Chapter 7

EVOLUTION OF MILITARY RECRUIT ACCESSION STANDARDS

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INTRODUCTION

For as long as communities have raised armies, there has been a need to determine who is physically qualified to serve. One example shows that age and physical infirmity were considerations for military service millennia ago. In the Bible, it is written that God instructed Moses to "number the whole community of Israel by families in the father's line, recording the name of every male person aged twenty years and upwards fit for military service" (Numbers 1:2-3). The aged, infirm, and maimed were exempt from the Biblical census. Other armies throughout history have imposed a wide variety of physical standards.[1] It is also clear that these standards almost inevitably changed when the demand for soldiers increased, suggesting that what may be considered desirable soldierly characteristics in some situations may not be essential to effective war fighting.[2]

An accession standard is the application of a rule to determine fitness for military service following the screening of a group of people. From 1814 to 1986, accession medical standards for all of the US military services were set by the US Army, but today they are taken from Department of Defense Directive 6130.3.[3] This Department of Defense (DoD) directive provides physical standard goals

> to ensure that individuals under consideration for appointment, enlistment, and induction into the Armed Forces of the United States are:
> a. free of contagious diseases that would be likely to endanger the health of other personnel.
> b. free of medical conditions or physical defects that would require excessive time lost from duty for necessary treatment or hospitalization or would likely result in separation from the Service for medical unfitness.
> c. medically capable of satisfactorily completing required training.
> d. medically adaptable to the military environment without the necessity of geographical area limitations.
> e. medically capable of performing duties without aggravation of existing physical defects or medical conditions.[4(p1)]

Great difficulties lie in balancing standards so that the pressing needs of the community are fulfilled, that individuals who are less well suited to serve (or who might actually impair the effectiveness of a unit) are not permitted entry, and that when possible, each person is treated fairly. Controversy surrounded military medical standards even in antiquity. This was largely because of the difficulty of accurately predicting, based on information available at the time of accession, how a particular subgroup of people (much less a particular individual) will actually perform during a tour of military service. However, the importance of physical standards was recognized. Napoleon realized during his 100-days campaign that his last lot of troops (left over from previous campaigns' unsuitables) served "only to line the roadside and to fill the hospitals."[5]

A medical standard can pertain to a specific disease, injury, physical attribute, or symptom that is thought to be a indication of a more serious underlying condition. For example, in the past, height standards often served a health screening purpose entirely apart from any desire to select for men of a certain height. Short stature was sometimes felt to reflect underlying chronic disease or poor physical development. At times tall stature, especially in conjunction with low weight, was used as a marker of tuberculosis. "Lankiness" in Southern men was sometimes used as a sign of infection with malaria and hookworm.[2] Surrogate markers continue to be used today and will continue to be used as long as they remain a meaningful way of assessing an individual's health and as long as our knowledge of medicine and our ability to predict future performance remain imperfect.

Medical standards applied to screening programs are always intended to select individuals who are medically fit to fulfill necessary functions under the often rigorous conditions of military service and who are expected to remain so for a reasonable period of time.[6] Both common sense and real-world experience have taught the United States that it is too costly in terms of both dollars and readiness to allow persons to enter the military, train for a year or more, and be sent to new jobs, only then to discover that they cannot perform their assigned roles.

A variety of social, political, and doctrinal influences affect the various objectives of medical standards, whether those standards are applied during accession, retention, selection for special jobs (eg, aviator), or any other phase of military service. But there are two fundamental goals to medical standards. One goal is to improve military efficiency, and it has long been recognized that any enterprise employing men and women who are physically and mentally fit for their specialized occupations is more efficient.[7] Experience has also taught that the US government's liability for long-term medical care and disability care creates a huge financial burden that

remains long after the service of any group of people. For this reason, and because it makes sense to protect the health of US citizens from needless harm, modern medical standards also have the goal of selecting those who are least likely to become disabled or injured in the normal performance of their duty.

Accession standards can be stiffened or relaxed as the manpower available for military service becomes either proportionately greater or less than the need for it. Changing medical standards are also used to meet objectives relating to force structure, (eg, target number of people in the service, median age of servicemembers, average number of tours of duty served). Other objectives of medical standards as previously applied or as conceivably applicable in the future to various parts of the armed forces may include offering special opportunities for certain subgroups of society, allowing the creation of a pool of individuals with a highly specialized civilian expertise for call-up during wartime, permitting servicemembers with valuable experience to remain in a position to pass their experience on, and many others.

