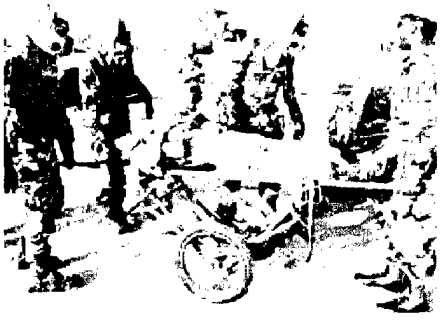
AMSARA

Accession
Medical
Standards
Analysis &
Research
Activity



Annual Report 2000

Contents

Executive Summary

The Accession Medical Standards and Research Activity (AMSARA) **has completed its fourth year of providing the DoD with evidence-based evaluations of accession standards**. AMSARA's unique focus and capabilities allow scientific methods to be brought to bear on persistent accession and attrition problems that degrade military readiness.

AMSARA **initiatives in 2000 have concentrated on asthma, mental health conditions, early hospitalizations, and rehabilitation of injured recruits.**

A history of asthma accounts for 10% of all waived conditions among those entering active service. An AMSARA study showed that **recruits receiving a waiver for a remote history of asthma are actually more likely to remain on active duty than those who did not need a waiver**. In response to this finding and previous studies, waiver authorities should consider liberalizing their current waiver practice for those with a history of asthma.

However, asthma is the single most common diagnosis made among EPTS discharges (13.6%), mostly in those who have concealed their condition at MEPS. In response, AMSARA is directing a Small Business Initiative Research grant **to develop an inexpensive, effective screening tool to detect asthma at the MEPS, and a prototype machine is expected soon**. Research funding is currently being sought to field test this machine in 2002.

To examine the medical and operational impact of allowing known mild asthmatics to stay on active duty, AMSARA has begun **a study at Great Lakes Navy Training Center measuring attrition, hospitalization, and outpatient visit rates among mild asthmatics**. This data will be useful in shaping future accession policy regarding known asthmatics.

Waiver analyses have confirmed that **those waived for attention deficit hyperactivity disorder (ADHD), a very common diagnosis; remain on active duty as long as the general recruit population**. Given the increasing prevalence of this disorder among applicants to the US military, these findings should reassure those currently waiving a history of this condition.

Applicants **waived for other mental health disorders, however, are at increased risk for both psychiatric hospitalization and attrition**. However, stricter standards might screen out many recruits who would do well on active duty to prevent approximately 9 excess discharges per year. These results support the current medical accession standards for applicants with a history of mental health disorders requiring careful consideration of each individual application.

Further study focusing on hospitalizations within the first 6 months on active duty revealed **25.5% of all individuals hospitalized during this period are diagnosed with a mental health condition**. Those **hospitalized for any mental health condition within the first 6 months of service are almost certain to leave the military early, with 70% to 96% leaving within 6 months.** Further study is warranted to determine whether this extraordinarily high loss rate is due to existing prior to service conditions or newly identified problems that might be addressed during basic training prior to hospitalization.

All diagnosis falling under the broad category of mental health conditions account for 25% of attrition due to pre-existing medical conditions. In response to the need for further research and intervention, **AMSARA has begun collaborative efforts with the Centers for Disease Control and Prevention, the National Institutes of Mental Health, and the University of Michigan**. The on-going collaborative efforts with the Division of Neuropsychiatry at WRAIR, have resulted in the hiring of a PhD psychologist to augment the AMSARA team in this critical area.

Impact on retention following voluntary participation in the Physical Training Rehabilitation Program (PTRP) at Fort Jackson, SC, was evaluated this year. The **PTRP rehabilitated soldiers completed basic training and were retained on active duty to the same degree as the general recruit population** for the first year of service following injury. Rehabilitation programs for injured recruits should be fully funded and supported for optimal outcomes.

As the pool of healthy applicants to the Armed Services continues to shrink, accession medical standards and attrition issues demand attention at the highest levels of the military. **AMSARA's unique blend of expertise and experience makes it crucial in developing the scientific basis for these standards**. AMSARA improves military readiness by improving accession and retention of motivated and highly capable recruits.

Introduction

The Accession Medical Standards Steering Committee was established by the Undersecretary of Defense (Personnel and Readiness) to integrate the medical and personnel communities so they could provide policy guidance and establish standards for accession requirements. These standards will stem from evidence-based information provided by analysis and research. The committee is co-chaired by the Deputy Assistant Secretary of Defense (Military Personnel Policy) and the Deputy Assistant Secretary of Defense (Clinical and Program Review). Its members include representatives from the Office of the Assistant Secretary of Defense (Force Management Policy), Office of the Assistant Secretary of Defense (Health Affairs), Office of the Assistant Secretary of Defense (Reserve Affairs), Offices of the Service Surgeons General, Offices of Service Deputy Chiefs of Staff for Personnel, and Chief of Personnel and Training (Headquarters, U.S. Coast Guard).

The Accession Medical Standards Working Group is a subordinate working group that reviews accession policy issues. This group is comprised of representatives from each of the offices listed above.

AMSARA was established in 1996 within the Division of Preventive Medicine at Walter Reed Army Institute of Research to support the efforts of the Accession Medical Standards Working Group. AMSARA's mission is to support the development of evidence-based accession standards by guiding the improvement of medical and administrative databases, conducting epidemiologic analyses, and integrating relevant operational, clinical, and economic considerations into policy recommendations. AMSARA has the following six main objectives:

- Validate current and proposed standards (e.g., should asthma as a child be disqualifying?);
- Validate assessment techniques (e.g., improve current screening tools);
- Perform quality assurance (e.g., monitor geographic variation);
- Optimize assessment techniques (e.g., develop attrition prediction model);
- Track impact of policies, procedures, and waivers;
- Recommend changes to enhance readiness, protect health, and save money.

Military staffing to support this effort includes the Director, Division of Preventive Medicine, COL Patrick W. Kelley, and Chief, Department of Epidemiology, LTC (P) Margot R. Krauss, and the Chief, AMSARA, LTC David W. Niebuhr.

AMSARA is augmented with contract support through Allied Technology Group (ATG). Current staff includes Project Manager, James Onaitis; Senior Biostatistician, Dr. Yuanzhang Li; Senior Analyst, Timothy Powers; Statistician, Lily Trofimovich; Data Manager, Janice Gary; Data Technician, Lorenzo Kennedy; Editor, Therese Grundl.

1. STUDIES

ASTHMA ACCESSION STANDARD:

5-YEAR COHORT STUDY OF MILITARY RECRUITS

Introduction

Over the past several years, the U.S. military has suffered shortfalls in recruiting as the number of available, eligible young adults in the U.S. population has declined. To improve this situation, the armed services have been reexamining the physical standards to determine if they are too restrictive. Currently, a history of asthma at any age is listed as a disqualifying condition for service in the military, meaning that any applicant with such history must receive a medical waiver to serve.

Asthma is estimated to affect 4–6% of the general U.S. population, and complete exclusion of this group from the potential recruit pool has significant long-term repercussions. However, across DoD there are nearly 1,000 recruit discharges annually for preexisting asthma at an estimated loss of $10 million [1]. Consequently, the need to bring in more recruits must be balanced against the prevention of medical discharges through careful screening.

The Navy, Army, and Marines will grant medical waivers to applicants with a history of childhood asthma if they have been asymptomatic since age 12. In contrast, the Air Force generally does not grant waivers. However, there have been no long-term studies of this group to examine the attrition rate over 5–10 years, the period in which they are most likely to develop symptoms [1]. In a study of 244 asthmatic children followed for 20 years, up to 27% had clinical remission in adolescence followed by recurrence in early adulthood [2]. It can be argued that these individuals continue to be mildly asthmatic because 60% will still demonstrate some bronchial hyper-responsiveness on nonspecific airway challenge testing [3].

This cohort study was performed to evaluate the practice of granting medical accession waivers to individuals with a history of childhood asthma before age 12. A previous study of this practice examined individuals beginning service from 1995 to 1997 and found no significant difference in the rates or patterns of discharge for asthmatics versus matched comparison subjects. This study will expand the time frame to include individuals beginning service from 1995 to 1999, with follow-up through 31 December 1999.

Methods

The asthma waiver group consisted of first-time enlistees (Air Force, Army, Marines, and Navy) who received an accession waiver for history of childhood asthma before age 12 and started training in CY 1995–1999.

Three comparison subjects were randomly selected from the pool of first-time enlistees who did not require a waiver for any condition, matching on service, age group, race (black, white, other), gender, and month and year beginning active duty.

Relative risks comparing the loss rates among the two study groups by service for each year of entry were performed. Statistical significance of relative risks was determined using 95% confidence intervals. Kaplan-Meier survival analyses and the associated log-rank test for significance were used to compare retention patterns of recruits receiving waivers for history of asthma against patterns among physically qualified recruits.

In the survival analyses, the endpoint was defined as discharge from the service for any medical or nonmedical reason, other than completion of term of service or promotion. Survival time for those individuals leaving the service after completion of term was censored at the completion date.

Information on military applicants was obtained from USMEPCOM. Data on medical accession waivers were obtained from the service-specific waiver authorities. Data on military accessions and discharges were obtained from DMDC. Specific data on discharges for preexisting medical conditions were obtained from USMEPCOM. SPSS 10.0 for Windows (SPSS Inc., Chicago, IL) was used for all analyses.

Results

A total of 6,039 individuals were included in the study: 1,510 were in the asthma waiver group; 4,529 were comparison subjects (Table 1.1). Of the asthma group, 496 (32.9%) were in the Army, 574 (38.0%) in the Navy, 403 (26.7%) in the Marines, and 37 (2.5%) in the Air Force.

There were 1,487 total discharges during the 5-year study, of which 347 (23.3%) were among the asthmatics and 1,140 (76.7%) were among the comparison subjects. Univariate analysis by year group and service did not reveal additional information. Overall asthmatics had a higher likelihood of being discharged for a preexisting condition than the comparison group, which would be expected since controls were selected based on having no known preexisting conditions.

TABLE 1.1. DEMOGRAPHICS OF STUDY COHORT

	Asthma group		Comparison group	
	No.	%	No.	%
Service				
Army	496	33	1,488	33
Navy	574	38	1,721	38
Marines	403	27	1,209	27
Air Force	37	2	111	2
Gender				
Male	1,372	91	4,116	91
Female	138	9	413	9
Race				
White	1,095	73	3,284	73
Black	287	19	861	19
Other	128	8	384	8
Age group				
17–19	970	64	2,910	64
20–22	406	27	1,218	27
23–25	88	6	264	6
26–28	35	2	105	2
29–31	7	0	21	0
32–34	4	0	11	0

Survival over time is statistically greater among the asthma group than among the comparison group with all services combined by log-rank test ($p = 0.049$)(Fig. 1.1).

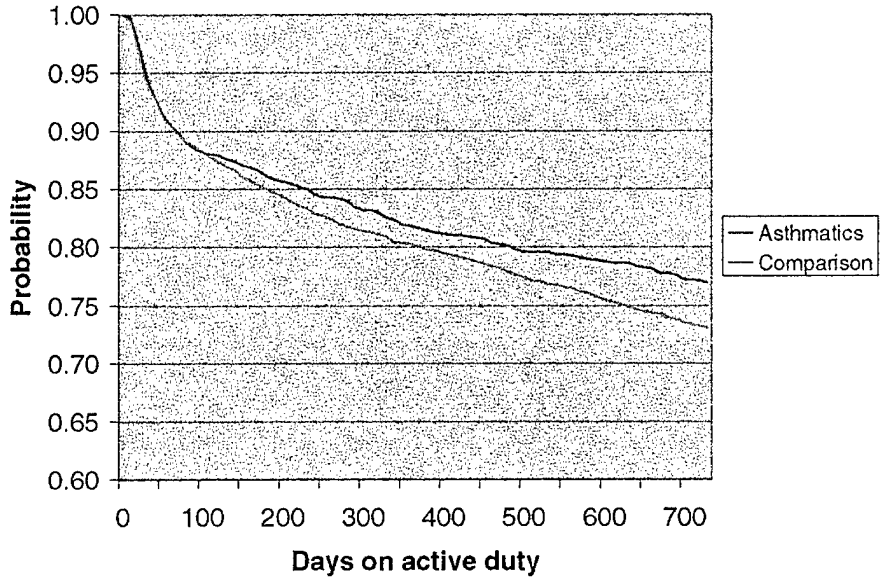


FIGURE 1.1. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG SUBJECTS WITH ASTHMA WAIVER VS MATCHED CONTROLS: ALL SERVICES, 1995–1999.

Survival analysis for the Army (Fig. 1.2), Navy (Fig. 1.3), and Marines (Fig. 1.4) demonstrated that those waived for asthma have a slightly higher retention on active duty; however, due to small numbers this finding was not statistically significant.

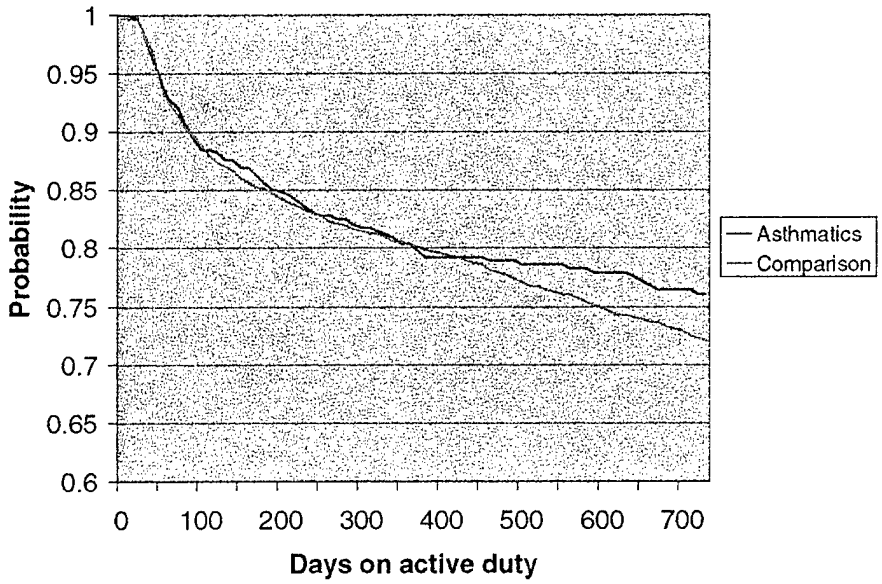


FIGURE 1.2. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG SUBJECTS WITH ASTHMA WAIVER VS MATCHED CONTROLS: ARMY, 1995–1999.

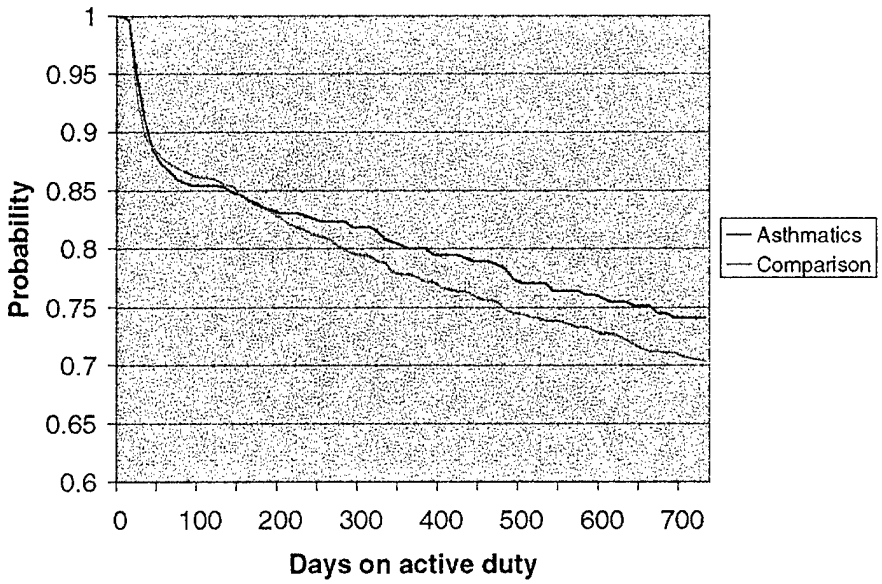


FIGURE 1.3. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG SUBJECTS WITH ASTHMA WAIVER VS MATCHED CONTROLS: NAVY, 1995–1999.

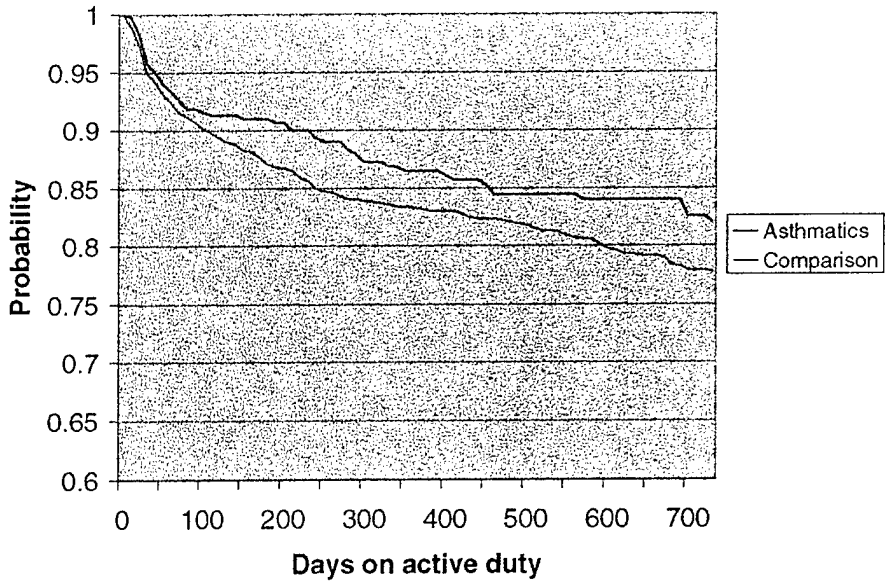


FIGURE 1.4. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG SUBJECTS WITH ASTHMA WAIVER VS MATCHED CONTROLS: MARINES, 1995–1999.

Discussion

Recruits receiving a waiver to enter the service for a history of childhood asthma are more likely to remain on active duty longer and have a lower likelihood of discharge than recruits without any waivers. This may reflect that the waiver process itself selects for a highly motivated individual who wants to succeed in the military. The recruits waived for asthma have already survived the waiver process usually requiring additional medical tests, waiting to hear about the waiver decision, and finally choosing to enter active duty after the waived is granted.

The study is limited by lack of information on other factors that may have influenced the waiver authorities decision. It is well recognized that each service's waiver authority use criteria according to their service specific needs. Analysis of those being granted a waiver compared to those not granted a waiver might prove useful in consideration of granting more waivers.

Another study limitation is the lack of information on other endpoints such as outpatients services utilized or limitations placed on assignments. It is possible that these recruits were found later to have active asthma after the EPTS time period, remaining on active duty with service limitations.

This study does not address the retention of asthmatics on active duty which is being addressed in the REMAIN study described in Section 4 of this report.

In conclusion, AMSARA found that those entering active duty with a waiver for asthma were statistically more likely to remain on active duty than individuals not requiring any waiver. Although, the current accession policy of granting waivers for a remote history of asthma appears sound, consideration might be given to allowing even more applicants with a history of asthma to enter active duty.

Acknowledgement:

AMSARA would like to thank CDR Neal Naito, USUHS Occupational Medicine Resident for his analysis and presentation of this study.

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ATTENTION DEFICIT HYPERACTIVITY DISORDER: 5-YEAR SURVIVAL ANALYSIS OF ENLISTED PERSONNEL

Introduction

Attention deficit hyperactivity disorder (ADHD) has the core pervasive symptoms of inattention, impulsiveness, and hyperactivity. In general, the prevalence of ADHD in children is estimated to be between 3 and 17% depending on the study, subject population, and measurement or diagnostic tool used. Those with ADHD generally have problems with social perception, awareness, and behavior that often facilitate psychosocial dysfunction and problems with interpersonal relationships. Related comorbid conditions include depression (15–20%), anxiety (25%), learning disabilities (20%), conduct and oppositional defiant disorders (40–90%), and substance abuse disorders and criminality (both twice the control rate). ADHD is becoming common in the United States, with more children increasingly being diagnosed and placed on medication to treat this disorder.

Under DoD Directive 6130.3 for medical accession, ADHD is not listed as an accession disqualifier. Rather, ADHD falls within the academic skills defect (ASD) category, which is defined as any medical or mental dysfunction that interferes with either work or school after age 12 or involves the current use of medications to improve or maintain academic skills. Each service waiver authority subjectively applies pertinent criteria to each case for determination of waiver approval for ADHD. Under current practice, an applicant with a history of ADHD may be given a medical waiver if he or she has not been treated with therapeutic medication within the last year, has documentation of stable employment or has done well in school (medication or an individual education plan), and has had no significant encounters with the legal system. The current and past position of the armed forces is that the associated cognitive deficits and comorbidities of ADHD are generally detrimental to job performance.

