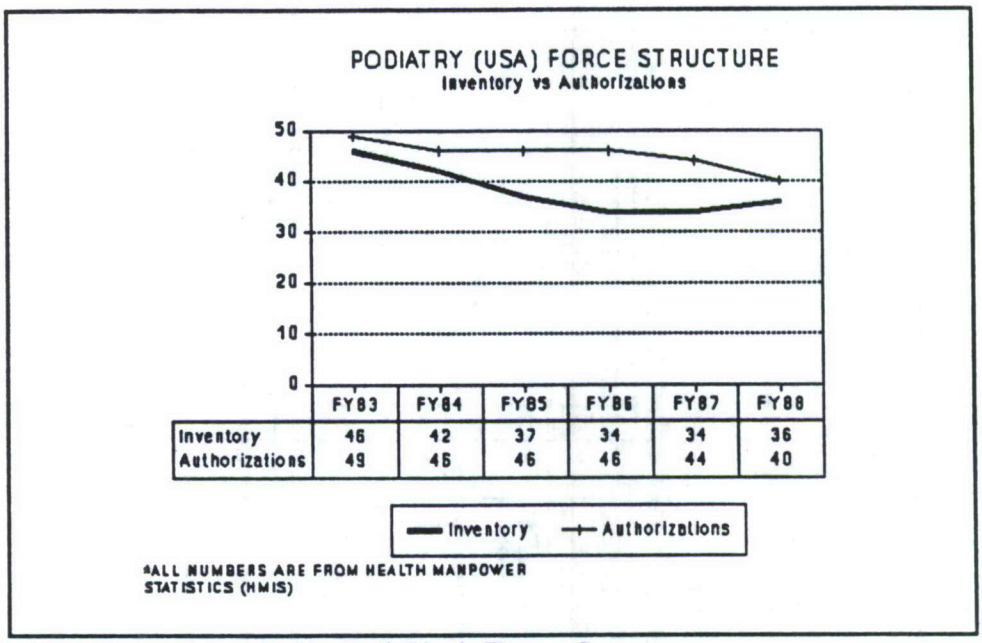


Figure I-1: Podiatry (USA) Force Structure Inventory vs. Authorizations

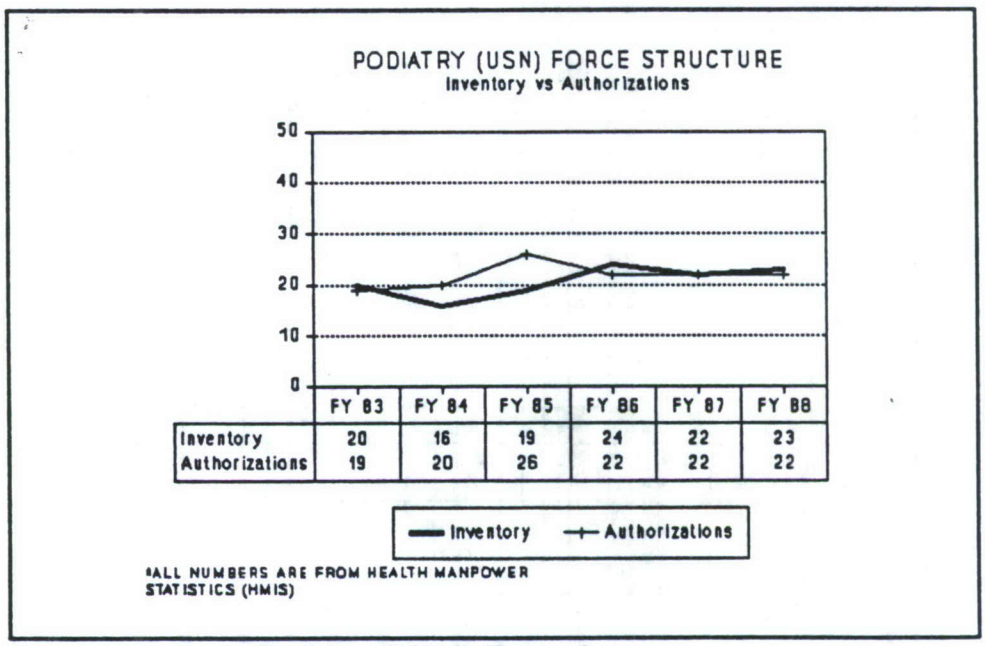


Figure I-2: Podiatry (USN) Force Structure Inventory vs. Authorizations

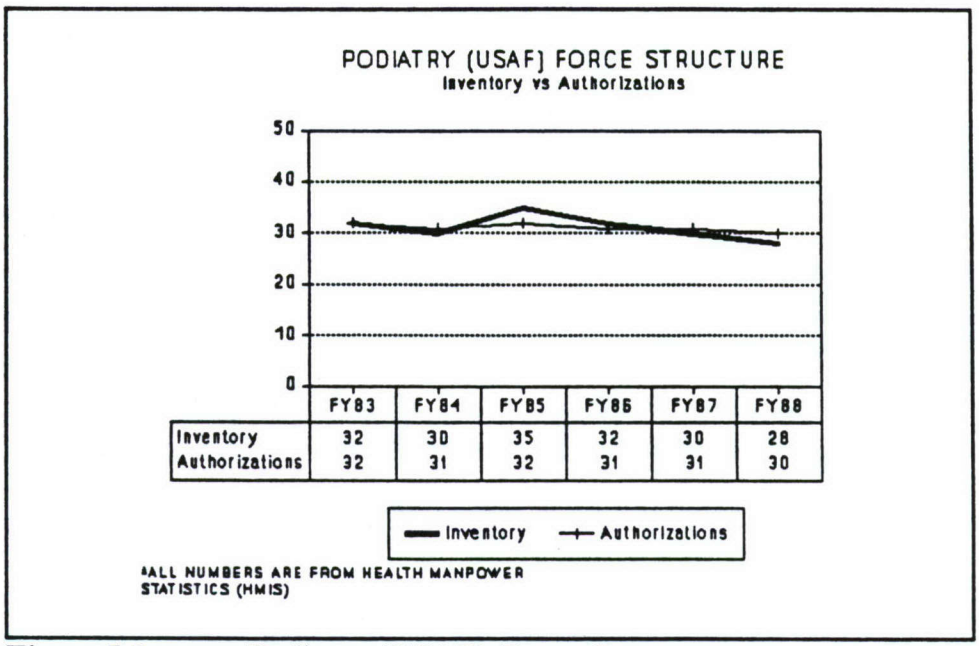


Figure I-3: Podiatry (USAF) Force Structure
Inventory vs. Authorizations

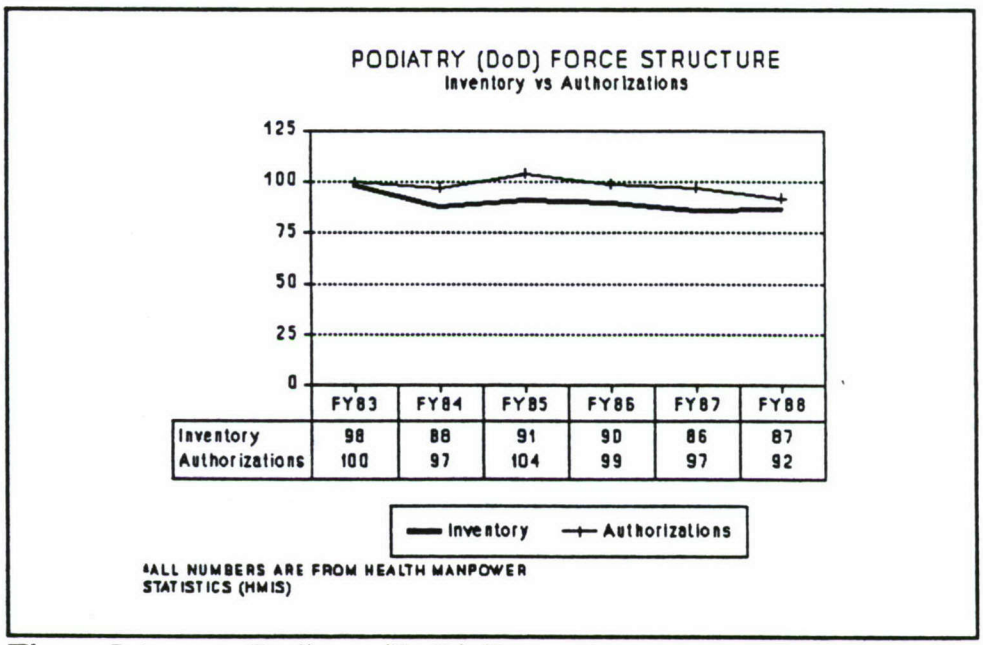


Figure I-4: Podiatry (DoD) Force Structure
Inventory vs. Authorizations

CONCLUSIONS AND RECOMMENDATIONS:

The specialty of podiatry has a small personnel shortage which occurs mainly in the Army. The cause of this shortage appears to be inadequate retention after initial obligation. Recruiting goals for military podiatrist have been met in the past, but this may change because the Services are now trying to access podiatrists who are already residency trained.

A significant military/civilian pay disparity exists for podiatrists. This disparity may be a factor in the loss of podiatrists at the end of their initial service obligation.

Podiatrists provide support for orthopedic surgeons, family practice and general practice physicians. A shortage of podiatrists increases the workload of these physicians, particularly the orthopedic surgeon, and becomes a physician dissatisfier.

If the Services become unable to access residency trained podiatrists, an accession bonus should be considered. Furthermore, podiatrists should be considered for incentive special pay targeted at improving retention at the end of initial obligation.

Endnotes

1. "Medical and Dental Practitioners and Assistants", Occupational Outlook Handbook, (Washington DC: US Dept. of Labor, Bureau of Labor Statistics, 1988), p. 17

2. Ibid, p. 17

APPENDIX J

SOCIAL WORK

EXECUTIVE SUMMARY

At the end of FY88 the DoD was staffed at 92 percent of authorizations for social workers. This represents a shortage of 35 military social workers. Military pay exceeds civilian pay at initial entry point and remains well above the civilian sector throughout a 30 year military career.