Clearly, many of these fundamental objectives are not achieved by using purely medical judgment, though fitness for combat duty naturally remains a critical criterion in selecting recruits. The philosophy and application of medical standards must necessarily incorporate both the changing needs of the military (eg, growing demands for special skills due to changing technology) and the social and political imperative to reflect the desires of the citizenry.[6] US military standards have evolved greatly and always with the goal of identifying from the pool of potential servicemembers those personnel capable of becoming the foundation upon which the armed forces' ability to meet the challenges of a complex world is built.

HISTORY OF MEDICAL STANDARDS IN THE UNITED STATES

Tracing the evolution of accession standards in the United States over time provides an excellent perspective from which to consider the current status of such standards.

The Early Years—A Blunt Tool

The second Continental Congress of the United States in July 1775 instructed that able-bodied men between 16 and 50 years of age be formed into loose organizations controlled by individual states and known as militias.[1] These were, in effect, the entire body of white male inhabitants who were felt able to preserve the peace. They fulfilled a role closer to that of police than to that of professional soldiery.

The first specific regulations governing the physical condition of recruits, issued in 1814, stated that all "free able-bodied men between the ages of 18 and 35 years who were active and free from disease were welcomed into the Army, but their healthiness had to be demonstrated."[1] Screening physical examinations ensured that each applicant "had perfect use of every joint and limb and that there were no tumors, diseased enlargement of bones or joints, sore legs, or rupture."[1]

The Civil War to World War I—Attempts to Be More Selective

Examination practices during the Civil War were lax and the induction physical something of a sham. One physician boasted that he examined 100 men in an hour, and frequently applicants who were obviously too young, too old, or infirm were admitted. This was recognized even then to result in at least one problem still faced today when improperly qualified applicants are accepted: excessive discharges due to preexisting illnesses. According to a Sanitary Commission report of 1861, three quarters of the soldiers discharged from the Union Army were "diseased" at the time of enlistment and should never have been enlisted in the first place. The situation finally became so woeful that the Surgeon General demanded and got the physicians to perform physicals more conscientiously. Inspectors were sent to supervise examinations, and recruits entering camp were re-examined just to make sure.[8]

The massive manpower needs of this bloody war led to the passage of the Draft Act of 1863, which established the Enrollment Board to serve as the first independent federal agency charged with examining all prospective servicemembers for physical and mental fitness.[8] At about the same time, the Confederate States of America passed the similar Conscription Act, which called "all free Southern men between the ages of seventeen and fifty to the colors" [8(p108)] and also told recruiters "to accept anyone else who could pull a trigger or stop a minie [bullet]."[8(p108)] During times of exceptional need, "such matters as heart trouble and epilepsy are strictly academic."[8(p108)]

The military of the closing years of the 19th century and first part of the 20th century had a rich voluntary recruit applicant pool, and the armed

forces became increasingly selective. Standards became more rigorous. From 1889 to 1915, 70.2% to 83.9% of all applicants could not meet standards and were rejected by the examination process as lacking in "…legal, mental, moral, or physical qualifications."[7]

World War I—The Need for Many Good Men

World War I brought many changes. The Selective Service Act provided for draft boards, in some ways precursors of today's military entrance processing stations. The draft boards screened the physical, mental, and moral fitness of prospective servicemembers. They were assisted by advisory boards, such as the medical advisory board and the legal advisory board, which were charged with establishing fitness standards and acting on complaints. The Provost Marshal General was placed in charge of the entire process.[9] Local boards were, as had historically been the case for entrance screening activities, very much overworked and undermanned in the face of a large flow of recruits.

Physical standards were revised several times during World War I. The first revision applied only to draftees, while the stringent standards described previously continued to apply to volunteers. It was not until the fourth revision, published in 1918, that the same, less-stringent standards were applied to both draftees and volunteers.[1] During the period from September 1917 through November 1918, records show that 2,801,635 men were inducted into the Army. Out of the approximately 10,000,000 registered men, roughly 2,510,000 were examined by local draft boards. During the first 4 months of mobilization, roughly one in three men were rejected on physical grounds, but the rejection rate dropped to one in four during the following 8 months.[9]

Reasons for Rejection

About 22% of rejections were for reasons of disease or defect that would interfere with so-called mechanical performance, such as problems with bones, joints, flat feet, and hernias. Fifteen percent were rejected because of imperfections of the sense organs and 13% for defects in the cardiovascular system. Roughly 12% were rejected for nervous and mental problems, in part due to "abnormal thyroid secretions." About 10% were rejected because of communicable diseases—in particular tuberculosis and venereal disease. Only slightly more than 1 out of 75 was rejected because he was judged to be mentally deficient or emotionally unstable.[10]