In consideration of the increasing emphasis placed on technology by the military, with recruits needing to demonstrate the ability to master complex tasks and protocols, it is ever paramount to access capable individuals. The prevalence of ADHD in U.S. society has resulted in many applicants receiving waivers for this disorder; however, no conclusive evidence demonstrates whether these accessions can adequately function in the military work environment.

A previous 2-year analysis by AMSARA in 1998 suggested that individuals who were waived for ADHD might perform better than those generally accessed. This analysis was undertaken to evaluate the question with a larger number of accessed recruits with a history of ADHD.

Methods

A retrospective cohort study was conducted on regular component enlisted servicemembers in the Army, Air Force, Navy, and Marines who were accessed into

active duty from 01 January 1995 through 31 December 1999. Cases received a medical waiver for ASD and accessed during this time period. Controls were matched to controls (1:3) on service, gender, race (black. white, and other), date of birth (within 1 year), and month of entry. Servicemembers with prior military service were not included in the study. Waiver data were obtained from each service-specific waiver authority, and accessions were verified using DMDC gain files.

Analysis was conducted for marital status, AFQT scores, and rank. Entry characteristics were stratified and compared individually with controls. Chi-square test, Kaplan-Meier survival analysis, and the log rank test for equality of survivor functions were conducted. For the survival analysis, premature military separation was utilized as the failure event. All statistical analyses were performed with STATA version 6.0.

Results

Between 1995 and 1999, 508 recruits received waivers for ASD and entered active duty (165 Army, 11 Air Force, 166 Navy, 166 Marines). These recruits were matched to 1,454 controls from the general recruit population. Entry demographics are shown in Table 1.2.

TABLE 1.2. ENTRY CHARACTERISTICS OF WAIVED VS MATCHED CONTROL GROUPS

	Waived		Control	
	Count	%	Count	%
Gender				
Male	493	97.0	1,427	98.1
Female	15	3.0	27	1.9
Race				
White	475	93.7	1,364	93.8
Black	18	3.6	44	3.0
Other	14	2.8	12	0.9
Service				
Army	165	32.5	480	33.0
Air Force	11	2.2	11	2.1
Navy	166	32.7	467	32.1
Marines	166	32.7	477	32.8
Age (all)	Mean	STD	Mean	STD
	21.3	1.93	21.1	1.80

Of the 508 individuals waived for ASD, 22% had left active duty by the end of 1999 compared with 24% of the controls. Attrition was not significantly different for any entry characteristic between those waived and the control group (Table 1.3), nor was there any difference in survival by Kaplan Meier analysis (Fig. 1.5).

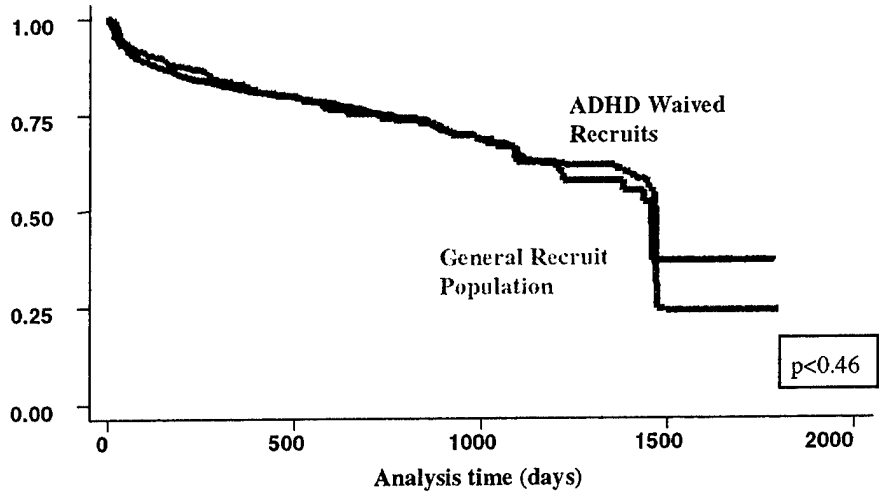
Table 1.3. BIVARIATE SURVIVAL ANALYSIS OF WAIVED VS CONTROL GROUPS BY SELECTED ENTRY CHARACTERISTICS

Entry Characteristic	Waived		Control		p*-value
	Count	% discharged	Count	% discharged	
Exposure†	508	22	1,454	24	0.46
Gender†					
Male	493	23	1,427	24	0.43
Female	15	27	27	22	0.79
Race†					
White	475	24	1,364	25	0.62
Black	19	16	44	27	0.58
Hispanic	6	7	34	15	0.73
Other	8	0	12	0	
Marital status†					
Single	496	23	1,389	24	0.50
Married	11	27	61	28	0.94
Age†					
<20	153	9	461	14	0.11
20–24	435	25	1,272	25	0.69
25–29	39	33	99	46	0.16
>30	6	17		0	
AFQT percentile†					
0–25	141	20	374	25	0.13
25–50	128	28	367	25	0.71
50–75	123	24	349	26	0.73
75–100	116	22	364	23	0.89
Interaction (age <20 and AFQT 0–25)†	39	5	122	16	0.08

*Log-rank test for equality of survivor functions.

†Total (% discharged).

FIGURE 1.5. PROBABILITY OF REMAINING ON AD AMONG RECRUITS WAIVED FOR ASD VERSUS MATCHED CONTROLS, ALL SERVICE, 1995-1999



Average AFQT scores for waived individuals who were discharged and those that remained on active duty were 59.8 and 60.0, respectively. There were no significant differences in mean scores of waived cases and controls for those who were discharged and those who remained on active duty (Table 1.4).

TABLE 1.4. MEAN AFQT SCORE BY DISCHARGE AND RECRUIT STATUS

Status	No.	Mean ± SD	Range	P*
Discharged				
Waived	114	59.8 ±16.9	31–98	0.99
Others	346	60.0 ± 18.4	29–99	
Active duty				
Waived	367	60.6 ± 18.2	31–99	1.00
Others	1,067	60.8 ± 18.9	23–99	

*Two-sided *t* test.

Discussion

This 5-year analysis of recruits granted a medical waiver for a past history of ASD demonstrated that these individuals have the same retention as the general recruit population. This similarity remains after stratifying by all available demographic characteristics and AFQT scores. The current waiver process appears to admit applicants with a history of ADHD who will do as well as those with any medical waiver. This study could not address whether those individuals not waived for their history of ADHD might also have done well on active duty.

This study has several limitations. The lack of information on comorbid conditions coupled with the subjective nature of the current waiver criteria makes it difficult to qualify the severity of ADHD among the group of waived recruits. The selection of applicants with ADHD with the most positive histories (likely excluding those with comorbid conditions) prevents extrapolation of our findings to all applicants with ADHD.

This study did not address whether those with ADHD use the health care system more than others once they are on active duty or whether these individuals have different levels of success in job performance. Future studies of ADHD in the military should include obtaining advancement of rank and outpatient utilization records.

This study demonstrates that the current waiver process is admitting qualified applicants. With the diagnosis of ADHD becoming more common in our society consideration should be given to liberalizing the current criteria, allowing more applicants with a history of ADHD on to active duty with a plan to re-evaluate the process in a few more years.

Acknowledgement:

AMSARA would like to thank CPT Robert Russell, WRAIR Preventive Medicine Resident for his analysis and presentation of this study.

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WAIVERS FOR DEPRESSION AND RELATED DISORDERS:

5-YEAR COHORT STUDY OF ENLISTED PERSONNEL

Introduction

Mental disorders comprise the largest diagnostic category among early medical discharges from the active duty military for EPTS conditions, accounting for just over 25% of all EPTS discharges in CY 1998. This category is also the most common primary discharge diagnosis for hospitalizations of first-year recruits, accounting for over 35% of all hospitalizations.

DoD Directive 6130.3 lists "Neurotic mood, somatoform, dissociative, or factitious disorders" as a disqualifying condition. As with any medically disqualifying condition, an individual disqualified for history of such condition(s) can request a medical accession waiver from a service-specific waiver authority. Informal reviews of Navy waiver records indicate that depression and phobias were the most common diagnoses for which waivers are granted in this category. The purpose of this study is to determine whether first-time enlistees who had been granted a waiver for history of depression or related disorders can remain healthy and on active duty relative to recruits without such history.

Methods

A retrospective cohort study was conducted on first-time enlistees who had been disqualified and subsequently granted a medical accession waiver for depression and related mental disorders (DODI code or ICD 300-300.9) from January 1995 to December 1999. These subjects were otherwise deemed healthy (i.e., did not require a waiver for any other condition) and had no prior military service.

Comparison subjects were drawn from the population of recruits accessed for service during the same time and were matched at a 3:1 ratio by age, race, sex, service branch, and month of entry onto active duty. These subjects had no medical disqualifications or waivers and no prior military service.

Hospitalization percentages during the first year of service were compared, both for diagnoses related to mental health and for all diagnoses, using the chi-square test. Attrition patterns within each service were compared by Kaplan-Meier survival analysis and associated significance tests (Wilcoxon and log-rank), both overall and by service. Attrition includes all premature losses from the service, both medical and nonmedical. Military survival times of individuals leaving the service after expiration of term of service or for an officer training program were treated as censored values (i.e., as if lost to follow-up at the time of leaving) rather than as losses from the service.

Results

There were 502 first-time enlistees who had been disqualified and subsequently granted an accession waiver for history of depression and related mental disorders, along with 1,501 matched comparison subjects. (Five waiver subjects had demographic

characteristics for which only two matching subjects were available, resulting in 1,501 comparison subjects rather than the expected 1,506.) As mentioned above, all subjects were first-time enlistees beginning active duty from January 1995 to December 1999.

As is expected, the two study groups are almost identical on all matching features within each service. Across services, however, some differences can be noted. Most apparent is that only four waivers were granted in the Air Force for mental disorders—this small number prevents meaningful survival analysis and makes it unlikely that any comparisons will yield statistical significance. Also notable is that although there are 128 subjects in the Marines with a history of mental disorders, only 18 (11%) are female. These numbers roughly mimic the general pattern of a smaller percentage of females in the Marines than in other service branches.

Table 1.5 shows numbers of individuals with initial hospitalization during the first year of service for any condition and those with initial hospitalization for a mental disorder. It is seen that the likelihood of having at least one hospitalization during the first year of service does not differ significantly between the mental disorder group and the comparison group. However, those subjects who had been granted a waiver for a mental disorder had a significantly higher likelihood of having an initial hospitalization during the first year of service for primarily psychiatric reasons.

TABLE 1.5. LIKELIHOOD OF HOSPITALIZATION DURING FIRST YEAR OF SERVICE BY SUBJECT GROUPS FOR ANY CONDITION AND FOR PSYCHIATRIC CONDITIONS

	Any condition			Psychiatric conditions		
	Yes	No	Rate (%)	Yes	No	Rate (%)
Mental disorder waiver	36	466	7.2	13	489	2.6
Comparison	90	1,411	6.0	15	1,486	1.0

For any condition $p = 0.41$; for psychiatric conditions $p = 0.02$.

The leading hospitalization discharge diagnoses among the subjects waived for depression and related mental disorders were adjustment reactions (11) followed by pneumonia (2). The leading hospitalization discharge diagnoses in the comparison group were adjustment reaction (7), cellulitis/abscess (7), pneumonia (6), and noninfectious gastroenteritis/colitis (6). For those hospitalizations related to psychiatric conditions, the largest categories for both groups were adjustment reaction, alcohol dependence syndrome, and neurotic disorders. These accounted for approximately 53% of all initial hospitalizations in the waiver group as opposed to 14% of initial hospitalizations in the comparison group.

Figure 1.6 shows the probability of remaining on active duty over time for the two groups of subjects. The estimated survival curve for the mental disorders group is uniformly lower than that for the comparison group. This difference is highly statistically significant.

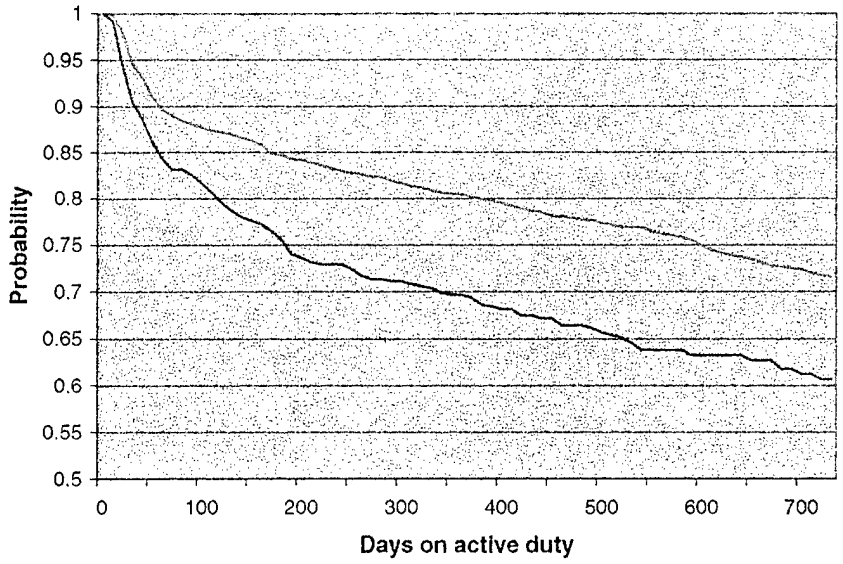

FIGURE 1.6. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG ENLISTEES GRANTED WAIVERS FOR HISTORY OF MENTAL DISORDERS VS COMPARISON SUBJECTS: ALL SERVICES, 1995–1999. *Upper line*, comparison subjects; *lower line*, mental disorder subjects.

Survival curves for Army subjects (Fig. 1.7) mimic the pattern seen in the overall comparison, and the difference in survival patterns between the mental disorder subjects and the matched comparison group is statistically significant. Analysis by gender (not shown) finds that the difference in analogous survival curves for females is statistically significant, whereas the difference among males is not significant.

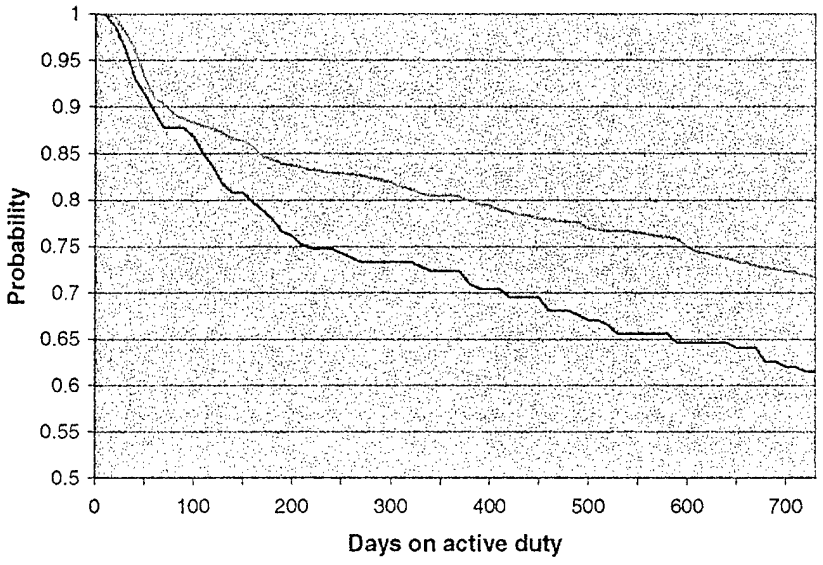

FIGURE 1.7. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG ENLISTEES GRANTED WAIVERS FOR HISTORY OF MENTAL DISORDERS VS COMPARISON SUBJECTS: ARMY, 1995–1999. *Upper line*, comparison subjects; *lower line*, mental disorder subjects.

Survival curves for Navy subjects (Fig. 1.8) also mimic the pattern seen in the overall comparison, although the difference in survival patterns between the mental disorder subjects and the matched comparison group is only marginally statistically significant by the log-rank test. When analyzed by gender (not shown) the difference in survival curves between the female mental disorder group and the comparison group is not statistically significant, and for males the difference is marginally significant by the Wilcoxon test only.

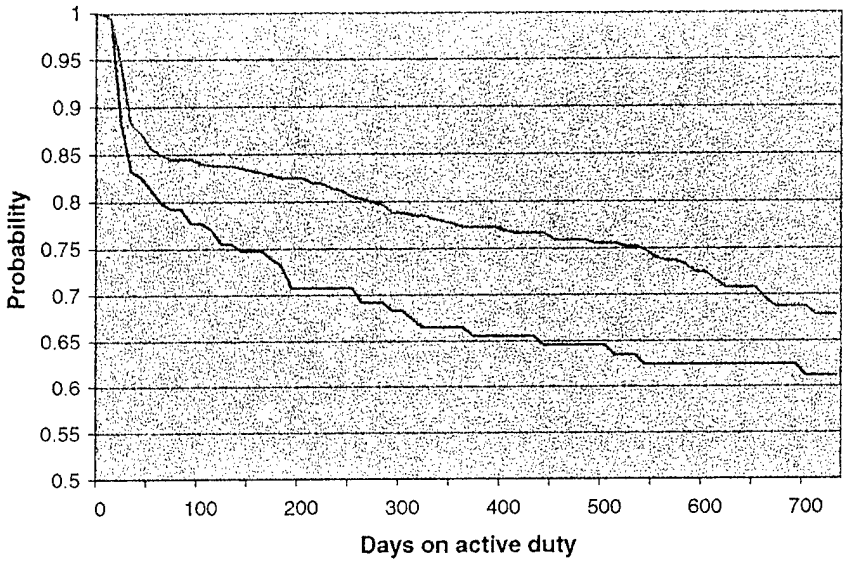

FIGURE 1.8. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG ENLISTEES GRANTED WAIVERS FOR HISTORY OF MENTAL DISORDERS VS COMPARISON SUBJECTS: NAVY, 1995–1999. *Upper line*, comparison subjects; *lower line*, mental disorder subjects.

Survival curves for Marine subjects (Fig. 1.9) indicate that likelihood of military retention is lower among the mental disorder group than among the comparison group. This difference was highly statistically significant. The survival curves look similar when the analysis is restricted to Marine males only, because there are few (18) female Marines in the mental disorder group.

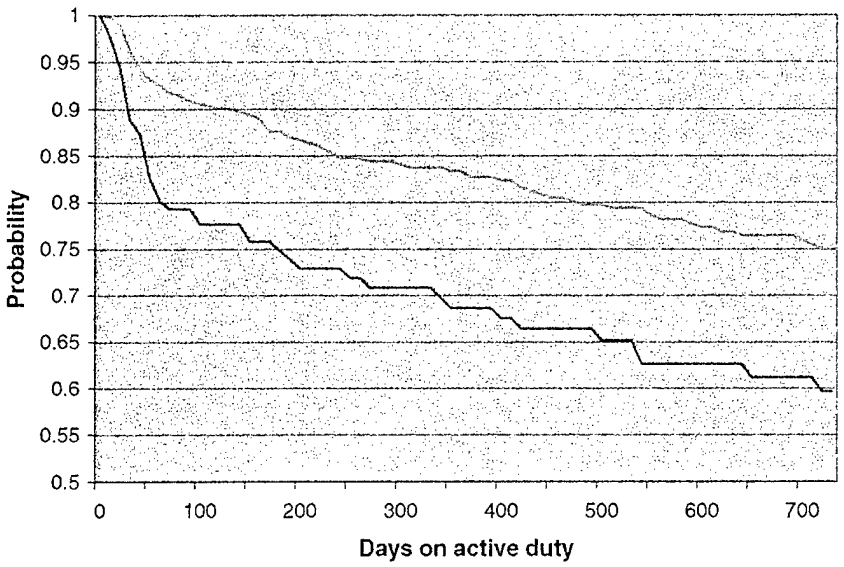

FIGURE 1.9. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG ENLISTEES GRANTED WAIVERS FOR HISTORY OF MENTAL DISORDERS VS COMPARISON SUBJECTS: MARINES, 1995–1999. *Upper line*, comparison subjects; *lower line*, mental disorder subjects.

Discussion

This study found increased likelihood of having an initial hospitalization for a mental disorder among enlistees granted waivers for depression and related mental disorders relative to a matched comparison group of enlistees who did not require medical waivers. Overall likelihood of hospitalization for any cause was not significantly different among the groups, although this result is difficult to interpret given that many hospitalizations were unrelated to psychiatric conditions.

It was also found that likelihood of military retention over time was significantly lower among the mental disorder group than among the comparison group, both overall and in each service (except for the Air Force, for which there were not enough subjects for analysis). More detailed documentation of the nature, frequency, and severity of conditions for which waivers were granted would allow further refinement of these analyses to determine whether certain waived conditions were responsible for more of the early losses.

When examined by service and gender, likelihood of retention was generally lower among the mental disorder group than among their comparison subjects, although not always significantly so. In the Army, differences in survival patterns were only statistically significant among females. In the Marines there was a highly significant

difference among males, whereas there was no significant difference for Navy males or females separately. The reason for theses findings can only be speculated on, but perhaps reflects the impact of more strenuous Marine training among those who have not dealt with stress well in their past. There were not enough Air Force subjects or female Marine subjects to allow meaningful survival analysis.