PROFILE OF MILITARY SOCIAL WORK

History

The Red Cross, founded in 1881, was the principle provider of social services through World War II, especially in the field of psychiatric social work. In 1943, psychiatric social work became an Army military occupational specialty. By war's end, some 711 social workers had served in an enlisted status. The first Army social worker officer was commissioned in 1946. Social work has been a supportive service to the Department of Psychiatry in Air Force hospitals since 1947. In 1980, the first social workers were commissioned in the Navy. In recent years, there has been a trend toward broadening professional social work service with a focus on prevention.

Education

A bachelors degree (BSW) is the minimum professional requirement for many positions in the civilian sector. A masters degree in Social Work (MSW) is required for positions in the mental health field and is frequently necessary for supervisory, administrative, and research positions. A doctorate in social work is usually required for teaching. A significant number of military social workers have doctorate degrees.

Licensure/Regulation

The National Association of Social Workers (NASW) offers voluntary certification and awards membership in the Academy of Certified Social Workers (ACSW). Requirements for ACSW membership are:

(1) Graduate degree from a school of social work accredited by the Council of Social Work Education.

(2) Two years of full-time paid social work practice beyond a graduate social work degree or an equivalent amount of part-time professional practice.

(3) Regular NASW membership.

(4) Successful completion of the ACSW examination.

Requirements and the definition of social workers vary from state to state. As of February 1989, 44 states and territories had licensing or registration laws regarding social work practice and use of professional titles.

Military Appointments

The Military Departments require commissioned social work officers to have a MSW. Neither the Army nor Air Force require licensing or certification for commissioning as a social worker, although these credentials are preferred. The Navy requires all military social workers to be licensed by a state or to be certified by a national social worker certifying organization prior to commissioning.

Constructive service credit has played a major role in recruitment efforts. New graduate social workers enter the service in pay grade O-2. Professional education beyond the MSW and professional experience determine whether a social worker is awarded additional constructive service credit.

Scope of Practice

In 1973, the NASW adopted a classification system for social work positions. Positions were divided into two main categories, preprofessional and professional. Preprofessional personnel are classified as Social Service Aides or Social Service Technicians. Professional positions require either a BSW, a MSW, or professional education beyond the MSW, and related experience.

Relationship to Other Health Care Providers

Social workers who possess the MSW degree and have two years of experience are considered capable of practicing autonomously. Referrals from physicians, nurses, and other health providers make up a significant portion of the social worker's workload.

Role in the Military

Military social workers work in mental health settings, hospitals, correctional institutions, teaching facilities, and headquarters staff positions. They frequently provide many of the same services as clinical psychologists and psychiatrists. Military social workers are involved in individual, family, and group therapy. They also perform discharge planning, family advocacy (spouse and child abuse and child sexual abuse), and contingency response team responsibilities.

In the military, enlisted specialists are utilized to perform many of the preprofessional roles. They are given training within the service structure prior to their first duty assignment. These specialists are trained to augment the work of social workers, psychologists, and psychiatrist.

The wartime mission of military social workers is to serve as members of Combat Stress Control Teams. They are members of multidisciplinary mental health teams at each echelon of care. The goal is early intervention, resulting in return of combat casualties to duty within 72 hours.

MILITARY AND CIVILIAN SALARY COMPARISON

The NASW conducted a survey of its members between July 1986 and June 1987. Survey results indicated that military and federally employed social workers earn more than those in the civilian sector.

Figure J-1 shows a comparison between military pay and civilian salaries.

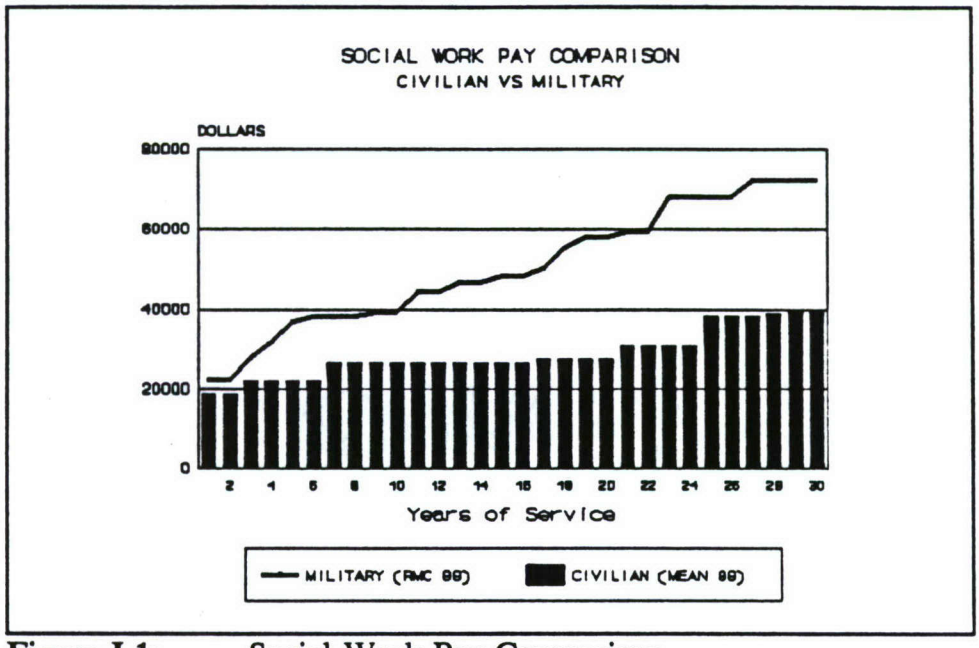


Figure J-1: Social Work Pay Comparison
Civilian vs. Military

SUPPLY AND DEMAND

Nationally, 365,000 social workers are professionally employed. About two out of five positions are in state, county or municipal government agencies. Relatively few are in the federal government. Social workers in the public sector are employed primarily in departments of human resources, social services, mental health, housing education, and corrections. Those in the private sector work usually for voluntary agencies, community and religious organizations, hospitals, nursing homes, and home health agencies. Social workers also serve in other parts of the world under the auspices of the federal government, the United Nations, or one of the voluntary international social agencies.

The requirements for social workers is expected to increase dramatically over the next few years. The number of individuals earning the MSW degree from accredited programs peaked in the late 1970s and has since declined. In view of past trends in the proportion of college-age population, the supply of formally prepared social workers is not anticipated to keep pace with anticipated growth in social work positions.

REQUIREMENTS

Figures J-2 through J-5 compare inventory and authorizations for each of the individual Services and Department of Defense.