Recruiting officers were directed to exclude the mentally defective and those showing evidence of serious nervous disorders and to recognize and reject those exhibiting a "degenerate physique,"[7] that is, one marked by diminished stature and inferior vigor. Additional functional stigmata were defective mental qualities and moral delinquencies such as willfulness, deceitfulness, and indecency.[7]

Screening Problems

Pulmonary tuberculosis was screened for by history and physical and became an excellent example of problems resulting from unavailability of adequate screening tests. If not evident, tuberculosis was particularly suspected in tall persons, because tuberculous men were on average 1/2 inch taller and 12 pounds lighter compared to the average healthy World War I registrant.[2] Taking screening chest roentgenograms of every inductee at that time was neither possible nor practical, and radiography was used only as an adjunct in select cases. Unfortunately, these insensitive and non-specific screening methods allowed many men with tuberculosis to be inducted. This proved to be very costly to the government, which provided medical care and other benefits to many World War I veterans with tuberculosis.[11]

Between the Wars—Toward a More Scientific System

The years following World War I and into World War II saw publication of regulations intended to simplify and speed mobilization. Problems experienced during World War I, along with the increasingly technical demands of a modern military force, led to a need for greatly expanded training, which in turn led to the creation of military occupational specialties. Increasingly detailed classification of enrollees was performed, with attention to physical and intellectual proficiency and aptitude. The Army adopted the PULHES system of physical classification from the Canadian military.[12] PULHES is used to assess **p**hysical capacity, **u**pper extremities, **l**ower extremities, **h**earing(ears), **e**yes (vision), and overall p**s**ychiatric impression. These areas are rated from 1 to 4, with 1 signifying no assignment limitations from a medical perspective, and as either temporary or permanent. Also, preinduction examining stations were opened to allow a more thorough evaluation of registrants. High school graduates and non-graduates, after orientation briefings, were given psychological tests separate from the medi-

cal examination. Skilled psychologists were employed to revise and improve classification procedures and testing, and the Army General Classification Test was implemented. Initially, those with high scores (over 100) on the test were routed largely into the Army Air Force; some went into the Special Services. Ultimately, the War Department sent 75% of those scoring over 100 to the Army Air Force. Ground commanders rebelled at this notion that intelligent men were not required in the ground forces and eventually prevailed, leading to a more equitable distribution of manpower.

The experience with tuberculosis in World War I sensitized the armed forces to the problem of nonspecific screening tools, but despite a decrease in cases of tuberculosis, it was still the primary disease-related cause of death among men of military age at the time of World War II. US Navy recruiters were especially interested in improving screening to prevent the spread of tuberculosis on crowded ships—a problem that continues to exist today. By early 1941, the US Navy had installed photofluorography units at seven training camps to examine recruits and personnel being reassigned to other units. By March 1942, the Army was also using radiography to screen all new recruits.[11] Ultimately, these military radiography screening programs demonstrated that 75% of early active tuberculosis could be discovered only by x-ray examination. Approximately 1% of apparently healthy young men and women were felt to have evidence of pulmonary tuberculosis extensive enough to warrant rejection.[11,13]

World War II—More Specific Screening

In September 1940, there were an estimated 1,024,789 men in the US Armed Forces, 519,805 of whom were in the Army. By the end of the war, more than 10 million men had served in the Army.[13] During the war, some men volunteered for military service, but for the most part, the armed services got their manpower through compulsion. Men were notified to appear for examination to determine their eligibility for service. In 1940, the armed services sought to avoid many potential difficulties by rejecting servicemen who they thought could not be readily converted into effective soldiers, sailors, airmen, or marines. The services had to assess whether a man's physical condition and stamina would enable him to keep the pace of the training schedule and withstand the stresses and strains of combat. The screening process became the anchor of military manpower policy and continued to be crucial throughout World War II.[10] Regulations actually allowed for up to 3 days of hospital observation and testing, if necessary, to clarify whether an individual was medically fit or not.[14] Some felt an even longer period to observe the individual reacting to military service should be allowed.[15]

The military believed that it also had to consider a potential servicemember's emotional stability. It was felt that in World War I sizable numbers of the American Expeditionary Force had "broken down" in battle. The services hoped to prevent a repetition of this experience. The advances made in psychological testing since the end of World War I encouraged many to believe that techniques had been developed that would distinguish the stable from the unstable, the bright from the dull, the well-motivated from the unmotivated.[10] After all, it is "[b]etter to enlist one man with normal intelligence than a dozen who are simply hewers of wood and drawers of water."[16(p302)]