Although attrition was found to be significantly greater among this group, present policy should not be altered based on this study. In practical terms, this study demonstrates that approximately 9 out of every 100 individuals waived are lost each year in addition to the normal loss rate among new recruits. Further study might focus on resource utilization, including both inpatient and outpatient data. Analyses involving numbers of outpatient visits, number and lengths of stays for outpatient visits, and more detailed examinations of underlying causes may illuminate light on any additional burden that might be expected among individuals with a history of mental disorders.

Acknowledgement:

AMSARA thanks LTC (P) Charles W. Hoge, Chief of the Department of Behavioral Health and Epidemiology, and Dr. Stephen Messer, Clinical Research Scientist with Allied Technology Group, both within the Division of Neuropsychiatry at Walter Reed Army Institute of Research, for their advice and assistance.

EARLY HOSPITALIZATION ON ACTIVE DUTY: PROGNOSIS FOR RETENTION AFTER HOSPITALIZATION FOR A MENTAL HEALTH CONDITION

Background

New military recruits are young and are expected to be healthy. However, every year nearly 4% of new accessions are hospitalized within the first 6 months on active duty. Illness requiring hospitalization costs the DoD training time and money. The early hospitalizations may indicate failures in the medical screening process or correctable practices during early training and may be associated with increased attrition. A disproportionate number (26%) of these hospitalizations are attributable to mental health conditions.

A previous study among the entire active duty population demonstrated a high attrition rate after hospitalization for psychiatric conditions [1]. The current study examines attrition patterns among first-time enlistees who are hospitalized during the first 6 months of service for mental disorders relative to patterns among persons hospitalized for other reasons. The goal is to determine whether the relatively high attrition rate found among all personnel after hospitalization for a mental disorder is also found specifically within the new enlistee population.

Methods

All regular active duty enlistees who were gained in 1995–1998 and hospitalized within the first 6 months of service were included. Subjects were categorized according to the primary diagnosis for the hospitalization, and all were followed for loss or discharge from active duty. Follow-up on all subjects was through 31 December 1999, leaving at least 1 year and no more than 5 years of follow-up for each subject. For those individuals with multiple hospitalizations in the first 6 months, only the first hospitalization record was used.

Primary diagnoses for hospitalization were condensed into five categories: 1) mental disorders (ICD9 codes 295–302.9 and 306–316), consisting mostly of adjustment disorders, personality disorders, and depression; 2) drug and alcohol dependence/abuse (ICD9 codes 303–305.9); 3) injuries and poisonings (ICD9 codes 800–999); 4) acute respiratory illness (ICD9 codes 460–496); and 5) other (all other ICD9 codes). Loss rates at several points during the first year after initial hospitalization were compared across these categories within each service. A proportional hazards model was used to examine service time and attrition patterns after initial hospitalization while controlling for gender, age, race, marital status, education, and AFQT performance.

Results

There were 20,603 individuals hospitalized within the first 6 months of service during 1995–1998, of which 5,266 (25.5%) had a primary diagnosis of a mental disorder. The demographic features of this group roughly mimic those of the overall new recruit

population: they are predominantly male, age 17–20, white, and single and have a high school education (Table 1.6). A previous study [2] found that some of these demographic factors are strongly related to the likelihood of early hospitalization.

TABLE 1.6. INDIVIDUALS HOSPITALIZED FOR ANY CAUSE DURING FIRST 6 MONTHS OF SERVICE BY DEMOGRAPHIC FACTORS (%)

Factor	Army (n = 10,193)	Navy (n = 4,325)	Marines (n = 2,593)	Air Force (n = 3,492)
Gender				
Female	30.6	20.8	7.9	33.2
Male	69.4	79.2	92.1	66.8
Age				
17–20	65.2	69.7	79.4	68.4
21–25	26.6	23.9	17.7	29.1
26–30	6.4	4.8	2.8	2.5
>30	1.9	1.6	0.1	0.0
Race				
White	68.0	69.7	75.5	77.9
Black	22.1	21.5	12.9	14.3
Other	9.9	8.7	11.6	7.8
Marital status				
Single	82.2	93.0	94.7	88.8
Married	16.2	5.4	4.5	10.4
Other	1.6	1.6	0.8	0.8
Education				
Less than HS	13.2	20.4	26.2	14.1
HS and above	86.8	79.6	73.8	85.9
BMI				
<20	12.4	13.1	11.9	15.7
20–25	51.9	52.7	53.2	60.6
>25	36.7	34.1	34.9	23.7
AFQT percentile				
1	4.9	5.1	4.5	5.0
2	35.2	33.4	36.8	45.3
3	58.2	60.9	57.6	49.2
4	1.5	0.3	0.8	0.3

Mental disorders constitute the most common primary diagnosis for early hospitalizations, accounting for more than twice the number of persons hospitalized than the second leading cause, injuries (Table 1.7). Adjustment reactions, personality disorders, and depression accounted for over 83% of all hospitalizations under the category referred to as mental disorders, with adjustment reaction accounting for most of these.

TABLE 1.7. INDIVIDUALS HOSPITALIZED DURING FIRST 6 MONTHS OF SERVICE BY MEDICAL CATEGORY OF PRIMARY DIAGNOSIS, 1995–1999

Medical category	Individuals	
	Count	%
Mental disorders	**5,266**	**25.6**
Injuries and poisoning	2,033	9.9
Acute respiratory infections	1,425	6.9
Alcohol and drug dependence/abuse	**358**	**1.7**
Others	**11,521**	**55.9**

More than half of the individuals hospitalized for mental disorders are lost from service within 1 month of initial hospitalization (except for the Marines) (Table 1.8). Percentages by service are 52.5%, 62.8%, 31.1%, and 78.2% for the Army, Navy, Marines, and Air Force, respectively. By comparison, loss rates at 1 month after hospitalization for injury and poisoning, the second leading cause of early hospitalization, are 10.1%, 10.5%, 9.4%, and 19.8% for these same services.

Loss rates within 6 months of initial hospitalization for mental disorders are near or above 80% in all services. By comparison, loss rates for injury and poisoning hospitalizations range from 27.3% in the Navy to 38.1% in the Air Force at 6 months after initial hospitalization.

TABLE 1.8. LOSSES FROM SERVICE OF INDIVIDUALS HOSPITALIZED WITHIN FIRST 6 MONTHS OF DUTY BY LENGTH OF TIME SINCE HOSPITALIZATION AND CAUSE OF HOSPITALIZATION

Hospitalization cause	Total hospitalizations	Lost in 1 month*		Lost in 6 months†		Total loss (%)§
		Count	%	Count	%	
Army						
Mental disorders	1,565	822	52.5	1,295	82.7	88.8
Alcohol and drug	76	8	10.5	41	53.9	78.9
Injuries and poisoning	1,060	107	10.1	294	27.7	61.6
Acute respiratory	1,225	73	6.0	206	16.8	54.6
Other	6,267	492	7.9	1,524	24.3	58.2
Navy						
Mental disorders	1,939	1,218	62.8	1,728	89.1	93.3
Alcohol and drug	206	29	14.1	114	55.3	83.5
Injuries and poisoning	275	29	10.5	75	27.3	59.3
Acute respiratory	77	11	14.3	22	28.6	55.8
Other	1,828	203	11.1	432	23.6	53.7
Marines						
Mental disorders	425	132	31.1	329	77.4	88.9
Alcohol and drug	27	0	0.0	13	48.1	70.4
Injuries and poisoning	446	42	9.4	144	32.3	59.4
Acute respiratory	50	4	8.0	6	12.0	48.0
Other	1,645	118	7.2	340	20.7	48.6
Air Force						
Mental disorders	1,337	1,046	78.2	1,273	95.2	97.2
Alcohol and drug	49	5	10.2	16	32.7	65.3
Injuries and poisoning	252	50	19.8	96	38.1	58.3
Acute respiratory	73	7	9.6	17	23.3	53.4
Other	1,781	208	11.7	417	23.4	52.9

* Lost within 1 month after hospitalization.
† Lost within 6 months after hospitalization.
§ Lost before 31 December 1999.

The timing of losses within 1 year of initial hospitalization is shown for each service in Figures 1.10–1.13. Not surprisingly, although the magnitude of loss rates differs by medical condition and service, the likelihood of loss is highest in the month immediately after hospitalization. Again, it is clear that the likelihood of loss after hospitalization for a mental disorder is much higher than that for other conditions, and the losses tend to occur soon after hospitalization.

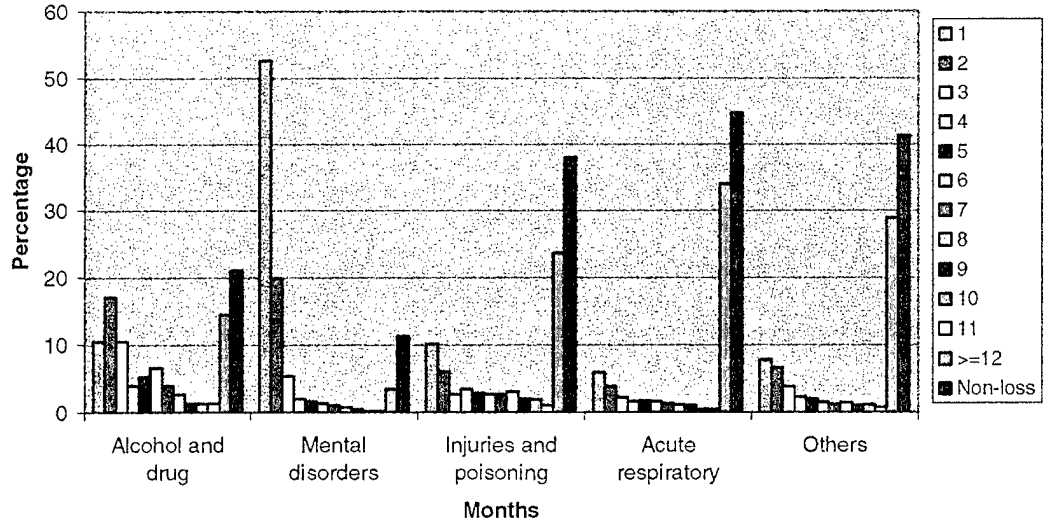

FIGURE 1.10. PERCENTAGE OF LOSS AFTER HOSPITALIZATION: ARMY. Months indicated by colored bars; see legend on right.

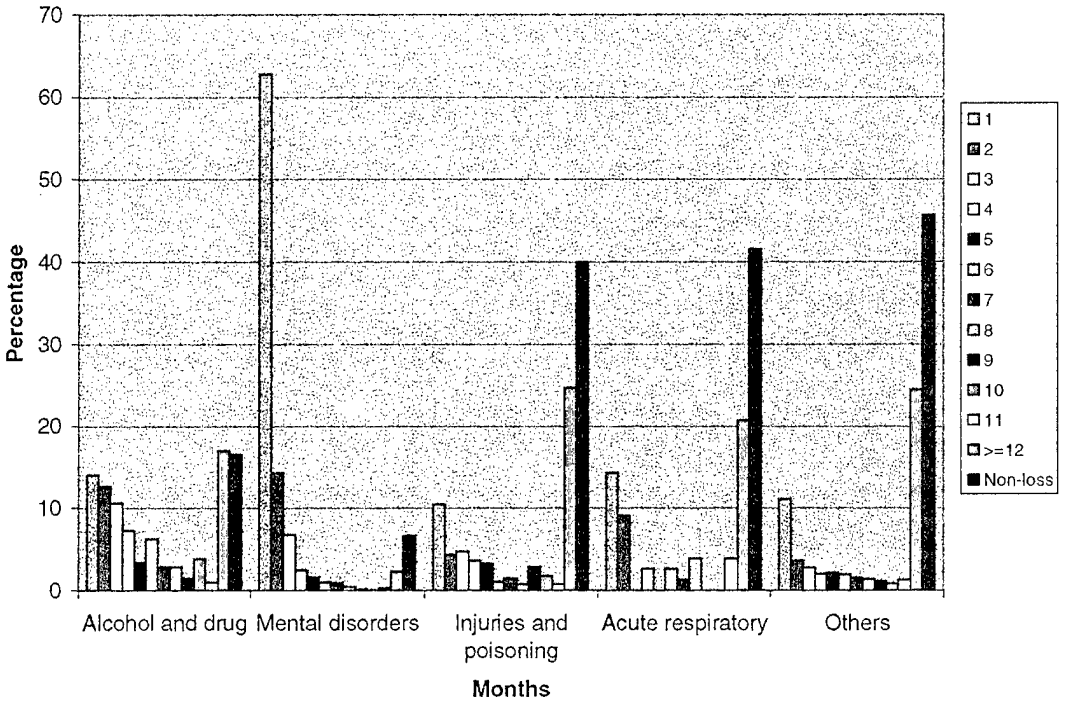

FIGURE 1.11. PERCENTAGE OF LOSS IN MONTHS AFTER HOSPITALIZATION: NAVY. Months indicated by colored bars; see legend on right.

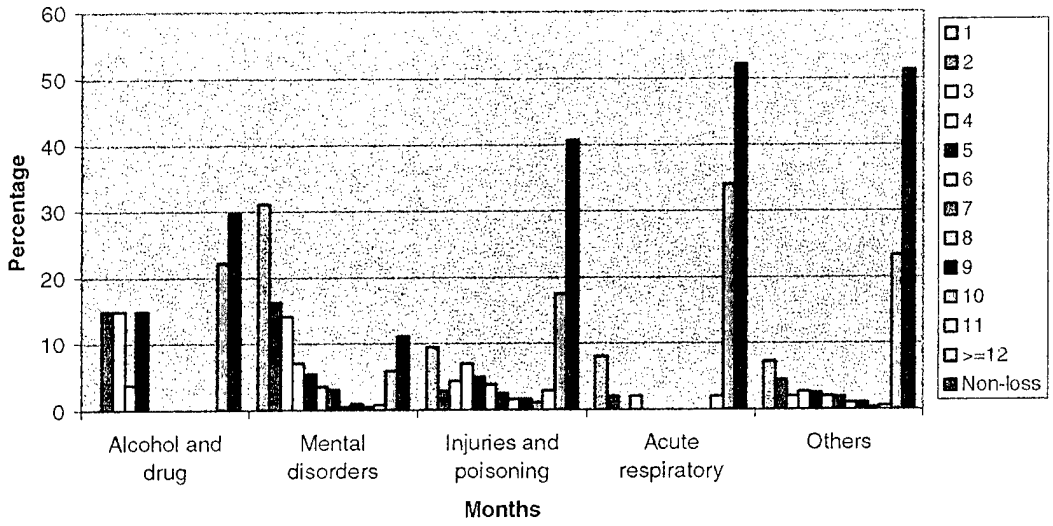

FIGURE 1.12. PERCENTAGE OF LOSS IN MONTHS AFTER HOSPITALIZATION: MARINES. Months indicated by colored bars; see legend on right.

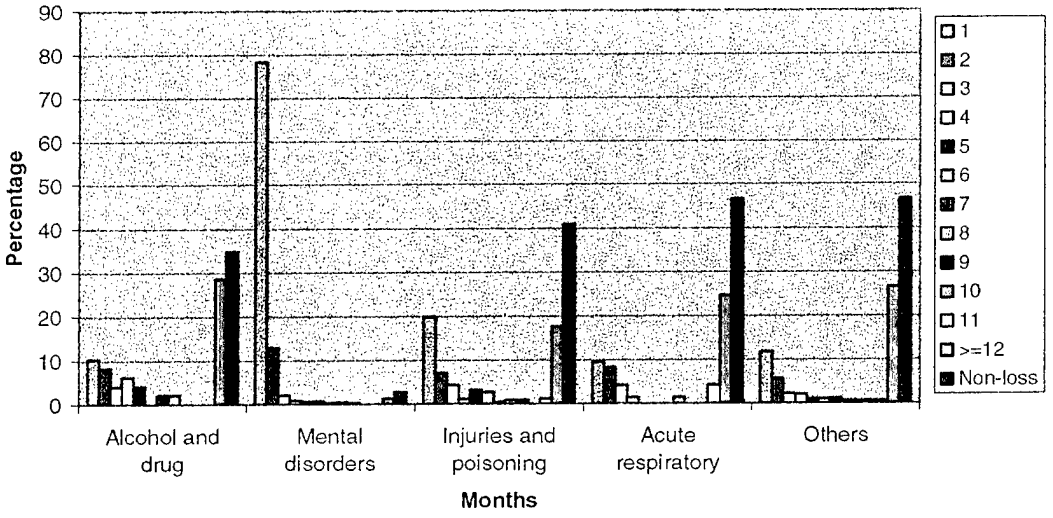

FIGURE 1.13. PERCENTAGE OF LOSS IN MONTHS AFTER HOSPITALIZATION: AIR FORCE. Months indicated by colored bars; see legend on right

Table 1.9 shows hazard ratios for attrition within 6 months of hospitalization by medical category, both overall and separately for females and males. All hazard ratios for the specific categories use the hospitalizations for "other" diagnoses as the baseline.

Hazard ratios for mental disorder hospitalizations are generally larger than those for the other categories and are statistically significant for all combinations of service and gender. Hospitalization for "alcohol and drug" also results in significantly increased hazard of attrition for males. Hazard ratios among females for "alcohol and drug" lack significance because of the small numbers of females in this category for those services.

TABLE 1.9. HAZARD RATIOS* FOR ATTRITION AMONG ENLISTEES HOSPITALIZED WITHIN FIRST 6 MONTHS FOR VARIOUS CAUSES: OVERALL AND BY GENDER

Hospitalization cause	Army		Navy		Marines		Air Force	
	Ratio	*p*	Ratio	*p*	Ratio	*p*	Ratio	*p*
Overall								
Mental disorders	4.77	<0.01	6.52	<0.01	4.20	<0.01	8.80	<0.01
Alcohol and drug	2.45	<0.01	2.38	<0.01	1.91	0.01	1.41	0.07
Injuries and poisoning	1.22	<0.01	1.18	0.05	1.37	<0.01	1.31	0.01
Acute respiratory	0.83	<0.01	1.26	0.13	0.85	0.46	1.04	0.81
Others (baseline)	1.00		1.00		1.00		1.00	
Females								
Mental disorders	3.81	<0.01	4.72	<0.01	3.06	0.01	7.77	<0.01
Alcohol and drug	2.50	0.11	1.62	0.08	3.51	0.14	0.90	0.78
Injuries and poisoning	1.22	0.02	0.96	0.84	1.36	0.21	1.66	0.09
Acute respiratory	0.79	0.08	1.07	0.83	0.36	0.16	1.10	0.73
Others (baseline)	1.00		1.00		1.00		1.00	
Males								
Mental disorders	5.32	<0.01	7.24	<0.01	4.30	<0.01	9.66	<0.01
Alcohol and drug	2.47	<0.01	2.59	<0.01	1.81	0.03	1.78	0.01
Injuries and poisoning	1.22	<0.01	1.25	0.02	1.37	<0.01	1.22	0.02
Acute respiratory	0.85	0.16	1.33	0.11	0.94	0.80	1.00	0.99
Others (baseline)	1.00		1.00		1.00		1.00	

*Hazard ratios can be loosely interpreted as the relative likelihood of attrition among individuals in one group relative to the comparison group.

Figures 1.14–1.17 show predicted probabilities of military "survival" over the first year after initial hospitalization for the various causes. These curves are predictions that account for the varying lengths of follow-up time for the study subjects. It is clear that, regardless of service, attrition is highest among those who had been hospitalized for a mental disorder. The likelihood of loss is highest immediately after initial hospitalization.

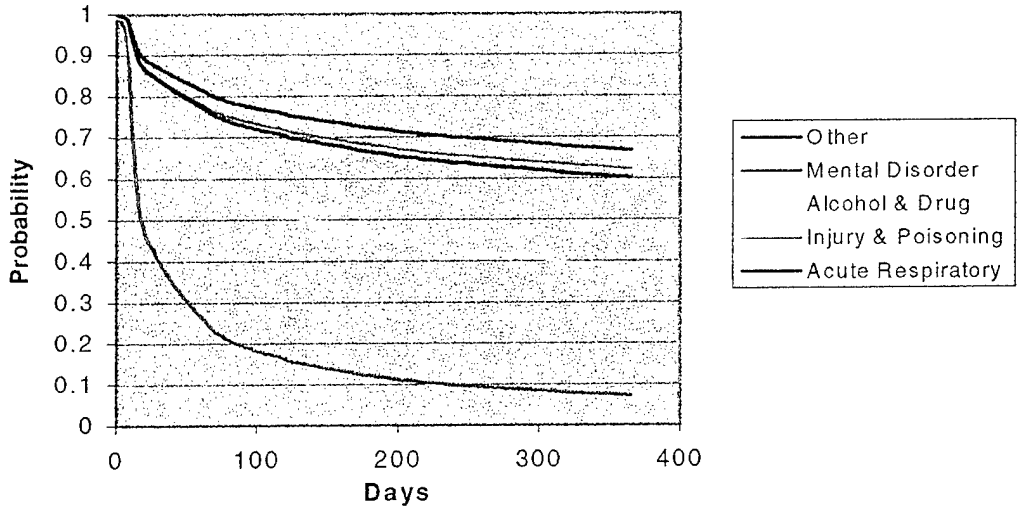

FIGURE 1.14. SURVIVAL PROBABILITY AFTER FIRST HOSPITALIZATION WITHIN 6 MONTHS: ARMY.