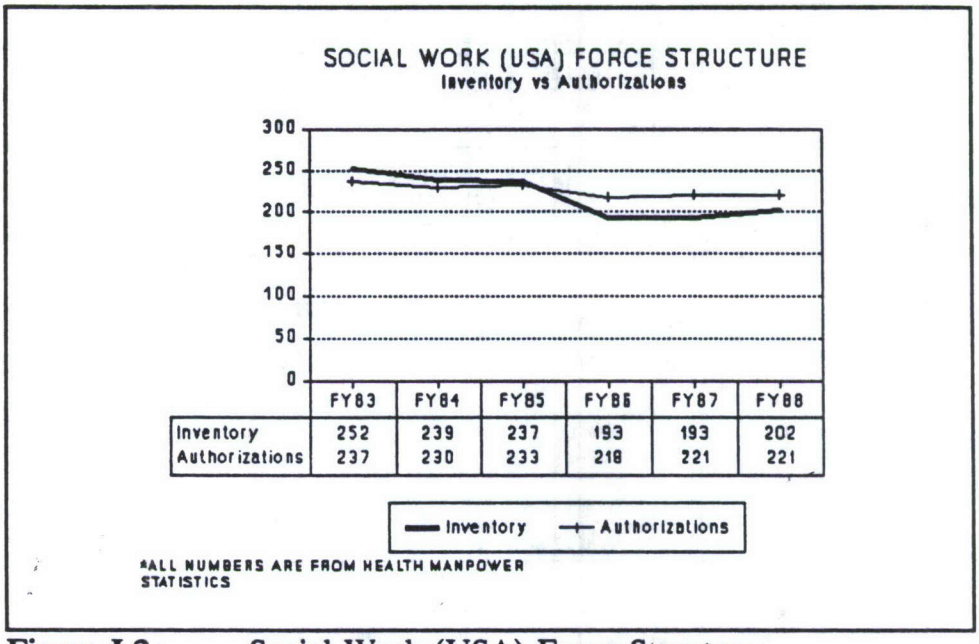


Figure J-2: Social Work (USA) Force Structure Inventory vs. Authorizations

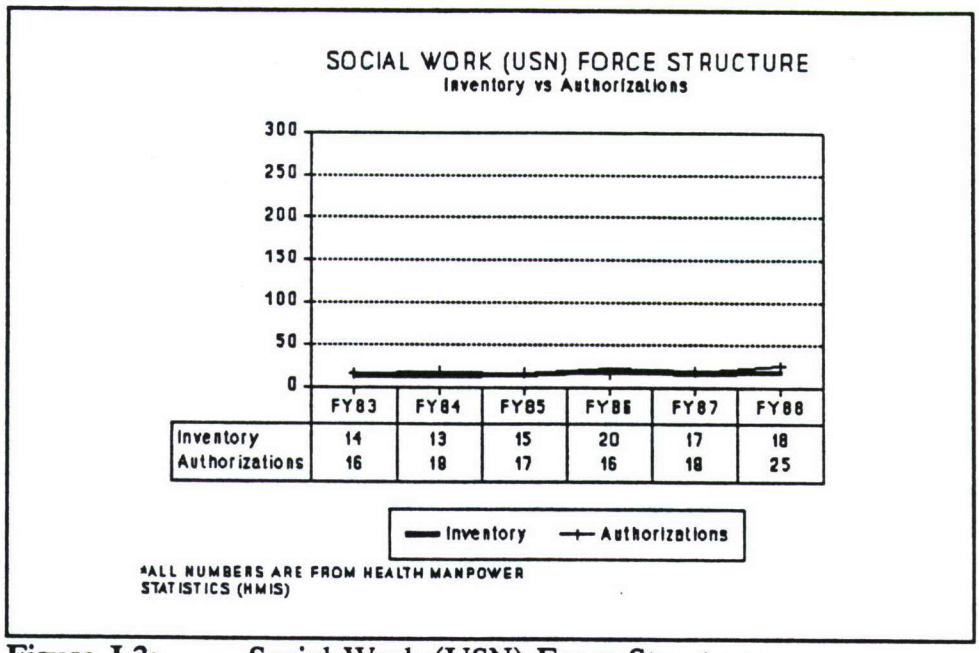


Figure J-3: Social Work (USN) Force Structure Inventory vs. Authorizations

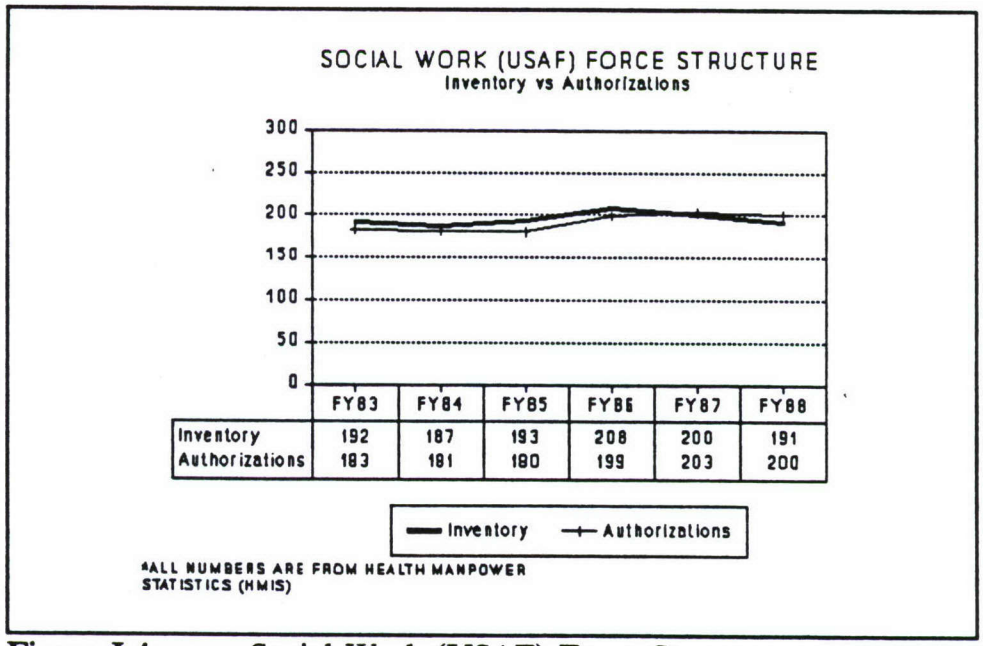


Figure J-4: Social Work (USAF) Force Structure Inventory vs. Authorizations

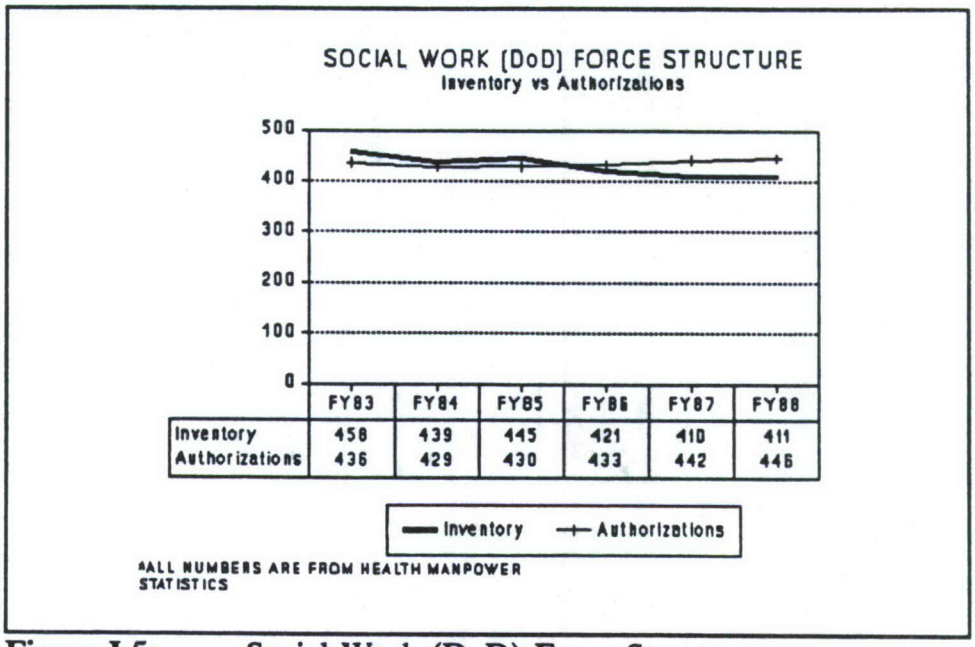


Figure J-5: Social Work (DoD) Force Structure Inventory vs. Authorizations

CONCLUSIONS

There are no significant problems with staffing of commissioned social workers. The significant advantage of military pay versus civilian salaries should continue to provide a sufficient incentive to access and retain adequate military social workers.

APPENDIX K

DIETETICS

EXECUTIVE SUMMARY

This report examines the profession of dietetics, defines the role of dietitians in the military, and addresses salaries and force structure.

Dietitians are direct patient care providers, consultants, and professional experts in nutrition. As such, they improve the quality of care and life for the patient and reduce work for the physician.

The dietitian specialty is not experiencing any significant accession, retention or total staffing problems. However, within the services, there are shortages in specific years of service and pay grades. The Army is short dietitians with four to nine years of service, the Navy is short dietitians with 11 to 15 years of service and the Air Force notes shortfalls in the 5 to 15 years of service groups. Both the Navy and Air Force are short dietitians in pay grades O-5 to O-6. If these trends continue and more serious personnel shortages do occur, special pay incentives may be needed in the future.

PROFILE OF MILITARY DIETETICS

History

The profession of dietetics in the United Stated grew out of the need to provide civilian and military populations with proper nutrition during World War I. The first meeting of what became The American Dietetic Association (ADA) was held in 1917 to consider how to best meet these needs. Nineteenth century cooking schools and "diet kitchens" for feeding the sick were prewar precursors to the profession. Over 1,600 dietitians served in World War II, managing procurement, preparation and service of meals to patients and medical personnel.[1] Nutritional consultation, recommendations, and educational activities complimented other medical treatments. The practice of dietetics has continued to expand into nutrition support and health promotion activities that further enhance the effectiveness of the physician and other health care providers.

Education

There are multiple ways to become a registered dietitian. Both didactic coursework and supervised practice are required. A baccalaureate degree from an approved dietetics program plus a minimum of 900 hours of supervised practice qualifies an individual to take the national registration exam. In 1986, 40 percent of all registered dietitians had advanced degrees with another 10 percent enrolled in programs.

Degree of Regulation

Twenty-three states have laws regulating dietitians and fourteen states provide opportunities for dietitians to be licensed. The American Dietetic Association administers a national registration program with the following requirements:

- o a baccalaureate or graduate degree from an accredited institution
- o completion of a supervised practice component
- o a satisfactory endorsement
- o passing the National Registration Exam

To maintain registration status, a dietitian must accumulate 75 hours of approved continuing education over a five year period and pay annual fees. All military dietitians must be registered.

Scope of Practice

> "The practice of dietetics is the application of principles derived from integrating knowledge of food, nutrition, biochemistry, physiology, management, and behavioral and social sciences to achieve and maintain the health of people."[2]

Fifty-four percent of all dietitians are employed by acute care hospitals and 10 percent by extended care institutions. Other employers include educational institutions, commercial companies, professional associations, voluntary organizations, government organizations, and individual health care providers. A growing number are self-employed. Presently, 33 percent of dietitians who work part-time are self-employed.[3]

Dietitians perform a wide variety of professional activities including:

- o food service management (purchasing, inspecting, producing, and supervising)
- o care of patients in clinical settings (assessment, planning, implementing, counselling, and referring)
- o commercial (marketing, sales, product development)
- o nutrition education for the public (wellness promotion, media presentations)

- o research
- o management of clinical nutrition services (coordination of nutrition care, supervision and scheduling of personnel)
- o education of dietetic students
- o education of other health professionals
- o administrative activities (program planning, public relations, legislative activities)

There is no formal identification of specialty areas in the profession of dietetics. Those dietitians who become specialists in a particular field do so mainly through concentrated experience in specific health care settings. Specialized areas include, but are not limited to, parenteral and enteral nutrition, renal dietetics, cardiac rehabilitation, and nutritional management of diabetes.

Use of Assistants/Aids

Dietetic support personnel include dietetic technicians and dietary managers. Dietetic technicians must complete two years of classroom instruction and 450 hours of supervised practice in service management, nutrition care, or general experience. Dietetic technicians must be supervised by a registered dietitian.

Dietary managers may be certified following graduation from approved training programs, and function in the role of food service supervisors. However, dietary managers lack training in patient care areas and cannot substitute for a registered dietitian.

There is no substitute for a registered dietitian. Nutritionists, not a recognized term in the profession, do not satisfy Joint Commission on Accreditation of Health Care Organizations (JCAHO) standards for hospital settings. Food service management professionals are able to administer food service programs but are not qualified to perform patient care functions. Replacing active duty dietitians with civilians has proven unsuccessful, especially during field exercises, and has reduced wartime readiness capabilities.

Relationship to Other Health Professionals

The JCAHO requires that "a qualified dietitian supervise the nutritional aspects of patient care and assures that quality nutritional care is provided to patients."[4] This item is designated as a key factor in the accreditation decision process.

Registered dietitians provide care in support of diagnostic and therapeutic assessments of health care providers. Registered dietitians working in a clinical setting independently accomplish nutritional assessments, dietary analysis, diet calculation, identification of patients at nutritional risk, and provide nutrition education. Registered dietitians working in administrative roles work independently to plan, direct and control

food production and service; oversee the provision of clinical care in both inpatient and outpatient settings; and manage financial and personnel resources.