The number of men disqualified for service exceeded all expectations while the need for manpower kept expanding.[13] For the period of November 1940 to August 1945, an estimated 17,954,500 men were examined for induction into military service, and 6,419,700 (35.8%) were rejected.[13] An army of 10 million men was possible only after changes were made to existing policies on physical and mental requirements, as happened in World War I. Although the US Army made changes in its physical and mental requirements throughout the war, it was during the first 2 years that the most telling changes had to be made to permit the induction of millions of men. Before changing standards and procedures, the Surgeon General's Office considered these three issues: (1) the contributions that could be made by persons with certain defects, (2) what the policy should be on the physical rehabilitation of men to make them capable of service, and (3) the legal and economic implications of inducting men with physical defects (thereby inviting future claims against the US government). The changes in physical standards that permitted the greatest addition of new men into the Army were those made for vision, venereal diseases, and teeth.[13]

Reasons for Rejection

Dental defects were the leading cause for rejection at local boards and accounted for 17.7% of all rejections. Providing treatment for dental defects resulted in the qualification of almost 1 million additional men for military service. During 1940 to 1941, eye defects caused 12.2% of all rejections and

were the second leading cause for disqualification. After standards were lowered at the onset of the war, however, rejections for eye defects were exceeded consistently by those for mental disease, mental and educational deficiency, and musculo skeletal and cardiovascular defects. The change in standards for eye defects principally involved correcting vision by giving spectacles to those who could not meet the standards without them.[13]

Comparisons With World War I

The rejection rate during World War II was 80% above the rate during World War I. Differences between the two wars were least marked in rejections for physical defects, where the rate for World War II was only about one third higher. This increase must be evaluated in terms of the substantial improvement in the health of the nation since 1918. The higher rejection rate reflected a raising of the criteria, a more careful evaluation of selectees, or, as is most likely, a combination of both.[10]

Much more striking was the more than 4-fold increase in the overall rejection rate for mental and educational deficiencies in the face of a significant rise in the educational level of the population. In World War I, an estimated 29% of men of military age had no more than 6 years of schooling, while in 1941 only 14% had so little education. But perhaps the greatest contrast was in the proportions rejected for emotional disorders: World War II had a rate 11 times as great as that of World War I. Almost certainly, the marked increase in rejection rates reflects a significant raising of entry criteria as applied in practice. Of the 43,000 rejected in World War I, virtually all were truly mentally deficient (ie, unable to perform even unskilled work except under close supervision in a protective environment), but the majority of the 716,000 rejected during World War II were apparently rejected because they were uneducated.[10] In all, 1,992,950 men, or more than 30% of all rejections, were found by the Selective Service to be unfit for general duty because of mental and educational deficiency and neuropsychiatric conditions.[13] This prompted increased interest in psychiatric epidemiology and resulted in an expansion of and alterations in psychiatric nomenclature.[17] Prevalence of psychiatric disorders started to be established less from second-hand accounts and records and more from health care provider interviews. Many of these interviews used instruments based on the Psychosomatic Scale of the Neuropsychiatric Screening Adjunct, which was developed during World War II for Selective Service screening.[17]

Interestingly, despite stringent medical standards and a high initial rejection rate intended to prevent the entry of individuals with mental or educational deficits, 379,486 men were separated from the services for neuropsychiatric reasons from 1942 to 1945. These accounted for 45% of discharges for disability. An additional 356,000 were separated for ineptness, lack of required degree of adaptability, or enuresis.[13]

The 1960s—Weight Standards and Other Surrogate Measures of Fitness

In 1960, accession standards established minimum weights for heights and (in 5-year age increments) liberal maximum weights for height. Obesity, in its lesser forms, was considered treatable and not a reason for rejection or exemption. Until 1976, body weight was a screening tool that excluded only the extremes of underweight and obesity, while a separate regulation detailed physical fitness tests, which periodically assessed the physical performance of active duty military personnel. Then these standards changed from simple entry criteria to standards that must be maintained throughout a military career by appropriate nutrition and exercise.[2] Body weight and body fat standards are the only physical standards currently used by all the Services that actually exclude or eliminate individuals for unsuitability based on a surrogate measure of physical fitness and combat readiness.