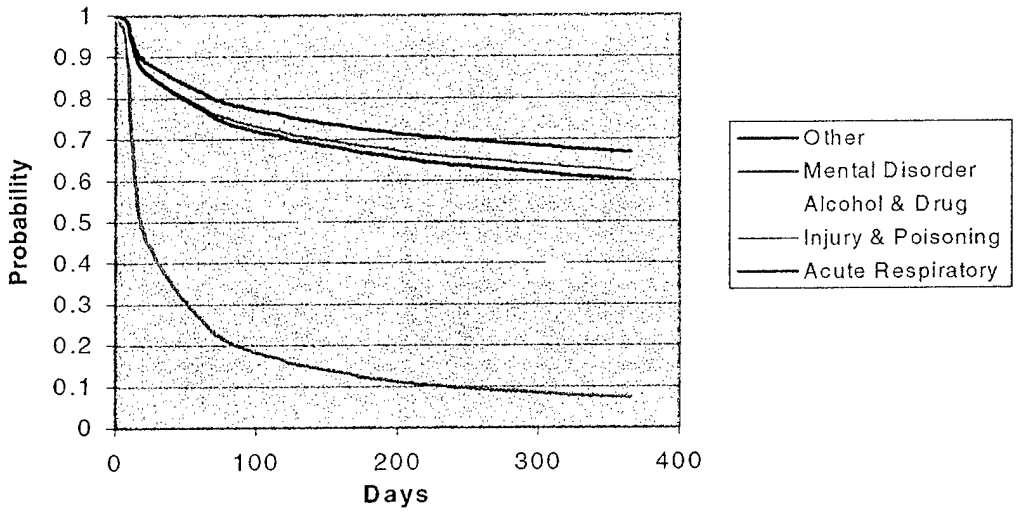

FIGURE 1.15. SURVIVAL PROBABILITY AFTER FIRST HOSPITALIZATION WITHIN 6 MONTHS: NAVY.

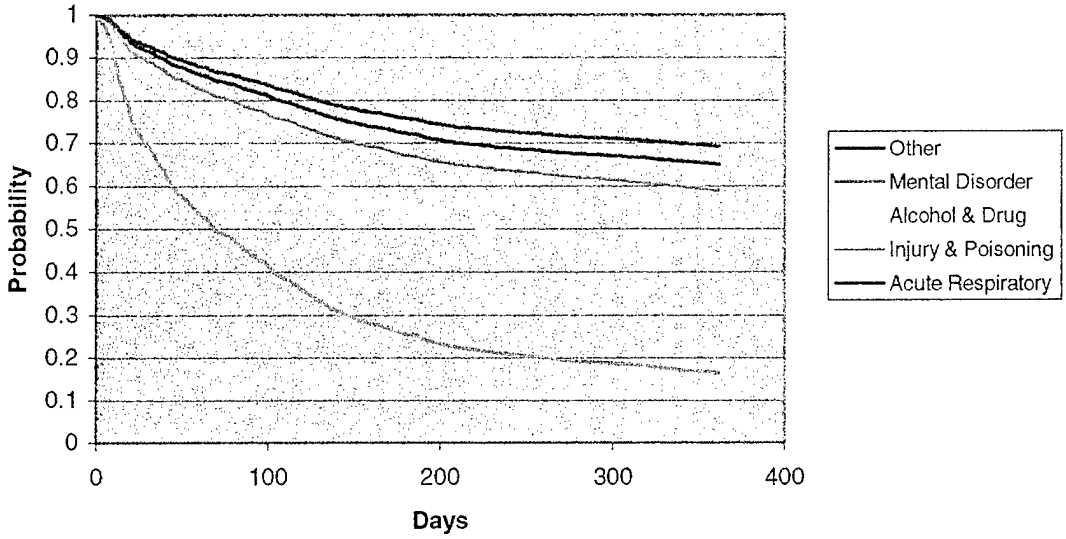

FIGURE 1.16. SURVIVAL PROBABILITY AFTER FIRST HOSPITALIZATION WITHIN 6 MONTHS: MARINES.

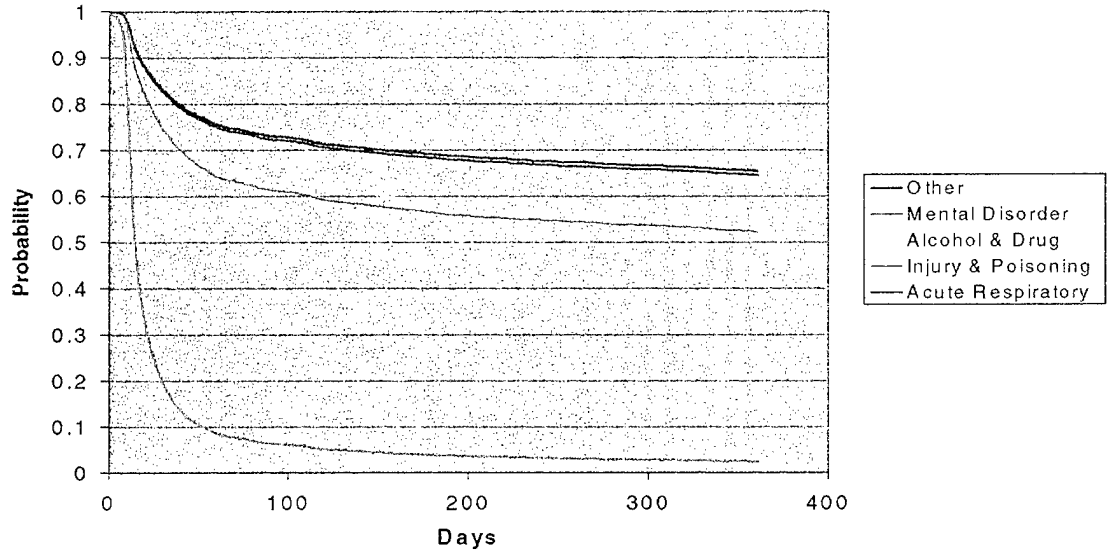

FIGURE 1.17. SURVIVAL PROBABILITY AFTER FIRST HOSPITALIZATION WITHIN 6 MONTHS: AIR FORCE.

Discussion

Mental disorders account for nearly 26% of hospitalizations during the first 6 months on active duty compared with 9% among the entire active duty population. In addition, the loss rate at 1 year after hospitalization for mental disorders is 89%, much higher than the loss rate after hospitalization for any other medical condition. High attrition rates were

seen after hospitalization for a mental disorder across all services, among females and males, and over time. This finding may reflect disqualifying mental health conditions that, in fact, existed prior to service and therefore resulted in an EPTS discharge. The high attrition after hospitalization may be associated with a more severe psychiatric diagnosis that is not reflected in the discharge diagnosis (e.g., because the time criteria required by some diagnoses cannot be met or because a lesser diagnosis was used to avoid stigmatizing the individual). This study could not address the reason for the extremely high early attrition among this group, nor could it address whether some of these individuals might have been successfully retained on active duty.

This study has several other limitations. First, the data were analyzed by broad diagnostic categories, thereby potentially including many unrelated conditions. Most hospitalizations categorized as mental disorders were actually due to adjustment reactions; therefore the impact of being hospitalized for this condition may be being measured. Discharge diagnoses were not independently reviewed for diagnostic accuracy, so again the true diagnosis may have been a more severe psychiatric condition than was indicated. Medical practices can be expected to differ somewhat by training site, leading to variations in the threshold for mental health hospitalizations and discharge diagnoses that this study could not address.

Further study should be made by specific diagnoses within the broad ICD9 category referred to as mental disorders. Reasons for discharge from the military should be examined to determine whether these hospitalizations were in fact due to mental health conditions that existed prior to service and thus triggered an EPTS discharge or to newly discovered conditions that make active duty service impossible. It is also important to see whether the initial hospitalization for an adjustment reaction may subsequently be related to more severe disease. Given the increasing prevalence of mental health conditions in the U.S. population, the U.S. military needs to consider developing programs to assist and potentially retain individuals who are experiencing severe adjustment reactions.

Acknowledgments

AMSARA thanks LTC (P) Charles W. Hoge, Chief of the Department of Behavioral Health and Epidemiology, and Dr. Stephen Messer, Clinical Research Scientist with Allied Technology Group, both within the Division of Neuropsychiatry at Walter Reed Army Institute of Research, for their advice and assistance.

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ATTRITION RATE FOR ENLISTEES WAIVED FOR MEDICAL DISQUALIFICATION CONDITIONS

Introduction

The U.S. military depends on a constant flow of healthy and physically fit individuals into the force each year. Although some applicants are disqualified as a result of the entrance medical examination, each service retains the authority to grant an accession waiver for disqualifying medical conditions on an individual basis. This study compared attrition among enlistees granted medical waivers to attrition among enlistees not needing waivers within the first 1–3 years of service.

Methods

The study population was comprised of all Air Force, Army, Marine, and Navy enlistees beginning active duty from 1 January 1995 to 31 December 1999. This population was divided into two groups: enlistees who needed an accession medical waiver and those who had not. All subjects were followed prospectively for any cause of attrition (e.g., administrative, medical, or other) until 31 December 1999.

The medical conditions for which waivers were granted were grouped according to the first three digits of the ICD9-coded diagnosis. Analyses were designed to predict loss rates for enlistees granted waivers for these grouped conditions.

Crude loss rates were first compared between waived and nonwaived populations by service. Proportional hazards and conditional logistic regression models were then used to refine these comparisons and to study survival probability and attrition rates by service according to waiver condition. In addition to medical waiver status (yes/no), the following factors were included in the modeling: service branch, gender, age, race, marital status, body mass index (BMI), education level, Armed Forces Qualification Test (AFQT) score, and year beginning active duty.

Results

Approximately 800,000 enlistments occurred from 1995 to 1999. Of these, 25,716 (3.2%) required a medical waiver for at least one disqualifying condition. Numbers of accessions with and without medical waivers are included for each service in Table 1.10. It is apparent that within any given service, the demographic features of enlistees who received a medical waiver are similar to those who did not require a waiver. For example, in the Army 19.6% of the accessions not requiring a waiver were females, whereas 19.5% of accessions that received a waiver were females. However, due to the large sample size, some of these small differences were statistically significant.

TABLE 1.10. ACCESSIONS BY WAIVER STATUS AND DEMOGRAPHIC FACTORS (IN 1995-1999)

	Army		Navy		Marines		Air Force	
	No waiver (*n* = 275,654)	Waiver (*n* = 12,114)	No waiver (*n* = 208,566)	Waiver (*n* = 6,831)	No waiver (*n* = 147,528)	Waiver (*n* = 4,404)	No waiver (*n* = 146,405)	Waiver (*n* = 2,367)
Gender								
Female	19.6	19.5	17.0*	14.6	7.3	6.5	26.4*	29.8
Male	80.4	80.5	83.0	85.4	92.7	93.5	73.6	70.2
Age								
17–20	68.7*	63.3	75.2*	69.4	82.3*	77.5	75.8*	76.9
21–25	24.5	28.1	20.5	24.8	15.6	20.2	21.9	20.4
26–30	5.3	6.7	3.3	4.5	1.9	2.2	2.2	2.5
>30	1.5	1.9	1.0	1.3	0.1	0.1	0.0	0.1
Race								
White	67.1*	70.0	69.8*	71.5	74.1*	78.0	74.9	75.3
Black	23.3	21.2	20.3	19.4	13.2	12.6	16.1	16.6
Other	9.6	8.8	9.9	9.2	12.7	9.4	9.0	8.1
BMI								
<20	0.37	0.39	0.34	0.37	0.35	0.39	0.27	0.29
20-25	0.52	0.48	0.52	0.50	0.54	0.51	0.59	0.57
>25	0.12	0.12	0.13	0.13	0.11	0.10	0.14	0.13
Marital status								
Single	86.4	87.0	94.8	94.6	96.0	96.6	90.6	91.6
Married	12.5	11.9	4.3	4.3	3.5	2.9	8.9	7.5
Other	1.1	1.1	0.9	1.1	0.5	0.5	0.5	0.9
Education†								
Less than HS	6.6*	6.0	3.0*	1.8	0.3	0.1	0.1	0.1
HS and above	90.9	90.5	95.8	96.3	99.2	98.8	98.1	97.4
AFQT %ile								
93-99	4.65*	5.96	5.58*	6.96	3.97	5.05	6.10	7.91
65-92	33.48	35.72	35.79	37.08	35.06	35.58	44.73	46.00
31-64	59.77	57.14	58.27	55.52	59.94	58.59	48.95	46.04
01-30	2.10	1.17	0.35	0.44	1.03	0.77	0.22	0.04

† Education information was unavailable for some individuals, so percentages do not total 100%.

* Statistically significant.

The most common conditions for which medical waivers were granted to new enlistees are shown in Table 1.11 Hearing deficiency was the most common, comprising slightly more than 10% of all accession medical waivers. Asthma and vision deficiency were similarly common. Note that these are not necessarily the conditions most commonly considered for a waiver but rather those most commonly granted among individuals who subsequently accessed.

TABLE 1.11. PRIMARY MEDICAL CAUSE FOR WAIVER AMONG ENLISTEES

ICD9 group	Condition	Enlistees with waiver	
		No.	% of total
389	Hearing loss	2,496	10.2
493	Asthma	2,184	9.0
367	Refraction error	2,067	8.5
401	Essential hypertension	1,155	4.7
734	Flat feet	1,112	4.6
754	Musculoskeletal	1,060	4.4
717	Knee derangement	887	3.6
P81	Knee ligament repair	749	3.1
300	Neurotic disorders	555	2.3
733	Bone/cartilage disorder	540	2.2
314	ADHD	507	2.1
785	Cardiovascular symptoms	435	1.8
905	Late effects of musculoskeletal injury	335	1.4
995	Adverse reactions	308	1.3
726	Enthesopathies	302	1.2
732	Osteochondropathies	278	1.1
696	Psoriasis and related disorders	261	1.1
746	Congenital anomalies of heart	253	1.0
737	Spine curvature	251	1.0

Table 1.12 shows the crude discharge percentages after 1, 2, and 3 years of beginning service for the waiver and nonwaiver groups by service. In each service, the loss percentages after 1 year of service are higher among the medical waiver group than the nonwaiver group. These differences are reversed in the Air Force at the 2-year point. At the 3-year point, raw attrition percentages are slightly higher among the nonwaived group than among the waived group.

TABLE 1.12. CRUDE DISCHARGE PERCENTAGES FOR ENLISTEES WITH AND WITHOUT MEDICAL WAIVERS

Service year	Waiver	Army	Navy	Marines	Air Force
1	No	17.4	20.4	15.5	14.0
	Yes	22.1	22.3	18.2	14.1
2	No	22.8	26.3	19.8	17.9
	Yes	26.8	26.9	21.9	16.9
3	No	36.4	36.0	31.9	27.8
	Yes	36.1	34.0	29.5	23.6

Table 1.13 shows estimates of adjusted hazard ratios for military retention between waived and nonwaived populations. Hazard ratios can be interpreted as the likelihood of discharge for a waived individual relative to that of a nonwaived individual within a given time. Estimates are presented at the 1-, 2-, and 3-year points and are adjusted for age, gender, race, BMI, education level, marital status, AFQT score, and year beginning active duty. Most of these demographic factors are significantly related to attrition rates, but the effects vary across the services. Statistical significance tests of the hazard ratios imply that the attrition rate is significantly higher for the waiver group granted waivers than for the nonwaiver group in the Army, Navy, and Marines but not in the Air Force.

TABLE 1.13. ADJUSTED RETENTION HAZARD RATIOS FOR WAIVED ENLISTEES WITHIN 1–3 YEARS

Censor years	Army		Navy		Marines		Air Force	
	Ratio	*p*	Ratio	*p*	Ratio	*p*	Ratio	*p*
1	1.32	<0.01	1.10	<0.01	1.22	<0.0001	1.09	0.16
2	1.26	<0.01	1.07	<0.01	1.22	<0.0001	1.04	0.50
3	1.20	<0.01	1.08	<0.01	1.20	<0.0001	1.05	0.38

Based on crude attrition rates among the nonwaiver group, the loss rates adjusted for age, race, age, marital status, BMI and AFQT among the waived group for those demographic factors are shown in Table 1.14 It can be seen that the adjusted loss percentages are higher among the waived groups in all services and at all follow-up times.

TABLE 1.14. ADJUSTED LOSS RATES WITHIN 1–3 YEARS BY WAIVER STATUS (%)

Service year	Waiver	Army	Navy	Marines	Air Force
1	No	17.4	20.4	15.5	14.0
	Yes	20.5	21.8	18.3	14.6
2	No	22.8	26.3	19.8	17.9
	Yes	27.8	27.9	23.7	18.5
3	No	36.4	36.0	31.9	27.8
	Yes	44.9	38.9	37.3	29.8

Table 1.15 shows the adjusted hazard ratios and predicted loss rates for the Army according to the primary medical condition for which the waiver was granted. The first row shows that 17.4% for all enlistees not requiring a medical waiver are lost from active service within 1 year of beginning service. Relative to this group, only individuals with waiver for ADHD were less likely to be lost during the first year of service, but the hazard ratio was not statistically significant.

There were highly significant hazard ratios in the Army for refraction error, hearing loss, knee ligament repair, and curvature of the spine. The likelihood of loss within the first year of service is significantly greater among these individuals than among the nonwaived group.

TABLE 1.15 HAZARD RATIOS AND PREDICTED LOSS RATES FOR ENLISTEES WITH WAIVER: ARMY

ICD9 Group	Waiver condition	Hazard ratio	Loss within 1 year (%)
None	------	1.00	17.4
314	ADHD	0.83	14.6
785	Cardiovascular symptoms	1.04	18.1
401	Essential hypertension	1.05	18.2
783	Nutrition/metabolism	1.06	18.4
493	Asthma	1.14	19.6
300	Neurotic disorders	1.21	20.6
367**	Refraction error	1.25	21.2
717	Knee derangement	1.25	21.3
389**	Hearing loss	1.28	21.7
734	Flat feet	1.47	24.5
P81**	Knee ligament repair	1.58	26.1
754**	Musculoskeletal disorders	1.83	29.6
737**	Curvature of spine	2.10	33.0

* Significant at $p<0.05$
** Significant at $p<0.01$

Table 1.16 shows adjusted results for the Navy. The likelihood of loss within the first year for individuals not requiring a medical waiver was 20.4%. It can be seen that individuals granted a waiver for hypertension actually have a significantly lower likelihood of attrition within the first year of service. Most other conditions had hazard ratios greater than 1, with those for hearing loss and neurotic conditions being strongly statistically significant.

TABLE 1.16. HAZARD RATIOS AND PREDICTED LOSS RATES FOR ENLISTEES WITH WAIVER: NAVY

Waiver ICD9	Waiver condition	Hazard ratio	Loss within 1 year (%)
None		1.00	20.4
401*	Essential hypertension	0.76	15.9
493	Asthma	0.88	18.2
717	Knee derangement	1.01	20.5
367	Refraction error	1.03	20.9
733	Bone/cartilage disorder	1.03	21.0
734	Flat feet	1.13	22.8
754	Musculoskeletal	1.19	23.8
389**	Hearing loss	1.32	26.0
300*	Neurotic disorders	1.44	28.0

* Significant at $p<0.05$

** Significant at $p<0.01$

Table 1.17 shows adjusted results for the Marines. The likelihood of loss within the first year for individuals not requiring a medical waiver was 15.5%. The only statistically significant hazard ratio was for bone/cartilage disorder. The highest predicted loss rate within 1 year was 28.3% for neurotic disorders, although the hazard ratio was not statistically significant.

TABLE 1.17. HAZARD RATIOS AND PREDICTED LOSS RATES FOR ENLISTEES WITH WAIVER: MARINES

Waiver ICD9	Waiver condition	Hazard ratio	Loss within 1 year (%)
None		1.00	15.5
401	Essential hypertension	0.90	14.1
367	Refraction error	0.90	14.1
493	Asthma	0.93	14.4
717	Knee derangement	1.00	15.4
389	Hearing loss	1.00	15.5
734	Flat feet	1.03	15.9
733**	Bone/cartilage disorder	1.20	18.3
754	Musculoskeletal	1.30	19.7
300	Neurotic disorders	1.97	28.3

* Significant at $p<0.05$

** Significant at $p<0.01$

Table 1.18 shows adjusted results for the Air Force. The likelihood of loss within the first year for individuals not requiring a medical waiver was 14.0%. Hazard ratios are not statistically significant for any medical conditions considered. Predicted loss rates within 1 year range from 8.2% for those with a waiver for joint derangement to 20.6% for those with a waiver for ADHD.