Dietitians interact with a variety of health professionals on a daily basis. Contact with physicians includes patient education, screening for patients at risk, in-depth nutritional assessments, and determination of nutritional intake. Dietitians document dietary progress notes in the medical record, participate in patient rounds and interact one-on-one with physicians to provide nutrition and dietary information pertinent to the medical care of patients.

Dietitians interact with nurses by relaying diet orders, providing dietary counseling, and coordinating patient meal and nourishment services. Dietitians participate on Nutrition Support Teams with physicians, nurses, pharmacists and other health care personnel. Multi-disciplinary patient education programs incorporate the dietitian's nutritional expertise for diabetes education, cardiac risk reduction, weight control programs and health promotion.

Role of the Dietitian in the Military

Peacetime Military Unique Characteristics

As the only professional experts in nutrition, dietitians monitor nutritional status, perform in-depth nutritional assessments, provide consultations to physicians and educate patients. Through these roles they free-up physicians for other patient care, increasing the number of patients that can be seen and the quality of care they receive. Nutrition is implicated in 80 percent of all disease states.

Military dietitians provide significantly more outpatient nutrition services, consultation, and education than their civilian counterparts. They provide weight management counseling, are active in health promotion programs, and serve in the Army as Divisional Nutritionists to support the line Army units.

Military dietitians must be proficient at providing nutrition care and managing food service operations in a field environment. They support active component hospitals during exercises and deployments in CONUS and overseas. Military dietitians are trained as generalists capable of working in all dietetic subfields to accommodate the variety of assignment requirements.

Wartime Mission

Military dietitians will be deployed worldwide to establish and direct medical food service operations and provide nutritional care to casualties.

MILITARY AND CIVILIAN SALARY COMPARISON

Military dieticians receive comparable or better pay than their civilian counterparts. In 1988, the average gross salary of a registered dietitian in the U.S. was $28,800, according to data from The American Dietetic Association. Entry level pay was $20,000 to $21,000, and average pay for a registered dietitian with 15 years experience was $29,000 to $30,000. A dietitian with a PhD earns a mean salary of $39,000. Starting salaries and maximum salaries for dietitians rose an average of 17 percent and 22 percent respectively in the last five years (see Table K-1).

Table K-1.

Changes in Civilian Dietitian Salaries

Mean Monthly Salary	Starting	% Change	Maximum	% Change
Year				
1983	$17,700		$23,000	
1984	18,600	4.8	24,000	4.1
1985	19,800	5.4	25,300	5.0
1986	20,100	1.7	26,400	4.0
1987	20,500	1.5	27,300	3.4
1988	21,000	2.3	28,400	4.1
Total Increase	$3,300	16.6%	$5,400	22.3%

Source: National Survey of Hospital and Medical School Salaries, University of Texas Medical Branch, Galveston, Texas; 1983-1988, Job No. 19.

Benefits received by civilian and military dietitians cannot easily be compared, because civilian benefits vary widely. However, many civilian employers offer free medical, life and disability insurance; pay association membership and registration fees; sign on bonuses; moving expenses; and continuing education costs.

FORCE STRUCTURE

Comparison of the Services' ideal force structure are displayed in Figures K-1, K-2, and K-3. Actual inventories demonstrate some trends which could develop into shortfalls of experienced dietitians. Retention rates at the end of the initial obligation through the tenth year of service are dropping. Although endstrength figures have not been effected, a shortage of senior captains and majors exists. If the trend continues, more serious problems will develop as the shortage year groups mature. The Army has shortages between 4 to 9 years of commissioned service, the Navy has shortages between 7 and 15 years of commissioned service, and the Air Force has shortages between 5 to 12 years of commissioned service.

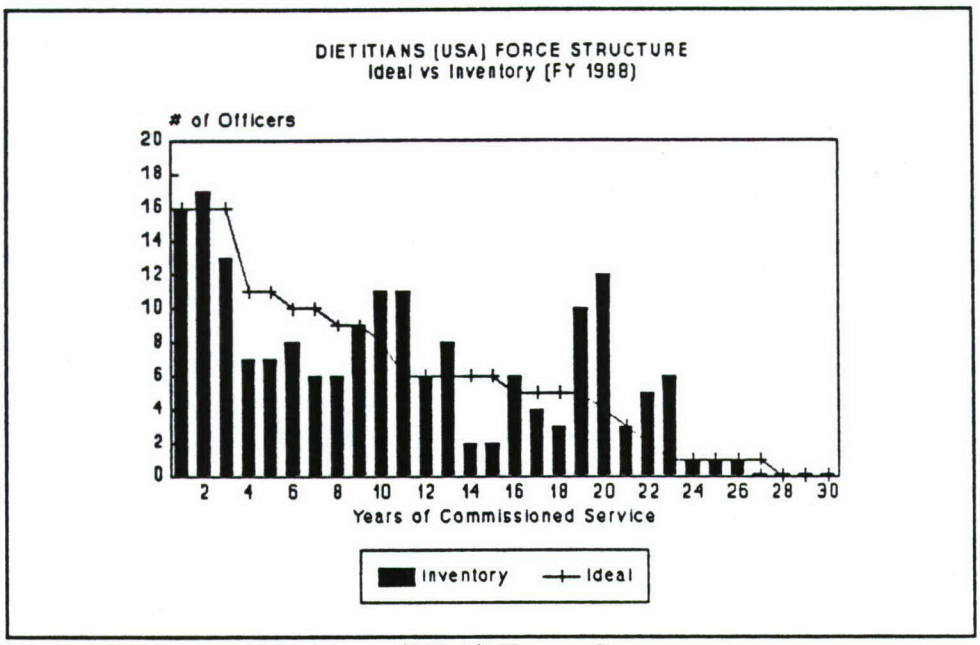


Figure K-1: Dietitians (USA) Force Structure
Ideal vs. Inventory

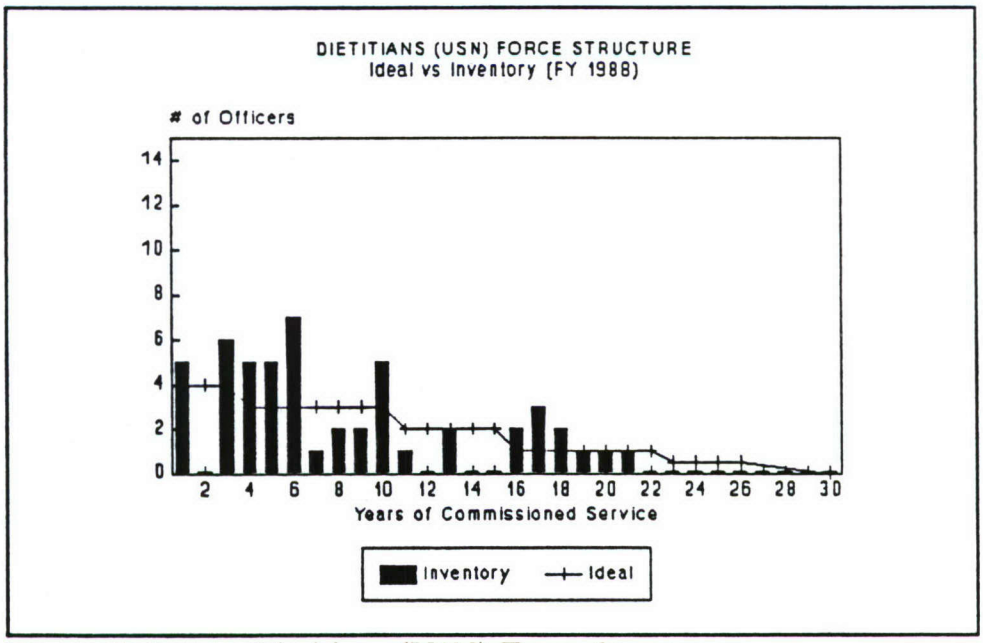


Figure K-2: Dietitians (USN) Force Structure
Ideal vs. Inventory

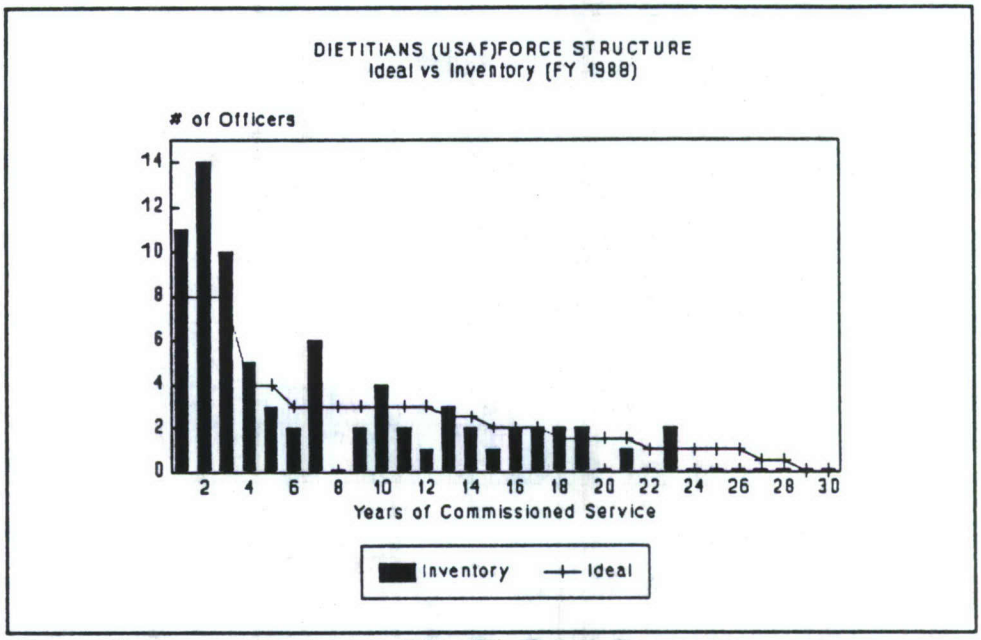


Figure K-3: Dietitians (USAF) Force Structure
Ideal vs. Inventory

REQUIREMENTS

Figures K-4, K-5, and K-6 reflect the comparison between each services' inventory and authorizations. Figure K-7 displays authorizations and inventory for DoD dietitians. The retention rate after initial obligation (1985-1988 average) in the Army is 55 percent, the Navy is 81 percent, and Air Force is 88 percent.