Changes in enlistment criteria began early in the Vietnam War. With a shortage of people during the early war years, Secretary of Defense Robert McNamara came up with a plan to meet manpower needs and "salvage hundreds of thousands of young men from economic deprivation by bringing them into the armed services."[18(p15)] The plan significantly relaxed entry standards. During the 3-year span of Project 100,000 (as it was called), 240,000 persons entered active duty. These men were considered only marginally qualified mentally by many and were more likely to desert, not complete a full tour, and be court-martialed than other servicemembers.

Recent Changes

Accession standards have continued to change as new threats to military readiness have emerged. Screening for the human immunodeficiency virus (HIV) among applicants for all services of the military began in late 1985. From October to December of the first year of testing, the prevalence was 1.64 per 1,000 and was higher in males (1.77/1,000) than females (0.68/1,000).[19] The prevalence of recruit

applicants infected with HIV has steadily declined since testing began. The prevalence fell to 0.82/1,000 in 1990 and then to 0.22/1,000 in 1994, and the differences in prevalences between the sexes disappeared.[19]

Increasing proportions of women in military accessions has made necessary more exploration of gender issues and medical accession standards. Conditions affecting women differently from men, such as genital chlamydia infections with their various sequelae, will need to be assessed for prevalence and importance relating to accession, attrition, medical costs, and military readiness. With continued scrutiny of the medical accessions process, it is likely that some entrance criteria will be deemed obsolete and new ones adopted as new disease entities arise and improved diagnostic tests are developed.

In the 1990s, the Army's approach to medical accession standards during war differed from that of prior wars. For the Persian Gulf War, retention standards were used instead of the more-lenient mobilization standards. The military services relied on the Reserve Component and National Guard for personnel instead of relaxing or modifying the standards for accession, as was done in World War I, World War II, and the Vietnam War.[3]

IMPLEMENTING ACCESSION MEDICAL STANDARDS IN THE 1990s AND BEYOND

Each individual service has the ultimate responsibility for determining which individuals will enter the service, be selected for a certain job, be retained in service, or otherwise pass a hurdle where medical evaluation plays a part. Beyond the guidance of DoD Directive 6130.3, individual service regulations address these issues, and authority for applying them resides with a variety of organizations. Much of the application of medical standards is a function of service medical facilities around the world, because that is where the examinations are done, whether retention and periodic screening examinations, special examinations for applicants to certain schools or special jobs, or other examinations to which standards apply. The exception to this is medical accession processing; it is not typically a function of service medical facilities and has been handled in the 1990s primarily by two organizations, the US Military Entrance Processing Command (MEPCOM) and the Department of Defense Medical Evaluation Review Board (DODMERB).

Military Entrance Processing Command

The MEPCOM is a joint service command operating under the executive agency of the US Army and is headquartered at the Great Lakes Naval Training Center in Great Lakes, Ill. It has the mission of helping determine if an applicant is qualified for enlistment into the armed forces based on standards set by each of the five individual services (ie, US Army, Navy, Air Force, Marine Corps, and Coast Guard).

The MEPCOM processes by far the largest number of potential servicemembers, mostly for enlistment rather than for the officer corps. In 1995, 340,530 medical examinations were performed by approximately 530 physicians, 474,820 people were tested with the Armed Services Vocational Aptitude Battery (ASVAB), and an additional 847,000 high school students were tested under the DoD student ASVAB testing program. The ASVAB attempts to improve the selection of applicants for enlisted service by measuring aptitude in multiple areas, such as general science, arithmetic reasoning, word knowledge, paragraph comprehension, numerical operations, coding speed, auto and shop information, mathematics knowledge, mechanical comprehension, and electronics information.[20] In the past, it had been a vehicle for examinees to avoid the draft by deliberately failing the battery. Computerized versions of the ASVAB can now detect deliberate failures. Ultimately 236,360 young men and women joined the armed forces from this pool of all who entered MEPCOM in 1995 (US Military Entrance Processing Command, North Chicago, Ill, 1996).

MEPCOM, initially called the Military Enlistment Processing Command, was created on 1 July 1976. It was formed under the jurisdiction of the Army Deputy Chief of Staff for Personnel at Ft. Sheridan, Ill, from elements of the US Army Recruiting Command and the Air Force Vocational Testing Group. Although it remains under the lead agency of the Army today and has a large number of Army personnel assigned to it, it is a tri-service command, is staffed by personnel from each service, and has had commanding officers from other services.