TABLE 1.18. HAZARD RATIOS AND PREDICTED LOSS RATES FOR ENLISTEES WITH WAIVER: AIR FORCE

Waiver ICD9	Waiver condition	Hazard ratio	Loss within 1 year (%)
None		1.00	14.0
718	Joint derangement	0.57	8.2
622	Cervix disorder (noninflammatory)	0.60	8.7
P81	Knee ligament repair	0.74	10.5
493	Asthma	0.84	11.9
P79	Fracture reduction	0.88	12.5
734	Flat feet	0.99	13.8
367	Refraction error	1.03	14.3
296	Affective psychoses	1.07	14.9
309	Adjustment reaction	1.40	19.1
314	ADHD	1.53	20.6

Discussion

Likelihood of attrition among enlistees with an accession medical waiver was significantly higher overall than that among enlistees not requiring a waiver in the Army, Navy, and Marines. Attrition rates were also related to the causes for medical disqualification. No clear patterns emerged in results by medical condition across the services, although those receiving a waiver for a psychological condition generally had high hazard ratios.

Although the current study indicates which conditions might warrant further study, there are some caveats. Most importantly, the meaning of a granted waiver may vary across services or even across medical conditions within a given service. For example, a waiver for asthma might indicate a medical judgment that the subject was never truly asthmatic, whereas a waiver for knee ligament repair clearly implies that ligament repair was performed but that recovery has been sufficient for enlistment. Services may also vary in what additional proof or documentation of recovery is required before granting a waiver

This study considers only the primary condition for which a waiver was granted. In some instances, two or more disqualifying conditions are identified for an applicant, and any waiver granted would cover all such conditions. Restricting attention to those granted waivers for only one condition could refine attrition predictions. Study of those granted waivers for multiple conditions might also yield interesting results.

FORT JACKSON PHYSICAL TRAINING AND REHABILITATION PROGRAM

Introduction

Can rehabilitated soldiers serve as well as soldiers who have not been seriously injured? The issue of training injuries is most significant during military basic training, where at least 25% of males and 50% of females will sustain some degree of injury. Many of these injured soldiers will lose valuable training time; some will be forced to restart training at a later date; and some will never return to duty. Loss of basic trainees to injury diminishes the Army's ability to train the number of soldiers needed to replace those lost to normal attrition.

Fort Jackson's solution to this problem is the Physical Training and Rehabilitation Program (PTRP). PTRP rehabilitates injured basic trainees and returns them to duty at the point they were injured. To be assigned to the PTRP during the period of study, a basic trainee must have suffered an injury significant enough to remove him or her from basic training and be recommended for this training. Recommendations were based on the rehabilitative potential of the trainee, as assessed by the physical therapist or other healthcare providers such as orthopedic surgeons or occupational therapists.

All trainees in the PTRP perform fitness training under the direction of their managing physical therapist, gradually increasing their exercise intensity as appropriate. For soldiers assigned to the PTRP, physical fitness training includes total fitness training, weight training, developmental stretching, cardio respiratory training, and aqua therapy.

Of the 2,007 soldiers initially recommended for the PTRP in 1998, 1,163 were actually assigned to the PTRP. Of those 1,163, there were 558 (48%) returned to basic training. AMSARA collaborated with the Physical Therapy Department at Moncrief Army Community Hospital to determine the retention of these 558 soldiers after their return to basic training.

Materials and Methods

This study was designed as a historical cohort study. Army basic trainees assigned to the PTRP from January-September, 1998, who were successfully rehabilitated and returned to basic training formed the "exposed" class of the cohort. Those injured recruits who were not assigned to the PTRP and those who were assigned but could not return to basic training were not included.

The "unexposed" class is a subset of all active-component soldiers who performed basic training at Fort Jackson during the first three quarters of 1998. A 3:1 match was used based on age, gender, race, season of entry, and retention to week of entry into the PTRP (to prevent bias from early loss for administrative or other reasons). Therefore a member of the comparison group had to complete at least the same number of weeks of basic training as the matched rehabilitated soldier had completed at the time of injury.

The exposed and unexposed subjects were followed for 1 year from the time of entering the study. Endpoints included early loss for any cause, including disability.

Data Sources

Information relating to the PTRP participants, including dates assigned and discharged from the PTRP, injury type, and Army component, was provided by the Physical Therapy Department of Moncrief Army Community Hospital and by the Fort Jackson Reception Battalion. Demographics, date of entry, and date of loss on both the exposed and unexposed classes were obtained from databases maintained by the DMDC and MEPCOM. Disability data were obtained from the Army Physical Disability Agency.

Statistical Analysis

Statistical analysis was performed using STATA version 6. In univariate analyses we used the chi-square statistic for categorical data and Student's t test for continuous data. Data were analyzed in a two-tailed fashion, and $p \leq 0.05$ was considered significant. Loss rates as of 1 January 2000 were calculated by exposure status, demographic feature, and injury type. Loss rates by exposure status stratified by demographic feature were then calculated to examine for interaction. The maximum likelihood estimate of the relative odds of loss and 95% confidence intervals by exposure status were then calculated, controlling for other variables using multiple logistic regression.

Kaplan-Meier survival estimates were calculated and plotted based on exposure status, demographics, and injury type. Subjects came under observation on their gain date. An event occurred on the date that a loss was recorded. All observations were censored on 31 December 1999, the end of the observation. For the exposed class, time spent in the PTRP was excluded from observation. The Wilcoxon test was then used to calculate equality of these survival functions.

Results

Of the 558 soldiers who were returned to basic training after successfully completing the PTRP, 358 had been assigned during the first three quarters of 1998. Those assigned in the fourth quarter were excluded because their retention data were unavailable. Reserve component soldiers were also excluded because their retention is not subject to the same constraints of military duty after basic training. The remaining 191 soldiers make up the exposed class.

The mean age of the entire cohort was 22.0 years. The cohort consisted of 320 (42%) males and 444 (58%) females.

Injury type by location for the exposed portion of the cohort is outlined in Table 1.19, with all injuries sustained included. Of all injuries, 88% occurred below the waistline, 80 (42%) occurred in the ankle or foot, 32 (17%) in the lower leg, and 30 (16%) in the knee. The most frequent injury types were stress fractures (39%), stress reactions (22%), and sprains (8%).

TABLE 1.19. INJURIES BY TYPE AND BODY PART*

Body part injured	Stress fracture	Stress reactions	Overuse	Sprain	Fracture	Pain	Other	Total
Upper extremity	0	0	0	4	6	4	4	18
Back	0	0	0	0	0	2	2	4
Lower extremity	8	0	0	0	0	0	1	9
Hip/upper leg	7	4	0	0	0	1	5	17
Knee	7	1	2	4	0	3	13	30
Lower leg	18	11	0	0	1	0	2	32
Ankle/foot	34	26	6	8	3	0	3	80
Total	74	42	8	16	10	10	30	190

*Information on one injured subject unavailable.

The effect of PTRP participation on rate of loss by race and gender is shown in Tables 1.20 and 1.21. There was no statistically significant difference in percent loss between those rehabilitated in the PTRP and unexposed classes (28.8% and 28.3%, respectively). Whites and females were at increased risk for being a loss; however, stratification of loss rates by exposure status showed no difference in percent loss between the exposed and unexposed classes, demonstrating no interaction between race or gender and effectiveness of rehabilitation.

TABLE 1.20. LOSS OF MALES REHABILITATED IN PTRP VERSUS CONTROLS, BY RACE

Group	White		Black		Other	
	No./total	Percent	No./total	Percent	No./total	Percent
PTRP	13/56	23.2	2/16	12.5	4/8	50.0
Comparison	33/168	19.6	9/48	18.8	2/24	8.3

Chi-square test for difference by group: $p = 0.29$.

TABLE 1.21. LOSS OF FEMALES REHABILITATED IN PTRP VERSUS CONTROLS, BY RACE

Group	White		Black		Other	
	No./total	Percent	No./total	Percent	No./total	Percent
PTRP	24/52	46.2	7/41	17.1	5/18	27.8
Comparison	73/156	46.8	29/123	23.6	16/54	29.6

Chi-square test for difference by group: $p = 0.57$.

For the exposed class, ankle injuries had the highest chance of becoming a loss after rehabilitation and return to basic training: almost 43% within 1 year of returning to basic training. Metatarsal injuries had the lowest loss rate: 15%. With respect to injury type, overuse injuries represent the highest loss rate: 44%. None of those who were rehabilitated from fractures were lost from active duty during follow-up.

Multivariate Analysis

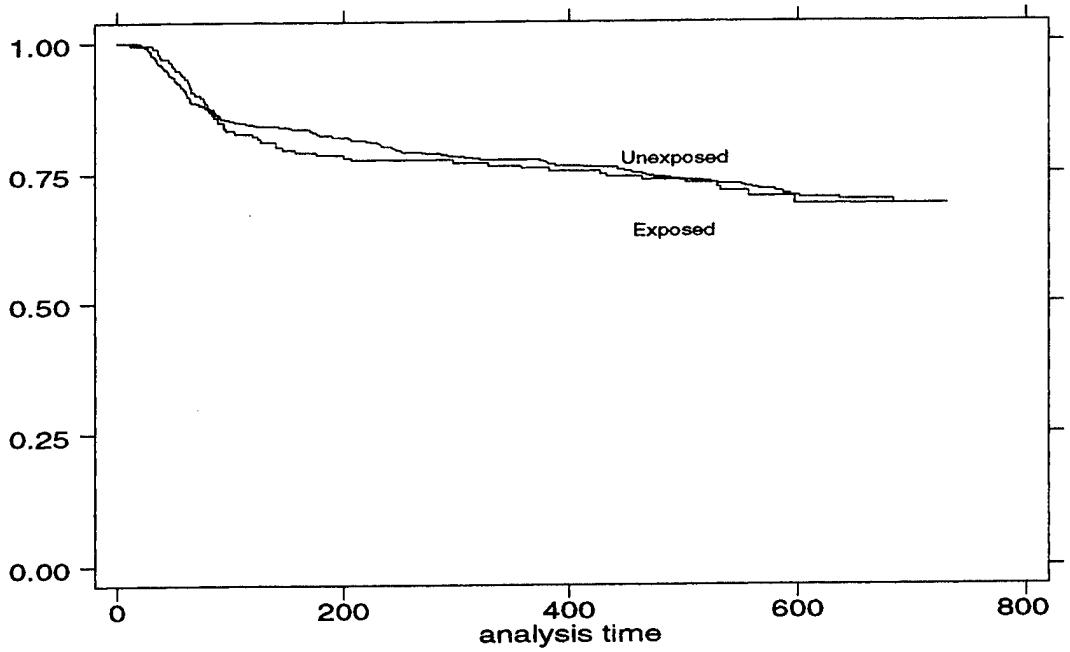
A multiple logistic regression model revealed that successful rehabilitation in the PTRP and age were not predictors of becoming a loss. Both gender and race remained

significant, with females having an odds ratio of 2.42 versus males, whereas blacks had an odds ratio of 0.40 and other racial groups 0.55 compared with whites.

Survival Analysis

Kaplan-Meier survival functions were calculated and plotted in Figure 1.18. The estimated probability of remaining on active duty is shown over time (in days). The Wilcoxon test shows that there is no statistically significant difference in these survival functions ($p = 0.85$), which is not surprising given the similarity in the curves. This result agrees with results of the univariate analysis and the logistic regression, showing no difference in the odds of loss for either class. Comparing the survival functions of the PTRP versus the unexposed classes by gender and racial group revealed no difference in survival functions between the two classes. No difference in survival was found for any injury type or location.

Figure 1.18. PROBABILITY OF REMAINING ON ACTIVE DUTY AMONG PTRP ("Exposed") SUBJECTS VERSUS COMPARISON ("Unexposed") SUBJECTS



Discussion

We can conclude from these data that soldiers who were assigned to and successfully completed the PTRP were comparable with other recruits in retention on active duty. The successful completion of the PTRP returns recruits to the same probability of success they had at the point in training when they were initially injured.

Note that 58% of the PTRP participants are female, yet at Fort Jackson the percentage of female trainees is approximately 34%. This discrepancy is consistent with research showing a higher injury rate for females in basic training. As has been shown in previous

studies, attrition is more likely during the first year of service in females, whites, and those who are older.

There are several limitations to this study. First, we could not analyze large numbers of subjects, particularly when looking at specific injury types, and this may have limited our ability to detect a difference in survival functions among various injury types. However, the current data gives no hint of an overall difference in survival across all injuries. This study could not examine the possibility that rehabilitated soldiers utilized more health care or were possibly not as physically fit as those never injured. It was not designed to examine performance of these recruits after injury.

In the strenuous environment of basic training, it is no small wonder that many recruits are injured, especially given the poor state of physical conditioning in which many enter the military. However, given the considerable cost to the military to recruit and train a soldier, every effort must be made to prevent loss from training injuries. The finding that trainees who successfully complete the PTRP remain on active duty at the same rate as uninjured recruits is impressive. These data demonstrate that rehabilitation was successful from the various injuries suffered during basic training. Although generalization to civilian athletes is difficult, similar results are potentially achievable.

Acknowledgement

AMSARA would like to thank MAJ Rodney Coldren, WRAIR Preventive Medicine Resident for his analysis and presentation of this study.

OFFICER SERVICE ACADEMY ATTRITION

Each service academy's Institutional Research Office compiles statistics on cadet selection cycle comparisons, entering class sizes, cadet attrition, and graduate comparisons. The Institutional Research Office of the Air Force Academy has been compiling statistics for the three service academies since 1980 and provided data for the graduating classes of 1997–2000 included in this year's report. Each service academy calculates an adjusted total entered for each graduating class by gender. The number of new cadets, reappointments, and turn-backs entering both before and after pretraining are included.

Cumulative loss total for each class includes losses during and after pretraining conducted before freshman year. After pretraining, losses are classified as either turn-backs or permanent discharges. Turn-backs are temporary discharges with a specified waiting time before the recipient may apply for re-admission. These may be given for administrative, medical, or other reasons.

Permanent discharges are further classified as voluntary, involuntary, or deceased. Voluntary losses occur predominantly during the first 2 years of study as individuals choose to leave the academy and do not experience adverse consequences for this decision; reasons include change in career goals, environment adjustment, honor, and/or academics. Involuntary losses occur predominantly during the third and fourth year of study, and reasons include academics, medical condition, aptitude, conduct, and/or honor. Cumulative loss total divided by adjusted total entered yields percent cumulative lost, which is reported by gender for each graduating class. Number of service academy entrants, total losses, and medical losses by gender and graduating class year are shown in Table 1.22.

TABLE 1.22. SERVICE ACADEMY ENTRANTS, TOTAL LOSS, AND MEDICAL LOSS BY GENDER AND GRADUATING CLASS: 1997–2000

Gender	Air Force Academy			USMA			Naval Academy		
	No. of entrants	Total loss	Medical loss	No. of entrants	Total loss	Medical loss	No. of entrants	Total loss	Medical loss
1997									
Male	993	316	5	1,082	255	9*	1,023	178	13
Female	187	68	1	136	36	1*	165	49	4
1998									
Male	1,111	314	1	1,001	213	1*	1,024	236	0
Female	197	47	3	155	50	1*	190	52	0
1999									
Male	1,133	312	7	1,018	192	9	975	217	2
Female	212	71	5	176	48	5	194	60	0
2000									
Male	1,037	264	4	1,017	188	7	1,021	207	3
Female	224	52	3	188	44	4	201	68	1

* The Office of Institutional Analysis and Research at USMA reports different results for 1997 and 1998 medical attrition. For 1997 they report 7 males and 1 female, and for 1998 they report 10 males and 4 females.

Air Force Academy

The Air Force Academy has experienced a statistically significant trend toward lower attrition from 1997 to 2000 (Figure 1.19) for both males and females (chi-square test for linear trend, $p < 0.05$). The average graduating class loss rate was 28.2% for males and 29.0% for females, which was not statistically significant (relative risk of 1.03, 95% confidence interval 0.91,1.16).

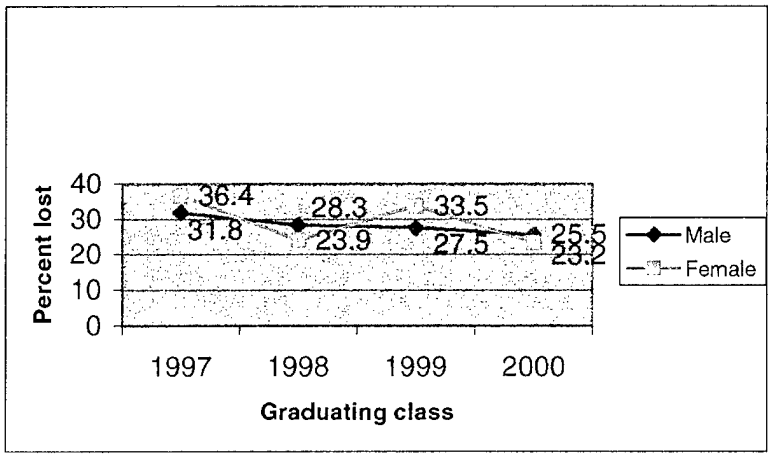


FIGURE 1.19. AIR FORCE ACADEMY CUMULATIVE LOSS BY GRADUATING CLASS AND GENDER.

Over 50% of all loss is voluntary for both genders (Figure 1.20). During a 4-year education among four graduating classes (1997–2000), there were a total of 17 medical losses for males (4.0 per 1,000 entering males/ 4-yr education) and 12 medical losses for females (14.6 per 1,000 entering females/ 4-yr education). Females were 3.68 times more likely than males to leave for medical reasons (95% confidence interval 1.76, 7.67). These numbers are small and not clinically relevant.

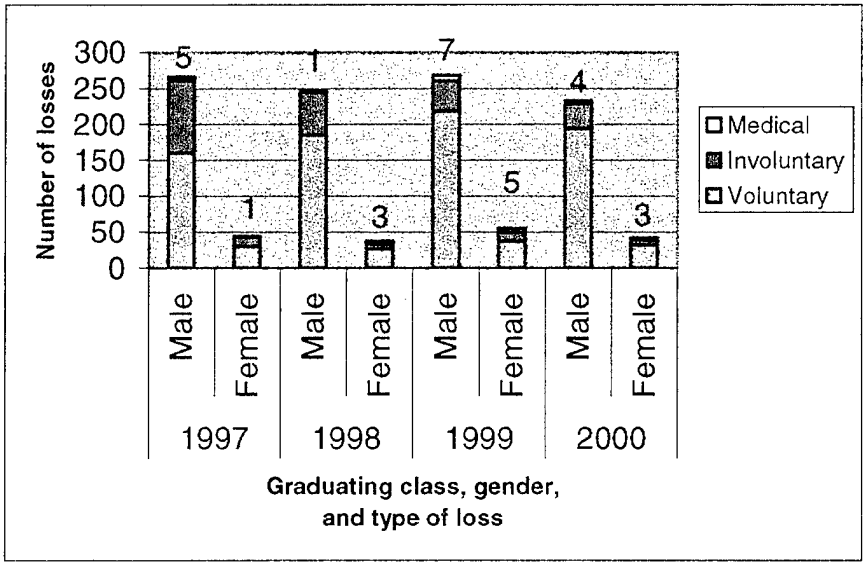


FIGURE 1.20. AIR FORCE ACADEMY LOSSES BY GRADUATING CLASS, GENDER, AND TYPE OF LOSS.
Numbers Above Bars Indicate Number Of Medical Separations.

U.S. Military Academy

The U.S. Military Academy (USMA) experienced a statistically higher loss rate among females (27.2%) compared with males (20.6%) over the 4 graduating classes (RR 1.32, 95% confidence interval 1.15,1.52). The downward trend in attrition was statistically significant only for males (chi-square test for linear trend, $p < 0.01$) (Figure 1.21)

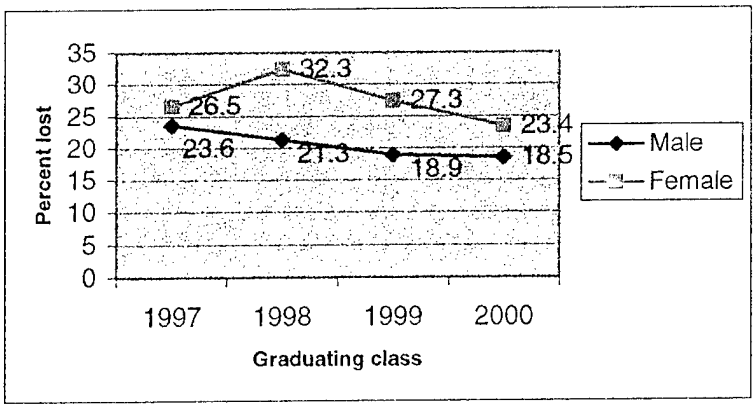


FIGURE 1.21. USMA PERCENT CUMULATIVE LOSS BY GRADUATING CLASS AND GENDER.

Figure 1.22 shows USMA entrants, losses (voluntary, involuntary, and medical) by graduating class year and gender. The 4-year medical loss rate was statistically higher for females (16.8 per 1,000 entering females/ 4 yr education) than males (6.3 per 1,000 entering males/ 4 yr education) with females 2.63 times more likely to leave due to medical problems than males (95% confidence interval 1.31, 5.30).