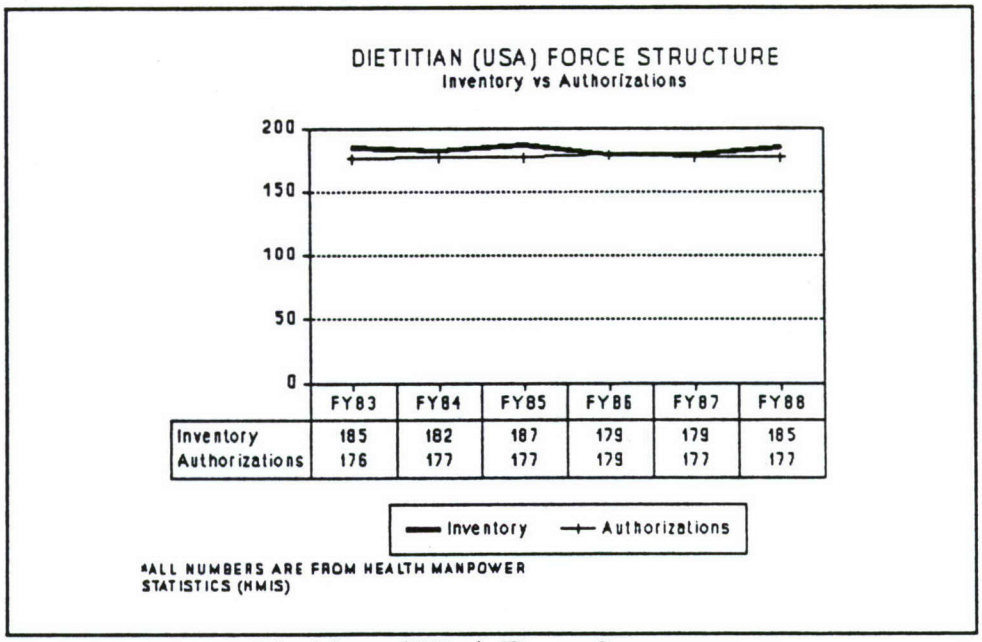


Figure K-4: Dietitians (USA) Force Structure Inventory vs. Authorizations

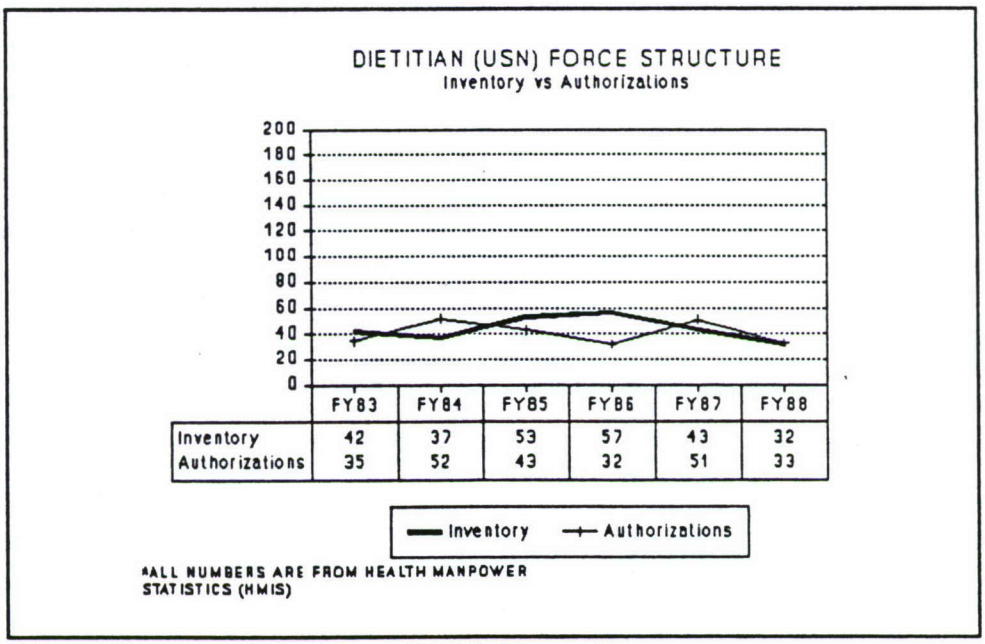


Figure K-5: Dietitians (USN) Force Structure Inventory vs. Authorizations

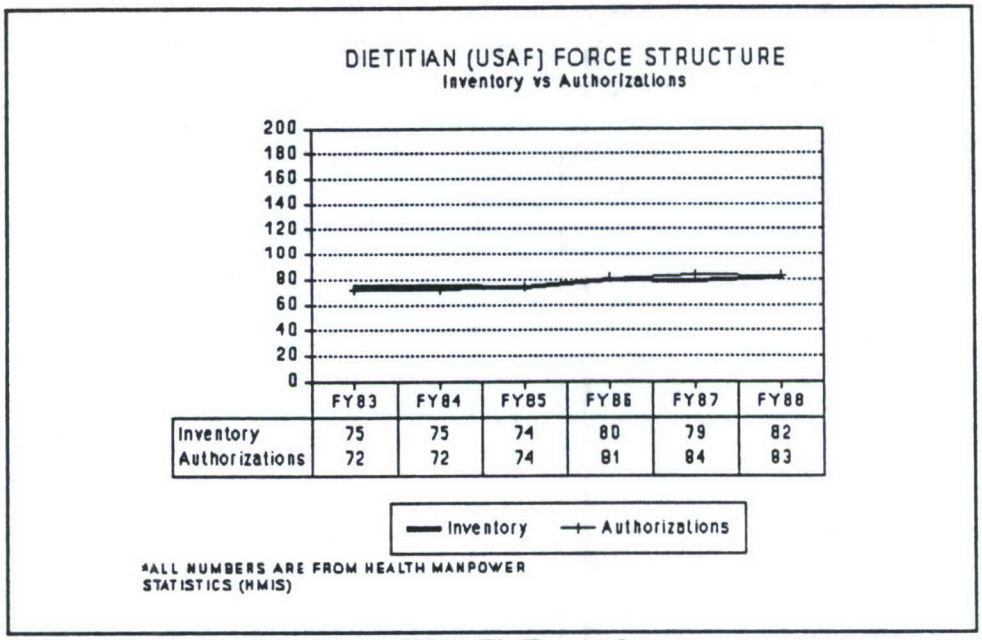


Figure K-6: Dietitians (USAF) Force Structure Inventory vs. Authorizations

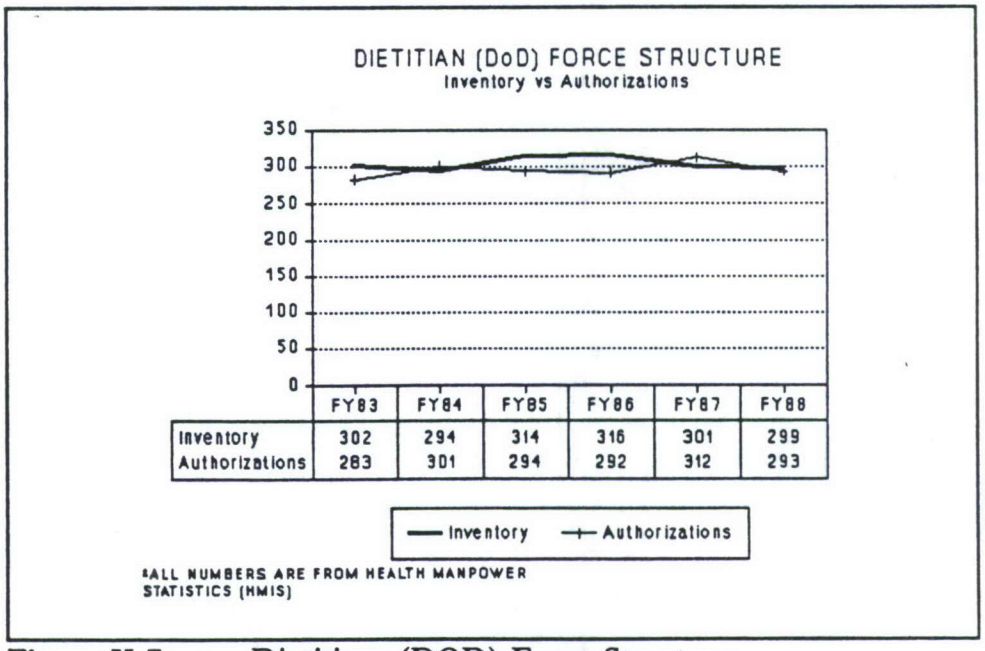


Figure K-7: Dietitians (DOD) Force Structure Inventory vs. Authorizations

CONCLUSIONS AND RECOMMENDATIONS

Military salaries for dietitians are competitive with the civilian sector. Over the past three to four years, none of the services have had significant accession problems, and no civilian shortage of registered dietitians exists.

Though no serious retention problem presently exists, shortages in dietitians with mid-level experience (O-3 to O-4) are present in all Services. If these shortages continue, special pay incentives may be needed in the future to improve retention.

Endnotes

1. Robert S. Anderson, The Army Medical Specialist Corps, (Washington DC: Office of the Surgeon General, Department of the Army, 1961)

2. Sally J Lanz, Introduction to the Profession of Dietetics, (Philadelphia: Lea & Febinger, 1983), p.3.

3. Allied Health Services: Avoiding a Crisis, (Washington DC: National Academy of Sciences, Institute of Medicine, Division of Health Care Services, 1988) p. 4-16

4. Accreditation Manual for Hospitals, Joint Commission for the Accreditation of Hospitals, (Chicago, 1985), p. 18.

APPENDIX L

PHYSICIAN ASSISTANTS

EXECUTIVE SUMMARY

At the end of FY88, the Department of Defense was staffed at 95 percent of budgeted authorizations in physician assistants, representing a shortage of 62 physician assistants (PAs). In FY89, 25 percent (401) of DoD PAs are retirement eligible. This represents 136 Army PAs, 238 Navy PAs and 132 Air Force PAs. While not all of these will retire, there are enough probable losses to predict a considerable shortage of PAs over the next two years. Attempts to recruit fully qualified PAs have not been as successful as anticipated. This has prompted the services to resume their training programs. However, it will take two years for these programs to generate qualified PAs.