The first years of the command were devoted to standardization of testing and processing in reception and training centers. By September 1979, the command was made independent of the Recruiting Command by Department of the Army General Order 19. In 1980 the name was changed to the US Military Enlistment Processing Command. Replacing "enlistment" with "entrance" in 1983 created today's MEPCOM. The command moved in 1982

from Ft. Sheridan to the Naval Training Center at Great Lakes, Illinois. In that year the examination stations were named Military Entrance Processing Stations (MEPS). By 1985 the mission to process National Guard applicants was added, bringing virtually all applicants for enlistment in the US military under MEPCOM processing authority.

The early 1990s brought a downsizing and streamlining in the armed forces, and MEPCOM responded by instituting in 1992 "1-day" processing (a recruiter was given a "qualified" or "disqualified" decision in 1 day, pending only the results of HIV screening and drug testing), by moving toward a paperless testing system, and by playing a role in efforts to use evidence-based medical standards to best serve the changing manpower needs of US military services.

Service Prerogatives and Waivers

To process applicants efficiently, quickly, and accurately, MEPS use a single DoD standard; the exceptions are service-specific height and weight standards and visual standards for selected programs. It remains a service-specific prerogative, however, to either accept or reject individual applicants. This means that an individual who is determined to be disqualified by MEPCOM according to the DoD standard may still be accepted by a service if it grants the individual a waiver. After an individual is disqualified by the MEPS, his or her physical is then reviewed by the service-specific waiver authority. Some services have different waiver authorities for specific programs (eg, enlisted, Reserve Officer Training Corps, and academy appointments). The waiver authority then grants the waiver, denies the waiver, or requests more information. At certain times, each waiver authority follows temporary policies instituted by its Surgeon General for a specific condition. The DoD Directive also gives the secretaries of the military departments the authority to grant waivers.[4] While the decisions of some service waiver authorities are final, in the Navy and Marine Corps the final decision rests with the Chief of Naval Operations and the Commandant of the Marine Corps, respectively, with the recommendation from the Medical Department (Table 7-1).

DODMERB and the Service Academies

DODMERB is primarily responsible for evaluation of individuals applying for one of the service academies. As early as the mid-1960s, the superintendents of the US Military Academy, the US Air Force Academy, and the US Naval Academy would meet annually, and the surgeons of each academy would meet at the same time. These meetings provided for some coordination and a degree of consistency; however, by the late 1960s it was recognized that there would be great benefits from better coordination and standardization. Under the impetus of Colonel Kandel and others, largely at the Air Force Academy, an organization called the Service Academy Central Medical Review Board was established in January 1970. Later its name was changed to DODMERB. Its purpose, then as now, was to standardize and make more efficient the medical entrance processing for entry into the academies of the Army, Air Force, and Navy. Responsibility for Coast Guard academy examinations was moved from the Public Health Service to DODMERB in 1971 and responsibility for the Merchant Marines was added in 1972. This is an area of particular importance to the armed forces because every accepted applicant consumes a major investment of resources during academy training, and each is a potential career servicemember. Moreover, there have almost always been many more applicants than available positions in the academies. As a result, greater efforts and costs have always been incurred in screening such applicants with more complete examinations than might otherwise be employed, and high standards for entry have been imposed.

Because the Air Force examination was considered the most stringent, it was chosen as the initial unified examination. Academy entrance examinations had been performed at many locations, but it was found that many were not correctly performed. This was particularly a problem with the cycloplegic refractions. The Surgeons General of the services provided

TABLE 7-1

THE FIVE MOST COMMON MEDICAL REASONS FOR DISQUALIFICATION AT MILITARY ENTRANCE PROCESSING STATIONS IN 1995

Medical Reason	Disqualification Rate (%)	n
Hearing	1.42	5,145
Lower extremity	1.29	4,678
Lungs/chest	1.24	4,500
Feet	0.97	3,507
Psychiatric	0.97	3,506

Data Source: US Military Entrance Processing Command, 2834 Green Bay Road, North Chicago, IL 60064-3094.

DODMERB with a list of specific sites that were certified to perform the DODMERB examination. Use of other sites for entrance examinations was not permitted by DODMERB thereafter. DODMERB was responsible for the entire medical entrance processing of each applicant, regardless of service, and forwarded results directly to the director of admissions at each academy. DODMERB's pioneering use of computers and automated decision systems applying rule-based standards with over 1,500 decision rules led to recognized early success. In the 1970s, responsibility for most Reserve Officer Training Corps applicant examinations was added to DODMERB as a result. In the 1990s, DODMERB was responsible for processing 30,000 to 45,000 applicants per year, of whom approximately 12% are disqualified.[21]

MEPCOM and DODMERB examinations were not the same, and an examination performed at one did not satisfy the needs of the other. This was not a matter of minor additions or deletions: entirely different forms and procedures marked a total lack of coordination of the two systems for many years. In1994, a process was initiated that will lead to the compatibility of these examinations.