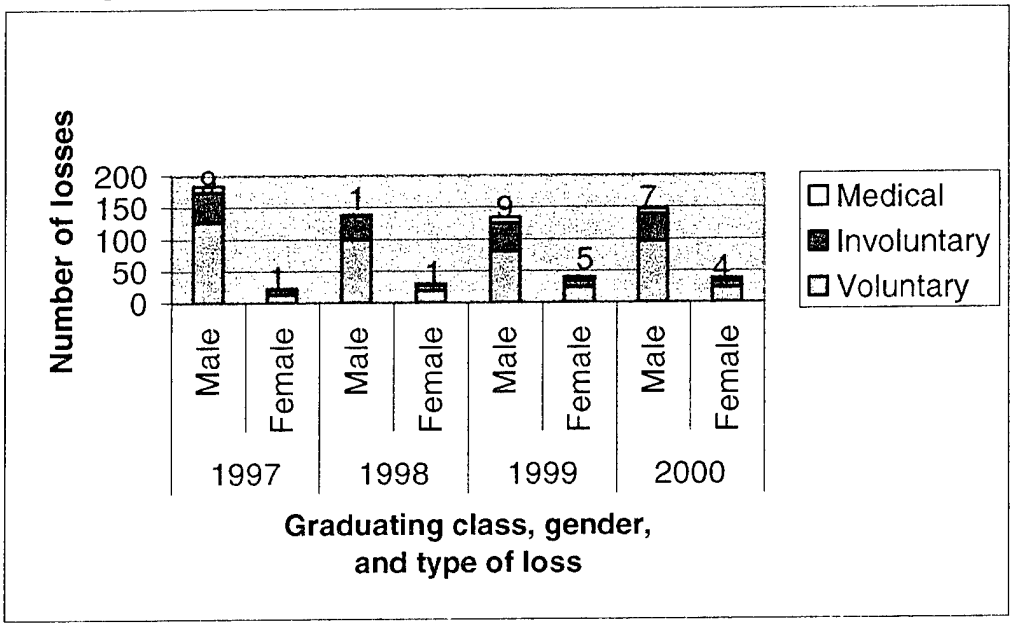


FIGURE 1.22. USMA LOSSES BY GRADUATING CLASS, GENDER, AND TYPE OF LOSS.

Numbers Above Bars Indicate Number Of Medical Separations

Naval Academy

The Naval Academy experienced no statistically significant trend in loss for either males or females (chi-square test for linear trend, $p > 0.05$) (Figure 1.23). The loss rate in females (30.5%) was consistently higher than that for males (20.7%) over the 4 years. This difference is statistically significant, with a relative risk of loss in females compared with males of 1.47 (95% confidence interval 1.30, 1.67).

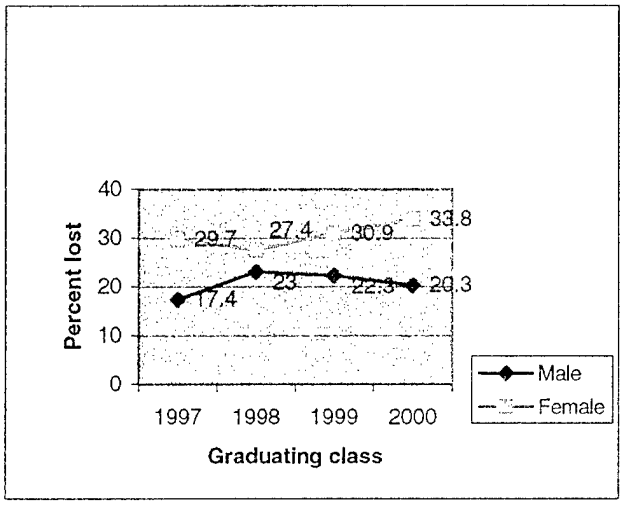


FIGURE 1.23. NAVAL ACADEMY PERCENT CUMULATIVE LOSS BY GRADUATING CLASS AND GENDER.

Figure 1.24 shows Naval Academy entrants and losses by graduating class year and gender. Naval Academy medical loss totals were 18 males and 5 females. The 4-year medical loss rate was not statistically different between genders (RR 1.5, 95% CI 0.56, 4.02) with a rate of 4.5 per 1,000 entering males over a 4-yr education and 6.7 per 1,000 entering females over a 4 yr education.

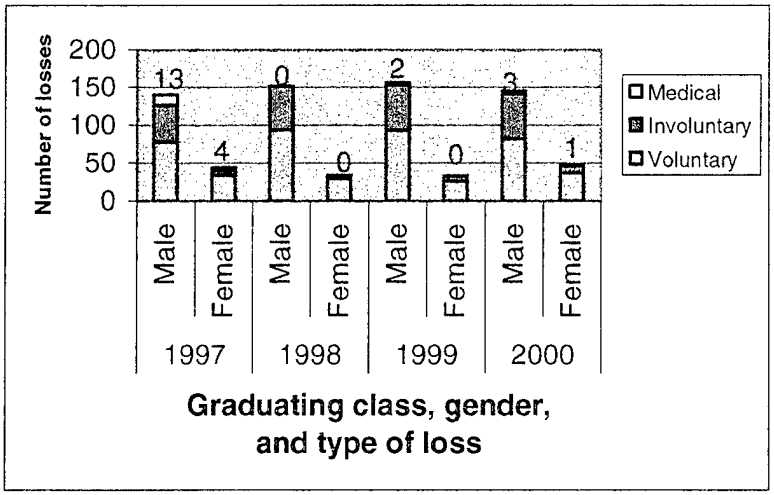


FIGURE 1.24. NAVAL ACADEMY LOSSES BY GRADUATING CLASS, GENDER, AND TYPE OF LOSS.
Numbers Above Bars Indicate Number Of Medical Separations.

Discussion

Cumulative 4-year loss rates at the service academies ranged from 20% to 30% among the four graduating classes, depending on gender and academy. Both the Air Force Academy and the USMA experienced significant declines in attrition over these 4 years, whereas the Naval Academy's attrition rate did not significantly change. The USMA and Naval Academy reported significantly higher loss rates for females than males, whereas the Air Force Academy demonstrated no difference by gender.

Voluntary losses were consistently greater than involuntary losses across the three service academies, accounting for over 50% of all losses. Medical loss accounted for an extremely small portion of total losses. No statistical comparison among service academies was performed because of differences in training requirements, medical condition waiver policies, and program of instruction.

This analysis has several limitations. Some losses associated with medical conditions may not have been coded as such in the administrative data. Early voluntary loss may have been associated with a medical condition that interfered with the student remaining at the academy, resulting in an underestimate of true medical losses.

Future Studies

Each service academy's Institutional Research Office does not collect medical diagnoses for the medical losses or medical diagnoses associated with voluntary loss. Some of this information is maintained by the service academy surgeon's office. Further analysis of this information may validate current accession standards and waiver policies.

For questions concerning the data reported, contact the Institutional Research and Assessment Division, Headquarters, USAFA/XPR, Colorado Springs CO 80840; phone 719-333-3090 (DSN 333-3090); website: http://www.usafa.af.mil/xp/xpr

NAVAL ACADEMY REVIEW OF WAIVED DISQUALIFICATIONS

The Senior Medical Officer*, U.S. Naval Academy, conducted a review of waived medical disqualifications for the graduating classes of 2000–2004. In addition, 15 years of medical boards performed on Naval Academy cadets and graduates were reviewed. The results were presented at the 17–18 October 2000 DoD Medical Evaluation Review Board Surgeon's Conference in Kingsport, New York, reported here with permission.

A total of 792 candidates out of 6,029 in the five classes were inducted with one or more waived DQ conditions (13.1%) compared to 3.2% of enlisted requiring waivers. A total of 999 DQs were waived because some inductees had more than one DQ. Asthma was the most common DQ experienced, with 4.0% of inductees having received asthma DQ waiver. After asthma and excluding miscellaneous, the top five DQs were 1) excessive refractive error, 1.5%; 2) retained orthopedic hardware, 1.2%; 3) miscellaneous extremity conditions, 1.2%; 4) history of anterior cruciate ligament disorders, 1.2%; and 5) various psychiatric conditions including neuroses, 0.7% (Table 1.23). A chi-square test for linear trend in the percent of class with a waived DQ was not statistically significant ($p > 0.05$).

TABLE 1.23. WAIVED DISQUALIFICATIONS AT NAVAL ACADEMY BY GRADUATING CLASS, 2000 TO 2004

	2000 (1,205 inductees)	2001 (1,166 inductees)	2002 (1,223 inductees)	2003 (1,222 inductees)	2004 (1,213 inductees)	Total (6,029 inductees)	% of class
Asthma	42	51	46	48	52	239	3.96
Miscellaneous	40	42	36	37	67	222	3.68
Excessive refractive error	19	8	11	28	23	89	1.48
Retained orthopedic hardware	8	12	17	15	23	75	1.24
Miscellaneous extremities	14	10	23	15	11	73	1.21
History of anterior cruciate ligament	12	13	16	12	19	72	1.19
Miscellaneous: psychosis, neurosis	0	8	8	7	19	42	0.70
Candidates inducted with waivers	*148*	*145*	*164*	*155*	*180*	*792*	
% Inductees with waivers	*12.28*	*12.03*	*13.60*	*12.86*	*14.84*	*13.14*	
Total defects waived	*164*	*175*	*201*	*196*	*263*	*999*	

*CAPT Robert G. Schultz, Senior Medical Officer, United States Naval Academy

Medical Board Review

Medical boards performed on Naval Academy midshipmen and graduates were reviewed over 15 years from 1985 to 1999. Separations before and after commissioning were included. All midshipmen and graduates receiving a medical board were checked for any waived DQ on induction to the Naval Academy, and the Senior Medical Officer*, USNA, then determined whether the medical board condition was related to the DQ.

A total of 221 midshipmen and graduates received a medical board during this period: 31 as midshipmen and 190 after commissioning. Of the 31 midshipmen with medical boards, 16 were separated. A DQ was found in 13 of the 31 compared with 792 DQ out of 6,029 inductees identified in Table 1.20. Midshipmen inducted with a DQ were 4.83 (95% confidence interval 2.35, 9.90) times more likely to receive a medical board for compared with those inducted without a DQ. However, only one medical board was for a condition related to the original DQ.

Of the 190 graduates who received a medical board, a DQ was found in 18 at induction. There was no statistical difference in receiving a medical board among graduates inducted with a DQ compared with those inducted without a DQ. Only one medical board was for a condition related to the DQ.

The case series review of midshipmen and graduates who received a medical board and had a disqualifying condition revealed one case in each group where the medical board condition was related to the disqualifying condition. This review suggests, but does not prove statistically or clinically, that the process of waiving disqualifying conditions does not increase the future risk of a medical board.

A medical board may lead to separation or retention depending on the condition and severity. A change in the remediation and waiver policy at the Naval Academy may reduce the number of medical boards performed on midshipmen, but its impact on graduation rates cannot be estimated from this study.

As a case series review, a causal relationship between a disqualifying condition and the risk of receiving a medical board cannot be established among midshipmen. Prior studies have shown that most medical boards are for musculoskeletal conditions, usually for injuries occurring once on active duty. Among the 234 disqualifying conditions related to orthopedic conditions no increased risk of having a subsequent medical board was found. Other attrition outcomes (voluntary or involuntary [academic, aptitude, conduct]) that might have been related to disqualifying conditions were not examined in this study.

Future analyses based on this study would validate current waiver policies at the Naval Academy. A prospective cohort study design that follows inductees with a disqualifying condition until graduation and identifies all types of attrition is needed. Because training requirements as well as remediation and waiver policies vary by service, similar studies should be conducted at the USMA and Air Force Academy.

2. DESCRIPTIVE STATISTICS FOR ENLISTED PERSONNEL IRRESPECTIVE OF ACCESSION RECORDS

Historically, AMSARA record counts and other summary statistics included only those records for which a corresponding accession record could be identified. This restriction, retained for the results in Section 3, allows analyses to be performed according to demographic factors contained in the accession data (e.g., gender, age, race) and also according to length of time in service. However, AMSARA analyses indicate that not all new accessions have a corresponding accession record. Therefore, this section provides more accurate information on the raw numbers of hospitalizations, EPTS discharges, and disability discharges by providing counts irrespective of accession records.

Hospitalizations

Hospital visits (Table 2.1) and persons hospitalized (Table 2.2) in calendar years 1995–1999 are shown.

Table 2.1 shows the number of hospital visits and burden of hospitalizations within the first year of service, as indicated within the hospitalization records. AMSARA has previously noted that the numbers of hospitalizations dropped sharply beginning in March 1997 (see page 34 of the 1999 Annual Report). About 11% of all hospitalizations occur within the first year of service. In 1999 overall 70% of the records for the Navy, Marines, and Air Force did not indicate length of service compared with <2% in 1995–1998.

TABLE 2.1. HOSPITALIZATIONS BY YEAR, OVERALL AND WITHIN THE FIRST YEAR OF SERVICE

Year of hospitalization	No. of all hospitalizations	No. of hospitalizations with non-missing length of service variable	No. of hospitalizations within 1 year of service	% hospitalizations within 1 year of service
1995	137,322	136,994	15,302	11.2
1996	149,489	148,735	16,739	11.3
1997	92,487	92,051	10,386	11.3
1998	63,169	62,623	7,208	11.5
1999	56,612	32,656	4,226*	12.9

*Value is a considerable underestimate because 1999 Navy, Marines, and Air Force records are incomplete.

The counts in Table 2.2 show a clear downward trend in the numbers of persons hospitalized for each service over this period. Percentages show that the relative contribution of each service to the total number of persons hospitalized remained fairly stable.

TABLE 2.2. PERSONS HOSPITALIZED BY SERVICE AND YEAR OF HOSPITALIZATION

Service	1995		1996		1997		1998		1999	
	Count	%	Count	%	Count	%	Count	%	Count	%
Army	47,912	41.6	43,485	41.3	28,630	40.1	22,814	41.7	22,426	45.3
Navy	28,817	25.0	27,645	26.2	19,292	27.0	14,220	26.0	11,975	24.2
Marines	11,411	9.9	10,418	9.9	6,967	9.8	5,825	10.6	5,514	11.1
Air Force	26,951	23.4	23,829	22.6	16,480	23.1	11,910	21.7	9,565	19.3

EPTS Discharges

Count and percent of EPTS discharges by service and year of discharge are shown in Table 2.3. Although the service numbers mostly remain stable, there is a noticeable spike in EPTS discharges for the Navy in 1998. Examination of monthly EPTS discharges revealed that the patterns were similar over 1997–1999.

TABLE 2.3. EPTS DISCHARGES BY YEAR AND SERVICE

Service	1995		1996		1997		1998		1999	
	Count	%	Count	%	Count	%	Count	%	Count	%
Army	2,682	40.0	3,687	44.0	3,772	39.4	3,664	32.7	3,041	39.9
Navy	1,427	21.3	2,290	27.3	3,198	33.4	5,131	45.7	2,420	31.8
Marines	1,098	16.4	1,493	17.8	1,633	17.0	1,409	12.6	1,231	16.2
Air Force	1,495	22.3	915	10.9	975	10.2	1,018	9.1	925	12.1

Table 2.4 describes the most common medical reasons for EPTS discharges. For the Army and Air Force various orthopedic conditions and asthma prevail, whereas for the Navy and Marines psychiatric conditions (excluding schizophrenia) dominate the counts.

TABLE 2.4. EPTS DISCHARGE BY CAUSES IN 1995–1999

Medical category	Army		Navy		Marines		Air Force	
	Count	%	Count	%	Count	%	Count	%
Psychiatric(excluding schizophrenia)	1,511	9.0	6,624	45.8	2,367	34.5	66	1.2
Orthopedics—feet	2,552	15.2	416	2.9	429	6.3	675	12.7
Asthma	2,370	14.1	1,924	13.3	567	8.3	928	17.4
Orthopedics—knee	2,155	12.8	621	4.3	626	9.1	986	18.5
Orthopedics—back	1,864	11.1	421	2.9	324	4.7	668	12.5
Orthopedics—other	2,169	12.9	719	5.0	926	13.5	709	13.3
Genitourinary system	719	4.3	389	2.7	119	1.7	113	2.1
Vision/refraction	436	2.6	516	3.6	112	1.6	84	1.6
Neurology—other	412	2.5	558	3.9	196	2.9	376	7.1
Abdomen and viscera	410	2.4	251	1.7	168	2.5	151	2.8
Chest and lungs--other	336	2.0	120	0.8	107	1.6	61	1.1
Cardiovascular—other	300	1.8	273	1.9	117	1.7	84	1.6
Skin and lymphatics	266	1.6	219	1.5	67	1.0	50	0.9
Seizure disorder	187	1.1	143	1.0	71	1.0	39	0.7
Hypertension	111	0.7	112	0.8	48	0.7	6	0.1
Hearing	104	0.6	170	1.2	158	2.3	16	0.3
Eyes—other	71	0.4	126	0.9	32	0.5	22	0.4
Schizophrenia	34	0.2	48	0.3	14	0.2	1	0.0
Ears---other	27	0.2	175	1.2	64	0.9	15	0.3
Total EPTS*	16,842		14,463		6,862		5,327	

*Please note that not all categories are included, hence the total is bigger than the sum of counts for categories listed above.

Disability

This section summarizes data on disability dispositions and discharges (dispositions excluding those who were found fit to return to duty) in the Army and Air Force irrespective of accession records. Navy and Marine Corps data are not available to AMSARA.

Table 2.5 describes Air Force disability dispositions by year. Records designated "EPTS" are not necessarily EPTS discharges that occurred within 6 months of coming onto active duty, which is the traditional definition of EPTS. Here, out of 506 disability records coded "EPTS," only 139 had a gain record within the prior 6 months. Note, that out of 13,648 disability claims in the Air Force in 1995-1999 6,171 (45%) were returned to active duty.

TABLE 2.5. AIR FORCE DISABILITY DISPOSITIONS BY YEAR

Disposition	Total	1995	1996	1997	1998	1999
Fit—return to duty	6,171	982	1,286	1,123	652	389
Discharge with severance pay	3,313	562	661	636	601	853
Temporary disability retirement leave	2,812	955	704	499	317	337
Permanent retirement	665	244	95	90	96	140
EPTS*(existing prior to service)	506	74	92	106	111	123
Unfit	125				19	106
Permanent disability retirement leave	37					37
Discharge (misconduct)	13	7	3	2	1	
Unknown	5		5			
Total claims	13,647	2,824	2,846	2,456	1,797	1,985

*EPTS discharges not necessarily within 6 months of active duty.

Table 2.6 describes Army disability claims by year. Out of 38,345 disability claims in 1995-1999, 4,790 (12.5%) were returned to duty as fit.

TABLE 2.6. ARMY DISABILITY DISPOSITIONS BY YEAR

Disposition	1995-1999	1995	1996	1997	1998	1999
Separated with benefit	22,194	3,396	4,134	4,108	4,938	5,618
Permanent disability retirement list	4,931	1,282	919	806	908	1,016
Returned to duty as fit	4,790	788	837	1,081	943	1,141
Placed on temporary disability retirement list	2,956	129	176	326	1,168	1,157
Severance without benefit	1,867	245	278	360	459	525
Retained on temporary disability retirement list	1,607	19	50	129	557	852
Total	38,345	5,859	6,394	6,810	8,973	10,309

Figure 2.1 shows the length of service before disability is claimed and a discharge is possible. Length of service variable is not available for the Air Force. Please note that there were 40 disability discharges for individuals with length of service of over 30 years.

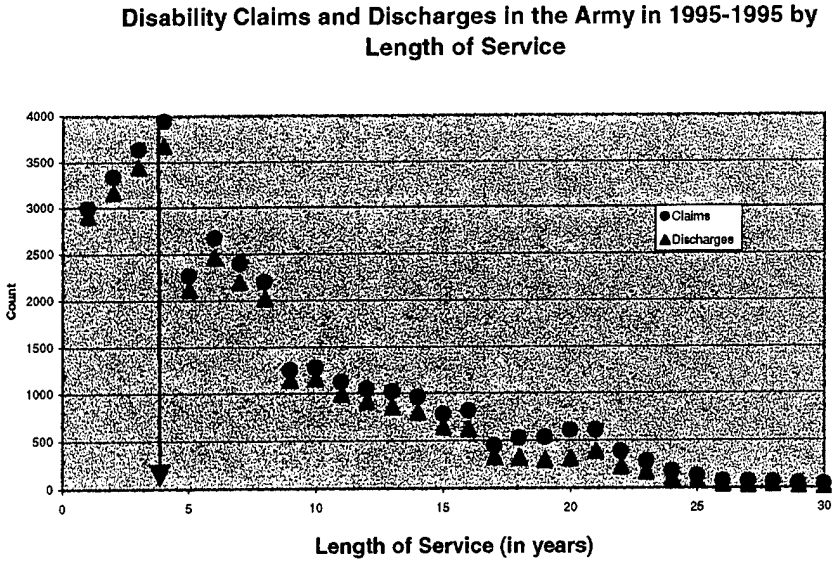


FIGURE 2.1. Length of service (in years) versus number of disability claims and discharges in 1995–1999. Note highest peak is at 4 years (*arrow*).
Note that there were 40 disability claims by individuals with length of service of over 30 years.