Civilian demand for physician assistants has increased salary and benefit packages to the point that military salaries, although nominally higher, may not be a sufficient retention incentive. This, combined with service career constraints which do not allow full career opportunities, will continue to result in retirements of PAs to accept more lucrative civilian opportunities.

The services may need to consider incentive pay bonuses for those who are retirement eligible in order to manage the shortfall over the next two years.

PROFILE OF PHYSICIAN ASSISTANTS

History

The first Physician Assistant (PA) training program began in 1965. By 1973, over 50 PA training programs had been established. At this same time, a shortage of military primary care physicians decreased the availability of health care to Department of Defense beneficiaries. The Armed Forces Health Professions Scholarship Program (AFHPSP) and the Uniformed Services University of the Health Sciences (USUHS) were created in 1972, but with a training time of 5 - 9 years, "in-the-field" graduates would not be available in sufficient quantity until the 1980s. Physician Assistants were seen as the short-term answer to a potentially long-term problem.

In 1971, PA training programs were established in the services and enlisted technicians were selected for advanced two-year training in the new profession. After graduation, the new PA was credentialed by the assigned hospital to provide health care under the supervision of a physician. From 1971 to 1978, Air Force PAs remained in the enlisted ranks while Army and Navy PAs were promoted to Warrant Officer status.

The American Medical Association (AMA) joined in early efforts to firmly establish the young profession. In 1970, it recommended that the states amend medical practice laws allowing physicians to delegate tasks to qualified PAs. The following year the AMA first recognized and accredited the rapidly growing number of PA training programs. Their physician-dependent role afforded PAs a large amount of responsibility for patient care, yet did not usurp the ultimate authority of physicians. Thus, the legal basis for PA practice is built upon physician supervision, a relatively unique arrangement among health providers.

Throughout the 1970s, health services researchers focused attention on PAs to observe their acceptance by physicians and patients, the content and quality of the care they provided, their cost effectiveness and productivity, and their willingness to settle in medically underserved areas. Study results have been uniformly positive. In little more than 20 years, the profession has grown and become well established. A favorable national climate, support from government policy makers and the medical establishment, plus creative planning on the part of early leaders were all key factors in the successful introduction of the PA.

At the present time, there are approximately 1,200 active duty PAs. The majority work in primary care, family practice, or sick call clinics. They are the gate keepers of the DoD health care system. Proven cost effective, PAs are providing quality care while increasing access to the medical system. However, with job opportunities in the civilian market projected to more than double by the year 2000 and a lack of career progression in the military, experienced PAs are opting to retire or separate from the services. For example, in FY89 Navy PAs are retiring at twice their normal rate, thereby giving credence to the large number of FY89 retirement projections.

Education

More than 50 PA training programs are accredited by the Committee on Allied Health Education and Accreditation (CAHEA) of the American Medical Association. PA programs are approximately 24 months in length and roughly equivalent to the first and third years of medical school. Generally, programs require a minimum of two years of college education prior to admission. This minimum is often exceeded since 49 percent of PA students in the academic year 1987-1988 possessed a Baccalaureate degree or higher prior to admission to civilian programs. Over 90 percent of Navy PAs hold bachelors or masters degrees. The vast majority of programs offer a Baccalaureate degree upon successful completion. However, there has been a trend towards awarding a Masters degree to those students who have a BA or BS degree prior to matriculation. In 1987, the American Academy of Physician Assistants (AAPA) proposed a bachelors degree as the minimum educational level for PAs.

Originally, training programs awarded certificates of completion only. Board Certification by the National Commission on Certification of Physician Assistants began in 1975. Military PA graduates receive Bachelor of Science degrees from the sponsoring university.

Over the past four years, there has been a decline in the number of applicants to PA programs. In 1984, there were roughly four applicants for every available slot. By 1988, that had slipped to 3.4 applicants per available slot.

In 1984, the Air Force PA training program was placed on "stand-by" status with the last graduates in 1986. This was done because PA inventory was good and expected to go above budget authorized levels in 1985 and 1986. It was further anticipated that direct recruiting would fill any losses. However, recruiting was not adequate and, in December 1988, the USAF Surgeon General directed reactivation of the PA training program. Class will begin October 1989, with 60 graduates per year with a six year service obligation. These graduates are needed because of losses of Air Force PAs, commissioned in 1978, that have now reached their 10-year commissioned service date and are eligible to retire as commissioned officers.

The number of applicants versus available training seats for the Army PA program has declined annually since 1981, from a high of 14 to 1 down to a low of 1 to 1. This decline in applicants has been attributed to changes in course prerequisites. Students completing the Army PA training program incur a five year active duty service obligation upon graduation. The Navy will re-activate its training program in July 1989 with a projection of 25 students per class. Graduates will have a three-year service obligation. As more PAs enter training programs armed with Bachelors and Masters degrees, it is increasingly apparent that Commissioned Officer status is justified.

Scope of Practice

Physician Assistants work under the supervision and administrative review of a specific physician assigned in writing, who is ultimately responsible for the patient's care and well-being. The credentials committees at the local medical treatment facilities (MTFs) recommend individual clinical privileges of assigned student and graduate military PAs. Normally, PAs work in primary care, acute care, family practice, and emergency Services unless they have completed a PA specialty training program approved by the service Surgeon General. Authorized procedures must not exceed the competence of either the practitioner or the supervising physician. Examples of specialty areas where PAs may receive additional training are:

Emergency Services	Orthopedics
ENT	General Surgery
Cardio-vascular Perfusion	Pediatrics
Occupational Medicine	Preventive Medicine
Aviation Medicine	Psychiatry
Urology	Family Practice
Internal Medicine	

All PAs must be certified by the National Commission on Certification of Physician Assistants (NCCPA) by taking an initial certifying board examination with both written and practical components. Maintenance of certification requires 100 hours of Continuing Medical Education every two years. Additionally, a PA must take the written recertification exam every six years.

While it is true that the PA, as a dependent practitioner, must practice under the direct and indirect supervision of a physician, the daily relationship of a physician/PA partnership develops unity of thought and medical logic that permits an autonomy of practice by the PA. This is advantageous in certain military situations, such as deployment to remote and isolated areas of the world.

Physician Assistants have defined a new level of medical care. Health care extenders, such as PAs and corpsmen, when utilized in a team concept, provide a synergistic effect. Each member of the team augments the other as they work toward the common goal of improving quality, accessibility and cost-effectiveness of health care.

Role of PAs in the Military

PEACETIME: PAs improve the productivity of a physician's practice, reduce patient waiting time, handle emergencies effectively, reduce pressure upon the physician, improve patient access to professional care and lower costs.

WARTIME: Formal wartime mission statements are presently being developed. The proper place for a physician assistant in a wartime situation is with the second echelon of care (ie., Aid Stations, Medical Treatment Platoons, Convalescent Centers,

Outpatient Care Positions, and Special Forces Operations). Specialty trained PAs may be used in nearly every echelon. PAs provide routine and resuscitative unit level medical care and evacuation of sick, wounded, and injured personnel from forward combat locations. They (1) conduct and/or supervise training of unit personnel in first aid, sanitation, personal hygiene, medical evacuation procedures, and the medical aspects of injury prevention; (2) arrange for a unit preventive psychiatry program to include unit leader training in the methods of preventing psychiatric disorders and combat stress casualties; (3) establish and operate a medical aid station, (4) treat patients who are sick, wounded or injured; and (5) refer patients requiring additional treatment to a higher echelon of care.

In 1983, a Lou Harris national poll revealed that a clear majority of the American people favor the increased use of physician extenders, such as nurse practitioners, midwives and physician assistants. Patients rate PAs highly in terms of technical competence, professional manner and satisfaction with procedures performed. Several studies by the Rand Corporation for the US Air Force resulted in similar findings.

MILITARY AND CIVILIAN SALARY COMPARISON

Civilian PA incomes have increased as the difference between supply and demand has widened. The AAPA reports the average starting salary for new graduates in 1988 was approximately $26,500 per year. Average salary for PAs across all regions, specialties and years of practice was approximately $33,000, with 20 percent of PAs reporting incomes in excess of $40,000.

Conversely, the entry level pay (RMC) in 1988 for military PAs is $27,905 in the Air Force (2LT), $26,673 in the Army (WO-1) and $31,233 in the Navy (WO-2). An experienced Air Force PA who is promoted to O-4, can expect to earn $48,303 compared with $43,685 for the Army and Navy (WO-4). Although military PA salaries exceed civilian averages, total civilian compensation packages are luring retirement eligible PAs to the civilian sector.

SUPPLY AND DEMAND

Presently, there are only 1,200-1,400 PA graduates per year in the United States. For every new graduate there are already eight civilian positions, and projections estimate a 56 percent rise in job opportunities by the year 2000. The AAPA estimates PA unemployment rate at less than one percent. The Bureau of Labor Statistics reports that job opportunities for PAs are expected to continue to outstrip supply over the next decade.

The profession has already experienced tremendous growth both in the military and civilian communities, considering there were less than 100 trained PAs in 1970. There are now approximately 18,000 PAs practicing throughout the United States.

Employment of PAs is expected to grow much faster than the average for all civilian occupations through the year 2000 due to an anticipated expansion of the health services industry, a greater reliance on PAs to provide primary care, and the need to assist with complex medical and surgical procedures.

FORCE STRUCTURE

The preliminary versions of an ideal Army and Air Force PA force structure and inventory are shown in Figures L-1 and L-3. The Navy's inventory is shown in Figure L-2. It is easy to see how the present PA inventory is widely divergent from ideal force structures which desire a relatively young force. The majority of PAs are close to, or beyond, retirement points.