EVIDENCE-BASED ACCESSION MEDICAL STANDARDS

A movement is taking place, with the support of the General Accounting Office and both the military personnel and medical communities, toward developing and using more evidence-based, scientifically valid medical standards, not only for military accession but also for all the other situations in which the armed forces judge fitness for service based on medical screening. This movement is, at least in part, a response to an increasing awareness of the problem of attrition in the military.

The Drain of Attrition

It is recognized that approximately 30% to 35% of all enlistees entering the services are separated before the completion of their first term of service, and 10% to 15% are discharged in the first 6 months of duty.[22] These rates are similar in all the services. Many of the recruits that are separated in the first 6 months fail to meet minimum performance criteria or have medical problems. The most common reasons for medical separation in the first 6 months are asthma, psychiatric conditions, and orthopedic problems (Table 7-2). In fiscal year 1993, the cost of recruiting, screening, and training one individual was approximately $20,000. The General Accounting Office calculated that if the services could reduce this 6-month attrition by 4%, short-term savings as a result of transporting, feeding, clothing, and paying fewer recruits would be $4.8 million; $12 million would be saved after a reduction of 10%.[22] The savings would increase over time as infrastructure needed for recruiting and training could be reduced.

Objectives

This movement to develop and utilize evidence-based standards has multiple objectives. Recruiters want to ease the difficulty and reduce the cost of accessing high-quality volunteers by relaxing standards they hope will be found to have been needlessly strict. Recruiters also hope that by understanding predictors of successful completion of full tours of duty, premature losses can be reduced and the number of new recruits needed every month correspondingly reduced. Trainers hope to reduce injuries and improve the graduation rate from training by bringing in candidates who are more likely to succeed in training or by identifying physical or mental conditions for which better training can be devised. Line commanders ultimately may suffer less loss-of-duty time to medical problems, improved world-wide deployability, and a higher level of readiness among their personnel as individuals who are increasingly well suited for the job (and jobs increasingly well suited to individuals) are developed. The Department of Defense may reduce the risk young men and women face for disability

TABLE 7-2

DISCHARGES FOR CONDITIONS EXISTING PRIOR TO SERVICE IN 1995*

Condition	Discharge Rate (%)	n
Orthopedics (knee)	0.453	1,566
Chest and lungs (asthma)	0.453	1,502
Orthopedics (other)	0.426	1,471
Orthopedics (feet)	0.366	1,264
Orthopedics (back)	0.318	1,099
Psychiatric (other)	0.188	651

*Out of total number of people starting active duty in 1995.
Data sources: the Accession Medical Standards Analysis and Research Activity, Walter Reed Army Institute of Research, Silver Spring, Maryland 20910-7500; and the Defense Manpower Data Center, Monterey, California.

discharge or long-term medical problems, sparing our youth a degree of risk and saving the US Government some portion of the billions of dollars currently spent on long-term disability and medical liability payments.

Underlying these motivations is the clear benefit of setting policies and standards that are supported by the best available evidence and not solely by opinion or historical precedent. For example, flat feet had been accepted as a risk for injury and poor physical performance in recruits. However, a rigorously conducted study found that the data do not unconditionally support that assumption.[23] Asymptomatic individuals with low foot arches actually did not appear to be at increased risk of exercise-related injury. In another example, serologic testing for hepatitis C became available, and the routine screening of all recruit applicants was considered. Careful examination and analysis of the data and costs proved that universal serologic testing of recruit applicants for hepatitis C would not be a cost-effective policy (Tri-Service Accession Medical Standards Working Group, unpublished data, 1997). Evidence-based policy decisions are more easily defended and their impact can be more accurately predicted, monitored, and understood.

The Accession Medical Standards Analysis and Research Activity

The Accession Medical Standards Steering Committee, whose membership is drawn from the medical and personnel communities, was created to provide policy guidance and establish accession standards requirements. The Accession Medical Standards Working Group is subordinate to that committee and reviews accession policy issues and recommendations from the Accession Medical Standards Analysis and Research Activity. This activity was established in 1996 at the Walter Reed Army Institute of Research, Washington, DC, to support the development of evidence-based accession standards; it does this by guiding the improvement of medical and administrative databases, conducting epidemiologic analyses, and integrating into policy recommendations relevant operational, clinical, and economic considerations. Ideally, under the direction of the flag-level steering committee and with the efforts of the other bodies, medical standards will increasingly be based on rigorous studies, careful questioning of evidence, and methodologically appropriate analysis of data.