Tables 2.7 and 2.8 show the most common disability Army and Air Force diagnoses coded using the Veteran Benefits Administration Department of Veterans Affairs VASRD codes.

Table 2.7 shows the most common diagnoses for a disability discharge in the Army separately for discharges occurring within the first 4 years of service (about 45% of disability claims and discharges occur within that time period) and for any length of service. Most disability discharges are due to conditions of the musculoskeletal system and muscle injuries.

TABLE 2.7. MOST COMMON DIAGNOSES FOR DISABILITY DISCHARGES IN THE ARMY FOR 1995–1999

Diagnosis	All discharges		Discharges within 4 years of service		% discharges within 4 years out of all discharges within diagnosis category
	Count	%	Count	%	
Musculoskeletal system, muscle injuries	20,951	81.7	9,319	86.5	44.5
Psychotic[1], organic mental[2] and psychoneurotic[3] disorders	1,508	5.9	425	3.9	28.2
Diseases of trachea and bronchi	1,389	5.4	661	7.1	47.6
Organic diseases of CNS	927	3.6	206	1.9	22.2
Endocrine system	444	1.7	130	1.2	29.3
Diseases of eye, impairment of muscle function	213	0.8	74	0.7	34.7
Diseases of genitourinary system	195	0.8	33	0.3	16.9
Epilepsy	10	0.0	3	0.0	30.0
Total	25,637		10,851		

Table 2.8 shows the most common diagnoses for disability discharge in the Air Force. Compared with the Army, the percent of musculoskeletal problems in the Air Force is significantly lower, and psychotic and psychoneurotic disorders constitute a large portion of all disability discharges.

TABLE 2.8. DIAGNOSES FOR DISABILITY DISCHARGES IN AIR FORCE IN 1995–1999

Diagnosis	Count	%
Musculoskeletal system, muscle injuries	2,256	49.3
Psychotic[1], mental organic[2] and psychoneurotic[3] disorders	1,122	24.6
Diseases of trachea and bronchi	498	10.9
Organic diseases of CNS	268	5.9
Endocrine system	196	4.3
Epilepsies	81	1.8
Diseases of eye, impairment of muscle function	75	1.6
Diseases of genitourinary system	73	1.6
Total	4,569	100.0

[1] Psychotic disorders include schizophrenia, bipolar disorder, major depression, paranoid disorders and psychoses.

[2] Organic mental disorders constitute various dementias.

[3] Psychoneurotic disorders encompass generalized anxiety disorders, psychogenic amnesia, psychogenic fugue, multiple personality, conversion disorder, psychogenic pain disorder, phobic, obsessive compulsive, dysthymic, adjustment, depersonalization and post-traumatic disorders and hypochondriasis.

3. DESCRIPTIVE STATISTICS FOR ENLISTED PERSONNEL WITH ACCESSION RECORDS

Summary statistics on data for enlisted personnel gained in 1995–1999 are presented with the following conventions.

- All merging of data sets to derive percentages and rates was performed at an individual level by SSN. For example, in presenting the percentage of individuals accessed in 1998 who received a discharge, only those discharges with SSN matching a 1998 accession record SSN were included.
- All references to dates refer to calendar year.
- Reference to "all applicants" refers to those who had a physical examination at MEPS. Applicants who were dropped from consideration before the medical exam (e.g., those who failed the AFQT) are not included.
- Totals may vary slightly among tables depending on the variable by which percentages or rates are presented. Records with a missing variable relevant to a given table are not included in that table.
- Education level at the time of application at MEPS is used under "MEPS/Gain" and "Waivers." For "Hospitalizations," "Existed Prior to Service Discharges," and "Disability Discharges in Army and Air Force," education level at time of accession is used.
- Age is from time of application at MEPS under "MEPS/Gain" and "Waivers" and from accession onto active duty under "Hospitalization," "Existed Prior to Service Discharges," and "Disability Discharges in Army and Air Force."
- All enlisted personnel statistics are for those on active duty only. Reserve and National Guard are excluded.
- Accession numbers in "Hospitalizations," "Existed Prior to Service Discharges," and "Disability Discharges in Army and Air Force" differ slightly to accommodate imperfect data: any event reported to have occurred before entry onto active duty was deleted. This elimination resulted in deletion of only 0.2% of the records.

MEPS/Gain

More than 1,120,000 applicants for the enlisted services were examined for medical fitness at MEPSs in 1995–1999. Data on these applicants were merged with gain data provided by DMDC to examine accession patterns. At least 61.2% of the applicants in 1995–1999 were admitted and subsequently gained into active duty during the same time; 12.3% of all applicants were physically disqualified and did not access. The percentage of applicants who accessed may be underestimated, and the percent that did not access overestimated because gain data for 1997 appear to be incomplete. In addition, some of those individuals receiving a medical examination at MEPS in 1999 would not be expected to begin active duty until sometime in 2000, thus reducing the calculated

accession rates. At the time these analyses were performed, gain data were available through the first quarter of 2000.

TABLE 3.1. ACCESSIONS FOR ENLISTED APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1995–1999

	Total	%
All applicants	1,126,041	100.0
Applicants who accessed	688,580	61.2*
Did not access, physically disqualified	138,897	12.3
Did not access, but physically qualified	298,564	26.5†

* May be underestimate because DMDC gain data for the Army in 1997 appear to be incomplete.
† May be overestimate because DMDC gain data for the Army in 1997 appear to be incomplete. Also, some of these were gained into the reserves.

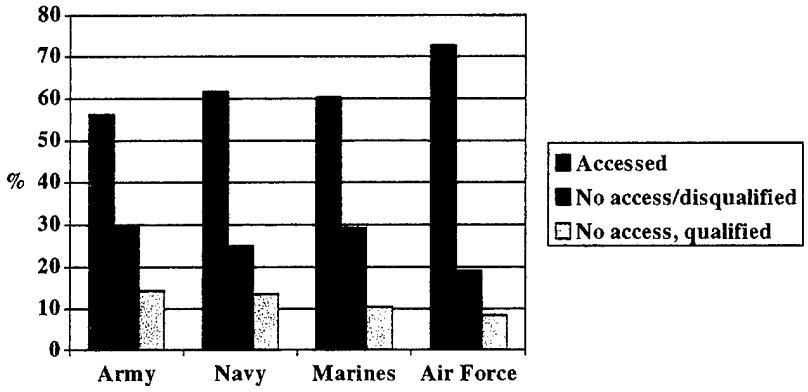


FIGURE 3.1. ENLISTED APPLICANTS AT MEPS IN 1995–1999 BY ACCESSION AND QUALIFICATION STATUS BY SERVICE. n = 1,126,041.

TABLE 3.2. ACCESSIONS FOR ENLISTED APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1995–1999 BY SERVICE

Service	All applicants	Applicants who accessed		Applicants who did not access and were physically disqualified		Applicants who did not access but were physically qualified	
		Count	%	Count	%	Count	%
Army	436,663	245,619	56.2	62,258	14.3	128,786	29.5
Air Force	184,805	134,493	72.8	15,464	8.4	34,848	18.9
Marines	220,001	132,834	60.4	23,030	10.5	64,137	29.2
Navy	284,571	175,634	61.7	38,145	13.4	70,792	24.9

Table 3.3 shows applicants and subsequent accessions by year of medical examination. Most accessions occur within the first year of application.

TABLE 3.3. ACCESSIONS WITHIN 1, 2, AND 3 YEARS OF APPLICATION FOR ENLISTED APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1995–1999

Year of exam	Applicants	No. within 1 year of application	% within 1 year of application	No. within 2 years of application	% within 2 years of application	No. within 3 years of application	% within 3 years of application
1995	226,628	142,924	63.1	152,883	67.5	154,545	68.2
1996	243,203	152,092	62.5	161,136	66.3	163,102	67.1
1997	222,974	120,171	53.9	130,115	58.4	131,088	58.8*
1998	204,586	129,224	63.2	136,622	66.8	NA	NA
1999	228,650	101,309	44.3	NA	NA	NA	NA

* Underestimate.

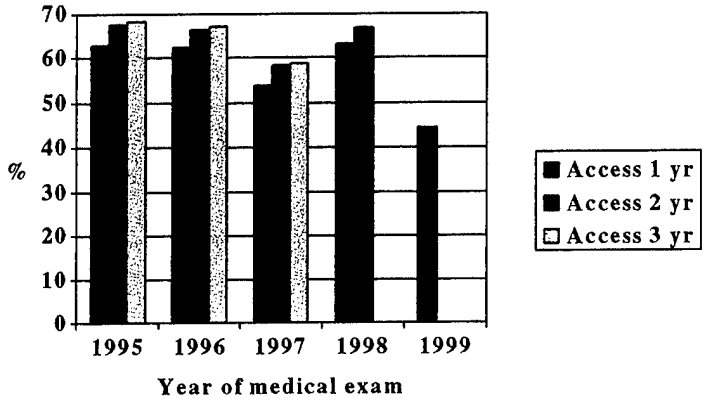


FIGURE 3.2. CUMULATIVE PERCENTAGE OF ACCESSIONS WITHIN 1, 2, AND 3 YEARS OF APPLICATION FOR ENLISTMENT FOR THOSE RECEIVING A MEDICAL EXAM, 1995–1999.
n = 1,126,041.

Demographic features of those who were gained into enlisted service in 1995–1999 are shown in Tables 3.4–3.7. Applicants are mostly male (79.8%) and white (70.4%) and are between ages 17 and 20 (72.4%).

Males made up a somewhat greater percentage of the accessed population than the applicant population (82.0% of accessions versus 79.8% of applications). Accession percentages did not differ from application percentages by age group and differed slightly by race and AFQT score. The difference by AFQT score may be partly due to rules governing accession of applicants with lower scores. The most pronounced difference occurred in education level percentages because many applicants are in high school at the time of application but have completed high school by the time of accession.

TABLE 3.4. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A MEDICAL EXAMINATION IN 1995–1999: GENDER (%)

Gender	All applicants	Applicants who accessed	Did not access, physically disqualified	Did not access, but physically qualified
Male	79.8	82.0	76.3	76.6
Female	20.2	18.0	23.7	23.4

TABLE 3.5. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A MEDICAL EXAMINATION IN 1995–1999: AGE (%)

Age at examination	All applicants	Applicants who accessed	Did not access, physically disqualified	Did not access, but physically qualified
17–20 yr	72.4	72.8	68.7	73.4
21–25 yr	22.1	22.6	24.1	19.9
26–30 yr	4.4	3.8	5.6	5.2
>30 yr	1.1	0.8	1.7	1.5

TABLE 3.6. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A MEDICAL EXAMINATION IN 1995–1999: RACE (%)

Race	All applicants	Applicants who accessed	Did not access, physically disqualified	Did not access, but physically qualified
White	70.4	70.6	69.8	70.4
Black	19.4	19.0	21.1	19.7
Other	10.1	10.4	9.1	9.9

Most applicants (63.6%) had a high school diploma, and about 29% were high school seniors at the time of application (Table 3.7). A higher percentage (70.7%) of those who accessed had a high school diploma at the time of application.

TABLE 3.7. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A MEDICAL EXAMINATION IN 1995–1999: EDUCATION LEVEL (%)

Education level	All applicants	Applicants who accessed	Did not access, physically disqualified	Did not access, but physically qualified
Less than HS senior*	2.8	2.3	3.6	3.5
HS senior	29.1	22.6	32.2	42.8
HS diploma	63.6	70.7	60.0	48.9
Some college	2.3	2.5	2.0	2.0
Bachelor's	2.0	1.8	2.0	2.6
Graduate	0.1	0.1	0.1	0.2

* "Less than HS senior" encompasses the following three cases: 1) one who is currently pursuing completion of the GED diploma or other test-based high school equivalency diploma, vocational school, or secondary school, etc; 2) one who is not currently attending high school and who is neither a high school graduate or an alternative high school credential holder; 3) one who is currently attending HS and is not yet a high school senior.

According to Table 3.7 about 25% of applicants accessed without a high school diploma. This is because education level is determined at the time of application rather than when an applicant came onto active duty. By the time of accession the education level had mostly likely changed.

Table 3.8 shows the AFQT percentile scores of all applicants who received a medical examination. Category 1 includes those in the 93–99 percentile range; category 2 is for the 65–92 percentile range, etc. The percentage of applicants in the lowest category (1–30) is small, reflecting that a low AFQT score is often used as grounds for halting the application before the more expensive medical examination is performed (per MEPCOM).

TABLE 3.8. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A MEDICAL EXAMINATION IN 1995–1999: AFQT CATEGORY (%)

Percentile score	All applicants	Applicants who accessed	Did not access, physically disqualified	Did not access, but physically qualified
93–99	3.1	1.4	4.1	6.6
65–92	30.9	30.1	33.2	31.5
50–64	27.4	28.0	27.6	26.1
31–49	34.4	36.0	31.5	31.9
1–30	4.2	4.5	3.6	4.0

Table 3.9 shows the MEPS medical disqualification counts and percentages (number disqualified for a particular cause divided by number of disqualifications) according to the primary disqualification cause. The most common cause for 1995–1999 was weight, followed by history of *Cannabis* use and problems in the lungs/chest.

TABLE 3.9. MEPS MEDICAL FAILURE CODES BY CAUSE

Cause	1995–1999		1995		1996		1997		1998		1999	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Weight	40,382	19.6	5,065	15.0	8,025	19.4	8,748	20.2	8,924	20.6	9,620	21.9
Cannabis	29,449	14.3	2,934	8.7	4,014	9.7	6,718	15.5	7,343	16.9	8,440	19.2
Lungs/chest	14,164	6.9	2,741	8.1	3,027	7.3	2,835	6.6	2,852	6.6	2,709	6.2
Audiometer	13,516	6.6	2,520	7.5	2,687	6.5	2,425	5.6	2,516	5.8	3,368	7.7
Lower extremities	12,526	6.1	2,626	7.8	2,709	6.6	2,490	5.8	2,479	5.7	2,222	5.1
Feet	9,135	4.4	2,071	6.1	1,874	4.5	1,724	4.0	1,906	4.4	1,560	3.5
Skin/lymphatics	8,569	4.2	1,413	4.2	1,917	4.6	1,809	4.2	1,822	4.2	1,608	3.7
Blood pressure	6,884	3.3	887	2.6	1,940	4.7	1,865	4.3	1,141	2.6	1,051	2.4
Other psychiatric failure	6,418	3.1	2,028	6.0	990	2.4	359	0.8	1,570	3.6	1,471	3.3
Upper extremities	6,378	3.1	1,302	3.9	1,337	3.2	1,315	3.0	1,256	2.9	1,168	2.7
Refraction	6,095	3.0	1,193	3.5	1,293	3.1	1,247	2.9	1,065	2.5	1,297	2.9
Genitourinary system	4,848	2.4	879	2.6	1,065	2.6	964	2.2	981	2.3	959	2.2
Abdomen/viscera	4,511	2.2	829	2.5	984	2.4	899	2.1	928	2.1	871	2.0
Other tests	4,204	2.0	795	2.4	817	2.0	837	1.9	985	2.3	770	1.8
Spine/other musculature	3,761	1.8	917	2.7	785	1.9	745	1.7	758	1.7	556	1.3
Cocaine	3,595	1.7	446	1.3	579	1.4	744	1.7	920	2.1	906	2.1
Neurologic	3,309	1.6	666	2.0	701	1.7	597	1.4	711	1.6	634	1.4
Psychiatric	3,069	1.5	152	0.4	1,119	2.7	1,505	3.5	289	0.7	4	0.0
Pelvic—female	2,434	1.2	602	1.8	654	1.6	497	1.2	380	0.9	301	0.7
Pulse	2,359	1.1	142	0.4	523	1.3	763	1.8	485	1.1	446	1.0
Heart	2,120	1.0	472	1.4	486	1.2	399	0.9	386	0.9	377	0.9
Total*	205,651	100	33,804	100	41,306	100	43,212	100	43,354	100	43,975	100

* Note that the sum of failure categories is less than the total of all disqualifications because uncommon disqualifications are not included.

Waivers

Applicants medically disqualified at the MEPS may receive an accession waiver for the disqualifying condition(s) from a service-specific waiver authority.

Table 3.10 shows accessions within 1 and 2 years of waiver application. Most accessions occur within the first year of waiver application.

TABLE 3.10. ACCESSIONS WITHIN 1 AND 2 YEARS OF APPLICATION FOR ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1995–1999 BY YEAR

Year of medical exam	Applicants with waivers granted	Applicants who accessed within 1 year of application		Applicants who accessed within 2 years of application	
		Count	%	Count	%
1995	5,701	4,104	72.0	4,256	74.7
1996	6,748	4,844	71.8	5,031	74.6
1997	6,566	3,863	58.8	3,993	60.8
1998	6,991	5,139	73.5	5,251	75.1
1999	8,383	4,950	59.0	NA	NA

Table 3.11 and figure 3.3 show waiver approvals and subsequent accession and losses within 1 and 2 years of accession.

TABLE 3.11. ACCESSIONS, EPTS DISCHARGES, AND OTHER SEPARATIONS FOR ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1995–1999 BY SERVICE

Service	Applicants with waivers granted	Applicants who accessed		EPTS discharges for any condition		Losses within 1 year of accession		Losses within 2 years of accession	
		Count	Access rate	Count	Loss rate	Count	Loss rate	Count	Loss rate
Army	17,312	11,369	65.7	843	7.4	2,434	21.4	2,983	26.2
Navy	8,653	6,101	70.5	519	8.5	1,308	21.4	1,584	26.0
Marines	5,647	3,970	70.3	173	4.4	555	14.0	685	17.3
Air Force	2,777	2,230	80.3	81	3.6	284	12.7	346	15.5

Compared with the general population, EPTS discharge rates are higher for the applicants who received a waiver. EPTS discharge rates for the general population follow: Army 4.4%, Navy 5.6%, Marines 3.6%, Air Force 3.2% (Table 3.31).

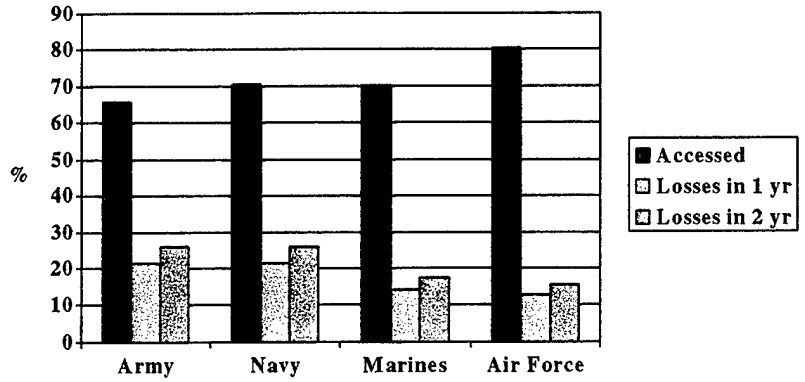


FIGURE 3.3. ENLISTED APPLICANTS WHO RECEIVED A WAIVER BY SERVICE, 1995–1999. *n* = 34,389.

Tables 3.12–3.16 show waiver counts, percent accessed, and odds ratios by demographic features for 1995–1999. Among those granted a waiver, females were significantly less likely to access than males (Table 3.12: odds ratio 0.71; 95% CI, 0.68–0.76). Those aged 21–25 were significantly more likely to access than those aged 17–20 (Table 3.13: odds ratio 1.09; 95% CI, 1.03–1.13), whereas those older than 30 were significantly less likely to access than those aged 17–20 (Table 3.13: odds ratio 0.69; 95% CI, 0.57, 0.84). There were no significant differences among races. Those with at least a high school education were more likely to access than those without, and those with AFQT scores below the 30th percentile were less likely to access than those at or above the 30th percentile.