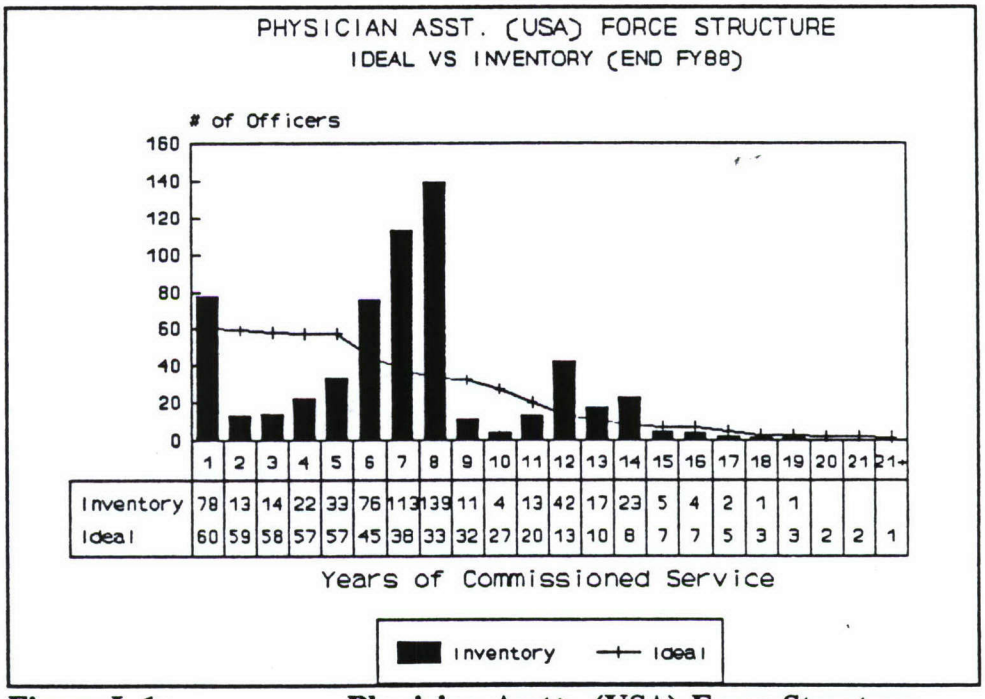


Figure L-1: Physician Asst> (USA) Force Structure Ideal vs Inventory

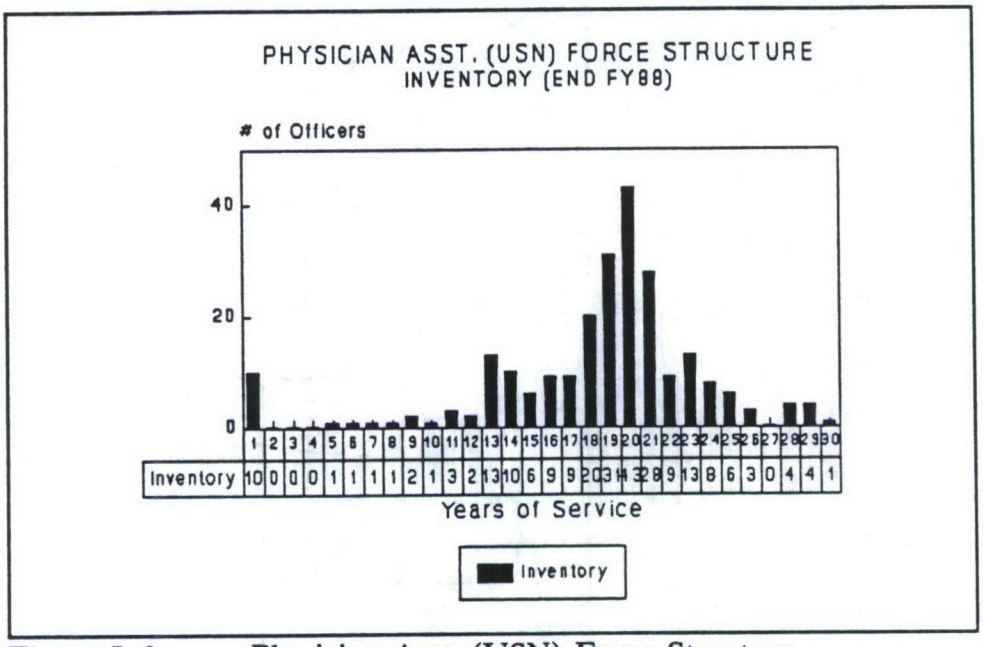


Figure L-2: Physician Asst. (USN) Force Structure
Ideal vs. Inventory

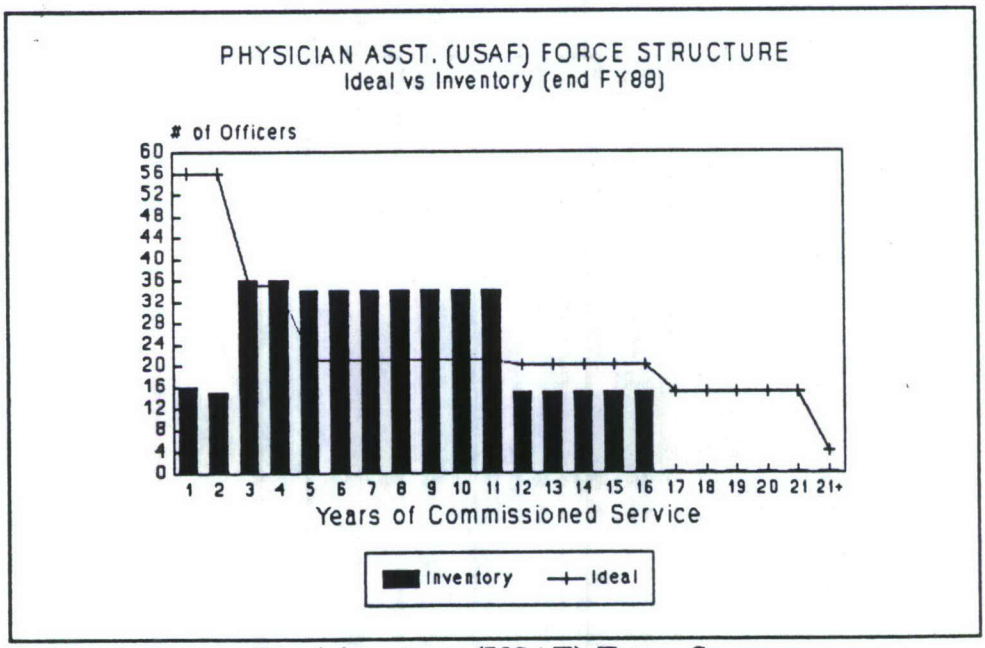


Figure L-3: Physician Asst. (USAF) Force Structure
Ideal vs. Inventory

REQUIREMENTS

Figures L-4, L-5, and L-6 show PA inventory against authorizations with the following shortfalls: Army - 13, Navy - 40 and Air Force - 9.