A variety of studies will be used to develop evidence-based policies and procedures and to validate current standards. This can be done by using survival analyses; for example, the group entering military service with asthma can be examined to determine whether the granting of waivers to certain people disqualified for asthma is appropriate (Figure 7-1). Certain diagnostic techniques and instruments need to be assessed. For example, understanding the sensitivity (the ability to detect those who truly have asthma) and specificity (the ability to accurately identify normals as normal) of the methacholine challenge test as a predictor of asthma is vital. Following over time indicators such as discharges for diagnoses that existed prior to service will allow for assessment of quality assurance measures at the waiver authorities and MEPS. Tools such as cost-benefit and cost-effectiveness analyses will be used to rigorously and quantitatively assess policy options, such as whether to continue screening for syphilis at the MEPS. Quality of experimental design, generalizability of findings from the medical literature to the target military population, and the presence of bias and confounding will be more widely and carefully considered by policymakers. After a change in policy is instituted, the impact on outcomes, such as attrition and hospitalization, must be monitored. In instances where expert opinion is all that can be relied on, standard methods with increased reliability, reproducibility, and validity (eg, the Delphi method) should yield more supportable results. This process will produce valuable new policies and procedures because of

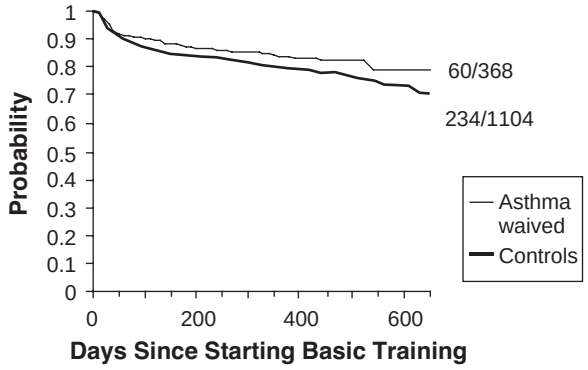

Fig. 7-1. Probability of remaining on active duty after accession. In a study of trainees from the Army, Navy, and Marine Corps in 1995, individuals given waivers for asthma appeared to have the same probability of remaining on active duty as their comparable non-waived counterparts. The waiver process as examined appeared adequate with respect to attrition. Graph: Courtesy of the Accession Medical Standards Analysis and Research Activity, Walter Reed Army Institute of Research, Silver Spring, Maryland 20910-7500.

its movement toward a scientific methodology in establishing and evaluating medical standards. However, a number of limitations and potential pitfalls exist.

Despite easier access to data and the shift toward more evidence-based decision making, the traditional method (in which subject experts based their judgments on personal assessments of available medical literature, on their own medical and operational experience, and on anecdote) will still be used when other options are not feasible. This may occur when resources or time do not permit rigorous analysis or when the potential value of a scientific approach is much less than the costs in time or money of such an approach. Using the "subject matter expert" approach is reasonable and desirable if its limitations, such as the propensity toward numerator bias, are explicitly recognized.

Numerator bias arises because clinical and administrative experience teaches a military physician a great deal about servicemembers who develop problems. Such experience also teaches the physicians about the relationship of a given problem to the prior conditions for which the servicemember could have been screened. However, the physician's experience may lack information about servicemembers who remain well (despite the same conditions) throughout their service. The result is an inappropriate emphasis when considering policy action on the performance of those who use the military medical system and underweighting of the performance of those who do not. Nevertheless, standards based on expert opinion will at times still be appropriate.

SUMMARY

There will always be a need to screen and select capable individuals for military service. Military medical accession standards have changed considerably throughout history and are likely to be altered further to adapt to the future needs of the military and the state of medical knowledge. Continuous improvements in accession and medical data collection are being made. Routine monitoring of the results of medical screening and the health of servicemembers is being done. Improved methods of assessing health are being developed. The capability to study this information epidemiologically allows potentially modifiable problem areas to be noted, trends to be monitored, and the impact of medical accession policy changes to be assessed. All this will improve the screening process, reduce medical attrition, and improve the capabilities of servicemembers in today's armed forces and so the forces themselves.

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