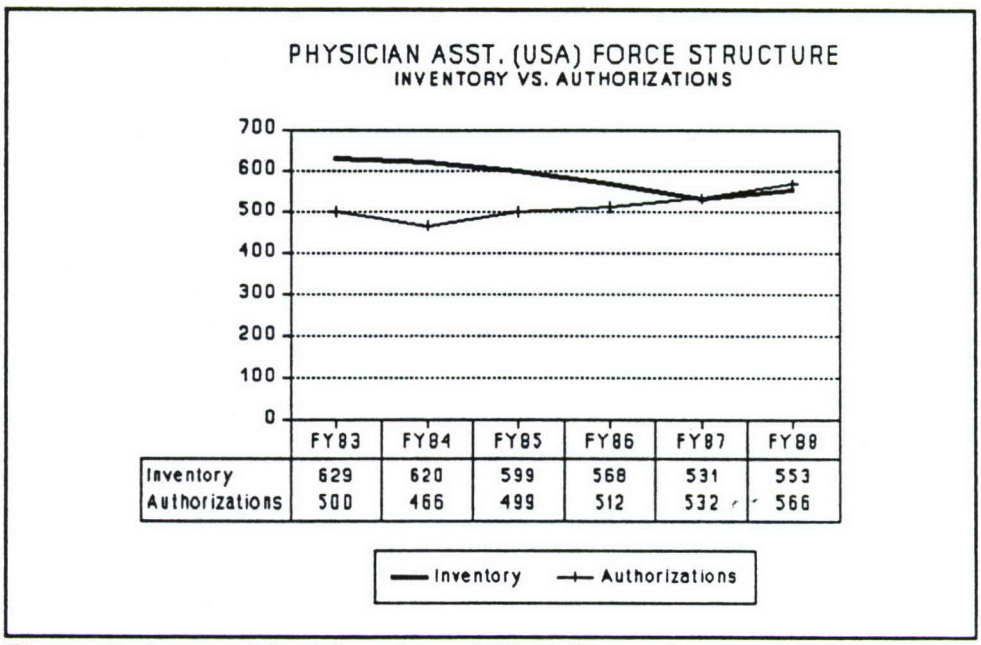


Figure L-4: Physician Asst. (USA) Force Structure Inventory vs. Authorizations

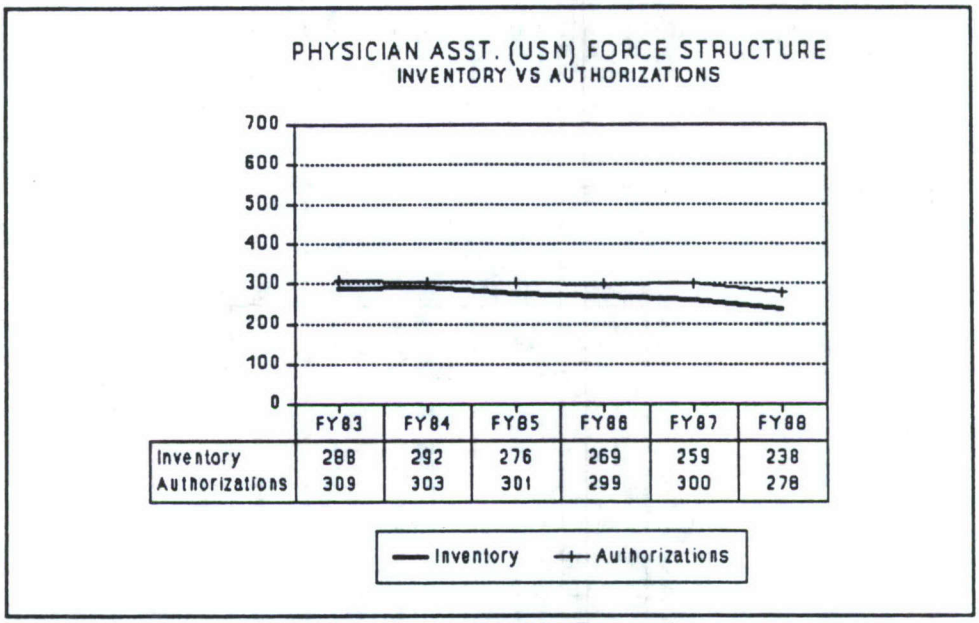


Figure L-5: Physician Asst. (USN) Force Structure Inventory vs. Authorizations

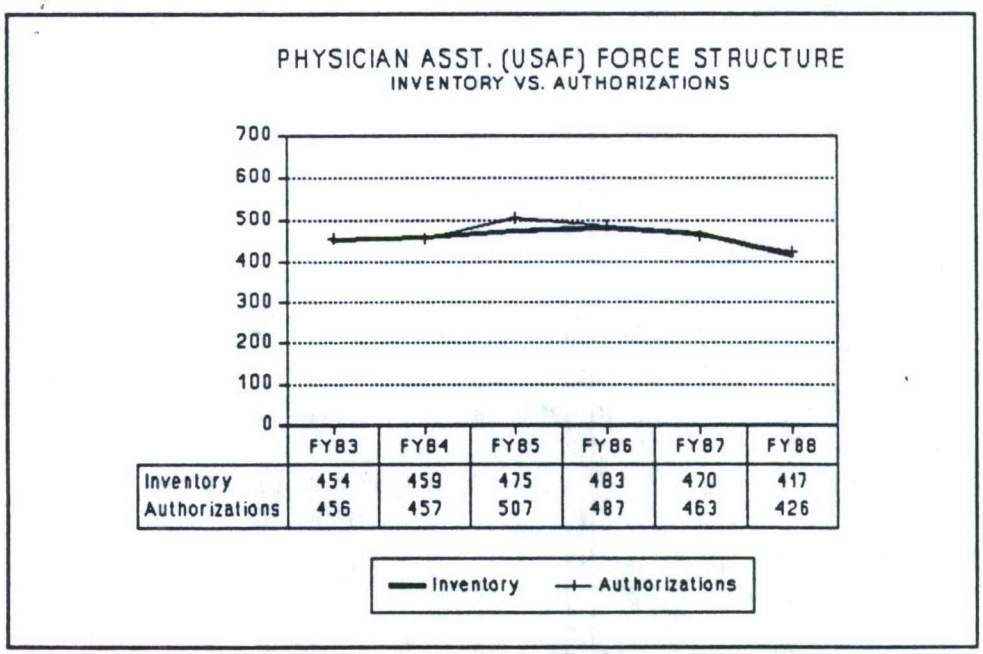
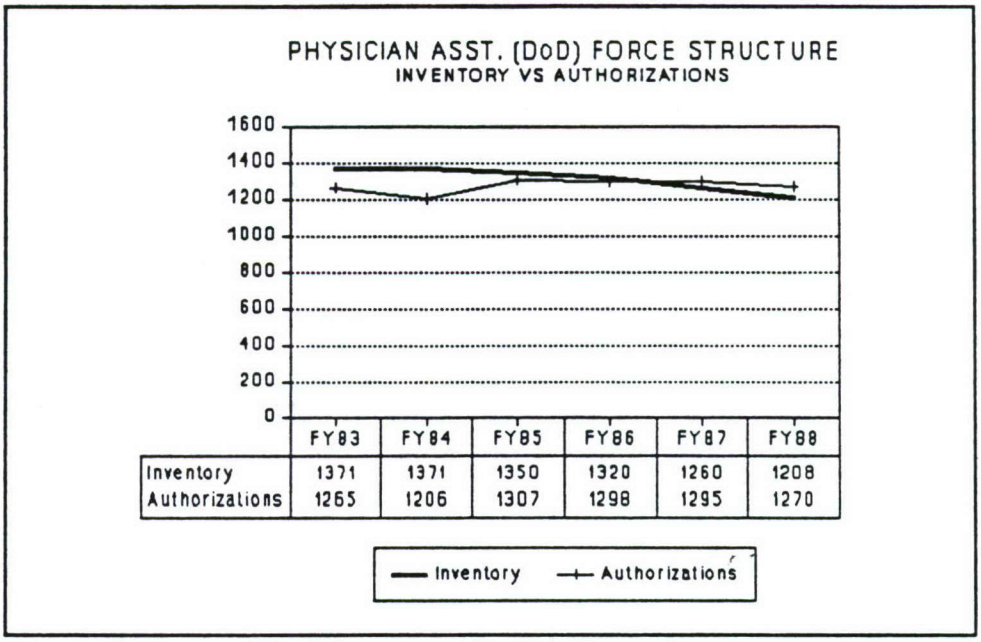


Figure L-6: Physician Asst. (USAF) Force Structure Inventory vs. Authorizations

The services and total DoD PA inventories are now either at or below authorizations rather than being over-authorization as they were in the past. This decline is due to retirements/separations without replacements by new accessions. (See Figure L-7)



	FY83	FY84	FY85	FY86	FY87	FY88
Inventory	1371	1371	1350	1320	1260	1208
Authorizations	1265	1206	1307	1298	1295	1270

Figure L-7: Physician Asst. (DoD) Force Structure Inventory vs. Authorizations

Recruiting

The Air Force has a recruiting goal of 100 PAs for FY89, while the Army and Navy have no specific goal. Success in recruiting civilian trained PAs, and the quality of those who were recruited, have not been as good as had been originally anticipated. Reasons given for the poor recruiting results have been: (1) the scope of military practice is much broader than civilian practice, (2) civilian trained PAs are overwhelmed by military productivity standards, (3) adaptation to the role of the professional military officer first and medical provider second appears too demanding and stressful, and (4) lack of career progression in the military health care system.

The military has relied heavily on "in-house" PA training programs. These programs have allowed the services to adjust curricula to their need. The Services have been able to partially control supply and demand problems by adjusting class size.

Finally, the quality of military PA training has been equal to, or better than, what is considered to be the top civilian programs in the nation.

The Army recruited 100 civilian trained PAs from 1977 to 1981. Since then the Army has accessed only 14 Guard/Reserve PAs onto active duty. In FY88 the Air Force accessed 29 PAs compared with a goal of 43. Despite the recent restoration of the Army's PA school (80 annual graduates) and the future reactivation of the Navy (25 graduates) and Air Force (60 graduates) schools, significant recruiting success is still necessary over the next two years to quickly bring inventory up to authorizations.

Due to prior enlisted service, many PAs are eligible to retire soon after the "payback" of their training obligation. Twenty-five percent of Army, 74 percent of Navy and 49 percent of Air Force PAs can retire within the next two years. Many of these officers indicate that they will retire when eligible. Since each service is currently short of PAs, large numbers of retirements would further increase the present problems in delivery of ambulatory care. Given the relatively modest size of Service training programs and the difficulty recruiting PAs, there would be no short term solution other than paying substantial retention bonuses if these providers retire.

An additional problem for the Air Force is the negative impact of the award of constructive service credit. Civilian-trained PAs can enter active duty at grades equal to or higher than PAs who have been with "the company" for many years. The awarding of constructive credit is necessary, however, for a viable recruiting program, despite the poor success the services have experienced to date. The award of the constructive credit tends to make officers bulge at the O-3 grade, since PAs have opportunities and selection rates lower than those of other allied health providers or line officer counterparts.

Continuation rates of PAs beyond their initial obligation has decreased over the past four years with the Army declining from 100 percent to 88 percent and the Air Force falling from 91 percent to 74 percent. The decline in retention can be attributed to losses due to retirement, loss of job satisfaction, or poor promotion possibilities, (i.e., two-time passovers to O-4). For example, in 1986, 18 of the 30 Air Force Biomedical Sciences Corps officers who were forced to separate due to promotion passover were PAs. In 1987, 18 of 27 twice passed over officers forced to separate were PAs.

Impact of Inadequate Staffing

For every $1.00 spent on care provided in a military health care institution, it costs at least $1.30 to provide equivalent under CHAMPUS. This does not account for the cost to the beneficiary in terms of their CHAMPUS "co-payment". Shortages of PAs in ambulatory care settings causes delays for care to beneficiaries or the elimination of some services. Additionally, staffing shortfalls have already caused the Services to look for "innovative" but expensive ways to provide primary care. For instance, PRIMUS and NAVCARE clinics have been contracted throughout the country to meet increased patient demand. The same level of primary care can be provided in military hospitals

and clinics with proper staffing. There is a definite negative impact on physicians when PA inventories are short since, instead of having the PA complement the physician, the physician becomes obliged to perform some of the PA's duties in troop medical clinics, emergency rooms, field units, family practice modules, sick-call clinics, etc.

CONCLUSIONS AND RECOMMENDATIONS

The problems and challenges of managing the Physician Assistant community are generally uniform among the Services despite the disparity between the Army and Navy Warrant officers and the Air Force Commissioned PAs. The Navy has virtually completed its plans to commission its PAs, and the Army is studying the issue. Commissioned status will bring higher income which will offset any pay advantage in the civilian sector. However, commissioning is certainly no panacea as problems of promotion stagnation and passover are likely to occur if most PAs congregate at the 0-3 level. Correction of this problem is internal to each service since promotion opportunities are dependent upon validated requirements for officers at higher grades.

Physician Assistants have also expressed a desire for increased access to Continuing Medical Education funds, which would allow them to more easily obtain the educational experiences required to maintain certification.

Finally, authority to off incentive special pay to keep retirement eligible PAs on active duty may be necessary over the next four to six years until training output from the three Services' PA schools can reduce the inventory shortages. Since 25 percent of the Army, 74 percent of the Navy and 49 percent of Air Force PAs are eligible to retire within the next two years, the pay incentive may be necessary should many of these individuals choose to retire.