TABLE 3.12. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1995–1999: GENDER

Gender	Applicants with waivers granted		Applicants who accessed		Applicants who did not access		Odds ratio (vs male)	95% CI
	Count	%	Count	%	Count	%		
Male	27,967	81.4	19,629	83.0	8,338	77.8	1.00	
Female	6,396	18.6	4,012	17.0	2,384	22.2	0.71	0.68, 0.76

TABLE 3.13. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1995–1999: AGE

Age	Applicants with waivers granted		Applicants who accessed		Applicants who did not access		Odds ratio (vs 17–20)	95% CI
	Count	%	Count	%	Count	%		
17–20 yr	20,582	66.2	14,025	66.1	6,557	66.4	1.00	
21–25 yr	8,348	26.8	5,848	27.5	2,500	25.3	1.09	1.03, 1.16
26–30 yr	1,727	5.6	1,092	5.1	635	6.4	0.80	0.73, 0.89
>30 yr	444	1.4	265	1.2	179	1.8	0.69	0.57, 0.84

TABLE 3.14. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1995–1999: RACE

Race	Applicants with waivers granted		Applicants who accessed		Applicants who did not access		Odds ratio (vs white)	95% CI
	Count	%	Count	%	Count	%		
White	25,002	72.7	17,163	72.5	7,839	73.2	1.00	
Black	6,328	18.4	4,374	18.5	1,954	18.2	1.02	0.96, 1.09
Other	3,046	8.9	2,127	9.0	919	8.6	1.06	0.97,1.15

TABLE 3.15. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1995–1999: EDUCATION LEVEL AT APPLICATION

Education level	Applicants with waivers granted		Applicants who accessed		Applicants who did not access		Odds ratio (vs HS)	95% CI
	Count	%	Count	%	Count	%		
HS	22,460	65.3	16,632	70.3	5,828	54.4	1.00	
Less than HS senior	795	2.3	483	2.0	312	2.9	0.54	0.47, 0.63
HS senior	9,289	27.0	5,304	22.4	3,985	37.2	0.47	0.44, 0.49
Some college	792	2.3	571	2.4	221	2.1	0.80	0.73, 0.89
Bachelor's	971	2.8	617	2.6	354	3.3		
Graduate	71	0.2	56	0.2	15	0.1		

TABLE 3.16. DEMOGRAPHIC CHARACTERISTICS OF ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1995–1999: AFQT CATEGORY

Percentile score	Applicants with waivers granted		Applicants who accessed		Applicants who did not access		Odds ratio (vs category 1)	95% CI
	Count	%	Count	%	Count	%		
93–99	1,942	5.7	1,302	5.5	640	6.0	1.00	
65–92	12,685	36.9	8,803	37.2	3,882	36.3	1.11	1.01, 1.23
50–64	9,531	27.8	6,637	28.1	2,894	27.1	1.13	1.02, 1.25
31–49	9,818	28.6	6,714	28.4	3,104	29.1	1.06	0.96, 1.18
01-30	365	1.1	203	0.9	162	1.5	0.62	0.49, 0.77

Table 3.17 shows top ten diagnoses for waivers granted from 1997 through 1999 sorted by total counts in each category. Low counts for the Air Force possibly reflect stricter guidelines for waiving certain conditions and/or data quality. Most conditions described are classified according to draft DoD Instruction 6130.4.

TABLE 3.17. TOP 10 DIAGNOSES FOR WAIVERS GRANTED FROM 1997 TO 1999 BY SERVICE

Diagnosis	Service	1997	1998	1999
Asthma	Army	243	290	412
	Navy/Marines	175	310	666
	Air Force	30	21	22
Knee	Army	185	161	356
	Navy/Marines	174	488	632
	Air Force	48	49	96
Hearing loss	Army	476	337	514
	Navy/Marines	173	333	390
	Air Force	1	1	0
Hypertensive vascular disease	Army	371	193	66
	Navy/Marines	119	177	142
	Air Force	1	0	0
Myopia	Army	368	393	433
	Navy/Marines	50	87	119
	Air Force	136	93	109
ADHD	Army	45	62	56
	Navy/Marines	50	131	146
	Air Force	31	39	25
Pes planus, congenital or acquired	Army	242	250	254
	Navy/Marines	165	148	146
	Air Force	64	65	55
Tachycardia	Army	166	74	95
	Navy/Marines	94	119	111
	Air Force	1	0	0
Dermatitis, eczema, psoriasis	Army	161	112	147
	Navy/Marines	45	116	181
	Air Force	11	5	4
Depressive disorder	Army	48	15	47
	Navy/Marines	0	0	0
	Air Force	0	0	0
Dysplasia of cervix	Army	42	46	33
	Navy/Marines	0	0	0
	Air Force	36	3	0
Total	Army	3,658	3,198	3,881
	Navy/Marines	2,483	4,447	5,555
	Air Force	765	551	558

Conditions presented appeared in any of the three first diagnosis fields. Numbers are sorted by total category counts. DoD diagnosis codes are used in the Navy, whereas ICD9 codes are used in the Army and Air Force for 1997–1999. Most of the categories in the table have an associated DoD code, others combine several codes.

Hospitalizations

Counts of hospital visits (multiple hospitalizations of an individual are counted as separate records) as well as number of persons hospitalized within 1 and 2 years of accession are shown in Tables 3.18–3.30.

Army enlistees are more likely to be hospitalized than members of other services. Females are more likely to be hospitalized than males, and older recruits have a higher likelihood of hospitalization. Whites are less likely to be hospitalized than blacks but have higher hospitalization likelihood than other races. There is no significant difference in hospitalization likelihood between recruits with just a high school diploma and those with at least some college. Finally, there is a higher likelihood of hospitalization for recruits scoring in the 31–92 AFQT range compared with those in the 93–99 percentiles.

TABLE 3.18. HOSPITAL ADMISSIONS WITHIN 1 YEAR OF ACCESSION FOR ENLISTED PERSONNEL ACCESSED 1995–1999: SERVICE

Service	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
Army	287,197	22,579	17,010	5.9	1.00	
Navy	201,707	9,348	7,739	3.8	0.65	0.63, 0.67
Marines	154,346	6,907	5,648	3.7	0.62	0.60, 0.64
Air Force	155,467	8,456	7,014	4.5	0.76	0.74, 0.78

TABLE 3.19. HOSPITAL ADMISSIONS WITHIN 1 YEAR OF ACCESSION FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: GENDER

Gender	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
Male	655,125	33,970	27,232	4.2	1.00	
Female	142,018	13,105	10,023	7.1	1.70	1.66, 1.74

TABLE 3.20. HOSPITAL ADMISSIONS WITHIN 1 YEAR OF ACCESSION FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: AGE

Age	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
17–20 yr	549,207	28,134	24,210	4.4	1.00	
21–25 yr	204,421	12,497	10,632	5.2	1.18	1.15, 1.21
26–30 yr	36,022	2,409	2,019	5.6	1.27	1.22, 1.33
>30 yr	8,841	644	532	6.0	1.37	1.26, 1.48

TABLE 3.21. HOSPITAL ADMISSIONS WITHIN 1 YEAR OF ACCESSION FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: RACE

Race	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
White	565,610	33,494	26,633	4.7	1.00	
Black	150,537	9,593	7,415	4.9	1.05	1.02, 1.07
Other	81,924	4,164	3,336	4.1	0.86	0.83, 0.90

TABLE 3.22. HOSPITAL ADMISSIONS WITHIN 1 YEAR OF ACCESSION FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: EDUCATION LEVEL

Education level	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
HS	716,886	41,868	33,352	4.7	1.00	
HS senior	24,635	1,217	1,014	4.1	0.88	0.83, 0.94
Some college	25,804	1,510	1,243	4.8	1.00	0.96, 1.05
Bachelor's	12,291	711	552	4.5		
Graduate	869	34	23	2.6		

TABLE 3.23. HOSPITAL ADMISSIONS WITHIN 1 YEAR OF ACCESSION FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: AFQT SCORE

AFQT score	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
93–99	35,489	1,905	1,536	4.3	1.00	
65–92	286,171	16,637	13,359	4.7	1.08	1.02, 1.14
50–64	223,400	14,112	11,098	5.0	1.15	1.09, 1.21
31–49	236,486	13,892	10,855	4.6	1.06	1.01, 1.12
01–30	9,841	553	417	4.2	0.98	0.88, 1.09

Tables 3.24–3.29 describe hospital admissions and persons hospitalized within 2 years of service. The patterns are the same as for the 1-year period.

TABLE 3.24. HOSPITAL ADMISSIONS WITHIN 2 YEARS OF SERVICE FOR ENLISTED PERSONNEL ACCESSED 1995–1999: SERVICE

Service	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
Army	287,197	36,490	25,981	9.0	1.00	
Navy	201,707	16,108	12,589	6.2	0.69	0.68, 0.70
Marines	154,346	12,349	9,472	6.1	0.68	0.66, 0.69
Air Force	155,467	14,347	11,190	7.2	0.80	0.78, 0.81

TABLE 3.25. HOSPITAL ADMISSIONS WITHIN 2 YEARS OF SERVICE FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: GENDER

Gender	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
Male	655,125	51,408	39,291	6.0	1.00	
Female	142,018	27,522	19,703	13.9	2.31	2.28, 2.35

TABLE 3.26. HOSPITAL ADMISSIONS WITHIN 2 YEARS OF SERVICE FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: AGE

Age	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
17–20 yr	549,207	47,090	38,818	7.1	1.00	
21–25 yr	204,421	20,275	16,595	8.1	1.15	1.13, 1.17
26–30 yr	36,022	3,758	3,033	8.4	1.19	1.15, 1.23
>30 yr	8,841	961	758	8.6	1.21	1.13, 1.30

TABLE 3.27. HOSPITAL ADMISSIONS WITHIN 2 YEARS OF SERVICE FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: RACE

Race	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
White	565,610	54,515	41,033	7.3	1.00	
Black	150,537	17,704	12,830	8.5	1.17	1.15, 1.20
Other	81,924	7,009	5,326	6.5	0.90	0.87, 0.92

TABLE 3.28. HOSPITAL ADMISSIONS WITHIN 2 YEARS OF SERVICE FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: EDUCATION LEVEL

Education level	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
HS graduate	716,886	70,695	52,954	7.4	1.00	
HS senior	24,635	1,788	1,455	5.9	0.80	0.76, 0.84
Some college	25,804	2,759	2,117	8.2	1.04	1.01, 1.08
Bachelor's	12,291	1,129	843	6.9		
Graduate	869	53	39	4.5		

TABLE 3.29. HOSPITAL ADMISSIONS WITHIN 2 YEARS OF SERVICE FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999: AFQT SCORE

Percentile score	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
93–99	35,489	2,987	2,257	6.4	1.00	
65–92	286,171	27,633	20,954	7.3	1.15	1.10 1.20
50–64	223,400	24,027	17,815	8.0	1.25	1.20 1.31
31–49	236,486	23,510	17,380	7.3	1.16	1.11, 1.21
01-30	9,841	838	604	6.1	0.97	0.88, 1.05

Table 3.30 shows the most common medical reasons for hospital visits by diagnostic category within 1 and 2 years of service. The top three are certain psychiatric disorders (which accounted for almost 22% of all hospitalizations within 1 year of service), injuries, and dysfunctions of the oral cavity.

TABLE 3.30. HOSPITAL ADMISSIONS AND PERSONS HOSPITALIZED WITHIN 1 AND 2 YEARS OF SERVICE BY MEDICAL CATEGORY FOR ENLISTED PERSONNEL ACCESSED IN 1995–1999

Medical category	Within 1 year of accession		Within 2 years of accession	
	Hospital admissions	Persons hospitalized	Hospital admissions	Persons hospitalized
Neurotic, personality, and other mental disorders	10,338	8,098	13,681	10,306
Injuries	5,355	4,356	9,288	7,209
Dysfunction of oral cavity, salivary glands, and jaws	2,373	2,034	3,593	2,902
Acute respiratory infection	2,152	1,754	2,369	1,915
Other psychoses	1,888	1,346	2,698	1,743
Pneumonia and influenza	1,863	1,582	2,024	1,700
Alcohol and drug dependence	1,813	1,330	3,473	2,404
Symptoms, signs and other ill-defined conditions	1,777	1,298	2,613	1,808
Infections of skin and subcutaneous tissue	1,588	1,345	2,136	1,753
Other diseases due to viruses and chlamydia	1,479	1,220	1,692	1,374
Complications of pregnancy	1,442	1,069	10,624	7,635
Hernia of abdominal cavity	1,059	919	1,483	1,227
Other diseases of respiratory tract	1,050	827	1,806	1,358
Noninfectious enteritis	920	711	1,220	916
Chronic obstructive pulmonary disease and allied conditions	839	656	958	731
Appendicitis	786	687	1,357	1,126
Arthropathies and related disorders	786	627	2,232	1,654
Viral diseases accompanied by exanthem	718	607	837	698
Other bacterial diseases	613	494	672	540
Other diseases of urinary tract	602	453	960	697
Total	47,290	37,411	79,294	59,232

EPTS Discharges

Only EPTS records with the corresponding accession record are included in this section. More than 60% of EPTS records for the Army in 1997 had a gain record because of incomplete Army data (Fig. 3.4). However, the missing gain data should not affect the EPTS discharge rates, under the assumption that those with a missing and present gain record are no different.

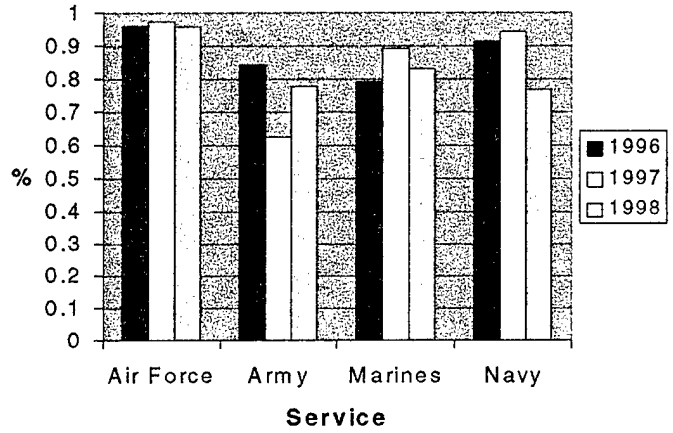


FIGURE 3.4. PERCENTAGE OF EPTS RECORDS WITH CORRESPONDING GAIN RECORD BY SERVICE AND YEAR.

Tables 3.31–3.38 summarize discharges for EPTS conditions in 1995–1999. EPTS percentages are shown by service, demographic characteristics, and academic variables. Percentages of those discharged are shown for each category, and relative risks are used to compare categories.

Table 3.31 shows percentages of accessions ending in EPTS discharge by service. From the relative risks it can be seen that the percentage of accessions resulting in EPTS discharge was higher in the Navy than the Army, whereas the Marines and Air Force had significantly lower rates. Data completeness varies among services, preventing conclusions from the comparisons by service.

TABLE 3.31. PERCENTAGE OF ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1995–1999

	Total accessed	Discharged	% Discharged	Relative risk	95% CI
Army	287,328	12,694	4.4	1.00	
Navy	201,629	11,308	5.6	1.27	1.24, 1.30
Marines	154,249	5,530	3.6	0.81	0.79, 0.84
Air Force	155,433	4,899	3.2	0.71	0.69, 0.74

Tables 3.32–3.34 show percentages by gender, race, and age at medical examination. From the relative risks, females had a higher likelihood of EPTS discharge than males; older recruits had a higher likelihood than those aged 17–20; and nonwhites had lower likelihood than whites.

TABLE 3.32. PERCENTAGE OF ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1995–1999: GENDER

Gender	Total accessed	Discharged	% Discharged	Relative risk	95% CI
Male	655,040	26,177	4.0	1.00	
Female	142,021	8,192	5.8	1.44	1.41, 1.48

TABLE 3.33. PERCENTAGE OF ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1995–1999: AGE

Age	Total accessed	Discharged	% Discharged	Relative risk	95% CI
17–20 yr	548,992	23,089	4.2	1.00	
21–25 yr	204,489	9,230	4.5	1.07	1.05, 1.10
26–30 yr	36,078	1,700	4.7	1.12	1.07, 1.18
>30 yr	8,857	410	4.6	1.10	1.00,1.21

TABLE 3.34. PERCENTAGE OF ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1995–1999: RACE

Race	Total accessed	Discharged	% Discharged	Relative risk	95% CI
White	565,512	26,445	4.7	1.00	
Black	150,553	5,444	3.6	0.77	0.75, 0.80
Other	81,919	2,536	3.1	0.66	0.64, 0.69

Table 3.35 shows the percentages according to education level at the time of application. Those with at least some college had a significantly lower likelihood of EPTS discharge than those with high school diploma only.

TABLE 3.35. PERCENTAGE OF ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1995–1999: EDUCATION LEVEL

Education level	Total accessed	Discharged	% Discharged	Relative risk	95% CI
HS diploma	716,802	31,338	4.4	1.00	
HS senior	24,626	1,202	4.9	1.12	1.06, 1.18
Some college	25,793	726	2.8	0.65	0.61, 0.69
Bachelor's	12,291	355	2.9		
Graduate	869	26	3.0		

Recruits with lower AFQT scores had a higher likelihood of EPTS discharge than those scoring higher (Table 3.36).

TABLE 3.36. PERCENTAGE OF ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1995–1999: AFQT CATEGORY

Percentile score	Total accessed	Discharged	% Discharged	Relative risk	95% CI
93–99	35,492	1,090	3.1	1.00	
65–92	286,139	11,154	3.9	1.27	1.19, 1.35
50–64	223,355	10,296	4.6	1.50	1.41, 1.60
31–49	236,427	11,344	4.8	1.56	1.47, 1.66
01–30	9,843	477	4.8	1.58	1.42, 1.75

EPTS discharges were summarized by medical category for accession years 1996–1999 (Table 3.37). Orthopedic conditions were the most common, followed by psychiatric and chest and lungs.

TABLE 3.37. EPTS DISCHARGE PERCENTAGES BY MEDICAL CATEGORY FOR ENLISTED PERSONNEL IN 1996–1999

Medical category	Count	%
Psychiatric—other	8,288	24.1
Chest and lungs—asthma	4,686	13.6
Orthopedic— other	3,576	10.4
Orthopedic—knee	3,543	10.3
Orthopedic—feet	3,215	9.3
Orthopedic—back	2,631	7.6
Other	1,609	4.7
Neurology—other	1,225	3.6
Genitourinary system	1,046	3.0
Vision/refraction	851	2.5
Abdomen and viscera	772	2.2
Cardiovascular—other	616	1.8
Chest and lungs—other	505	1.5
Skin and lymphatics	487	1.4
Neurology—seizure disorder	348	1.0
Hearing	335	1.0
Ears—other	212	0.6
Hypertension	203	0.6
Eyes—other	201	0.6
Psychiatric—schizophrenia	72	0.2
Total	34,431	100.0

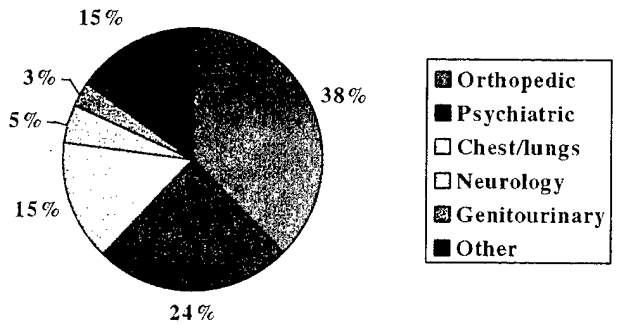


FIGURE 3.5. TOP FIVE MEDICAL CATEGORIES FOR ENLISTED EPTS DISCHARGES, 1995–1999. *n* = 34,431.

Results for 1999, the most recent year, are presented in Table 3.38. For analogous information from previous years refer to the 1999 AMSARA Annual Report.

TABLE 3.38. EPTS DISCHARGE PERCENTAGES BY MEDICAL CATEGORY FOR ENLISTED PERSONNEL IN 1999 BY SERVICE

Medical category	Army		Navy		Marines		Air Force	
	Count	%	Count	%	Count	%	Count	%
Orthopedic—other	399	14.8	160	7.1	133	12.8	101	11.7
Orthopedic—feet	397	14.7	59	2.6	43	4.2	77	8.9
Asthma	358	13.3	355	15.7	122	11.8	173	20.0
Orthopedic—knee	344	12.8	139	6.1	80	7.7	156	18.0
Psychiatric—other	333	12.4	799	35.3	329	31.8		0.0
Orthopedic—back	285	10.6	85	3.8	34	3.3	107	12.4
Other	115	4.3	106	4.7	84	8.1	63	7.3
Genitourinary system	82	3.0	74	3.3	24	2.3	24	2.8
Chest and lungs—other	58	2.2	38	1.7	25	2.4	20	2.3
Abdomen and viscera	54	2.0	39	1.7	20	1.9	19	2.2
Neurology—other	48	1.8	109	4.8	20	1.9	58	6.7
Eyes—vision/refraction	39	1.4	60	2.7	14	1.4	14	1.6
Skin and lymphatics	32	1.2	43	1.9	17	1.6	14	1.6
Seizure disorder	32	1.2	45	2.0	15	1.4	9	1.0
Ears—hearing	31	1.2	19	0.8	29	2.8	1	0.1
Cardiovascular—other	29	1.1	59	2.6	22	2.1	17	2.0
Eyes—other	28	1.0	52	2.3	13	1.3	10	1.2
Hypertension	26	1.0	7	0.3	7	0.7	1	0.1
Schizophrenia	5	0.2		0.0	2	0.2		0.0
Ears—other			16	0.7	3	0.3	1	0.1
Total	2,696	100.0	2,264	100.0	1,036	100.0	865	100.0

Disability Discharges for Army and Air Force

The Navy is excluded in this section because the complete data set is unavailable. Tables 3.39–3.44 summarize disability discharges from 1995 to 1999 within the first year of accession.

Females, whites, those with at least some college education had a higher likelihood of disability discharge than males. The likelihood of disability discharge also increased by age.

TABLE 3.39. PERCENTAGE OF ACTIVE DUTY ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1995–1999

Service	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
Army	287,387	1,118	0.4	1.00	
Air Force	155,492	639	0.4	1.06	0.96, 1.16

TABLE 3.40. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1995–1999: GENDER

Gender	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
Male	344,178	1,112	0.3	1.00	
Female	97,121	638	0.7	2.03	1.85, 2.24

TABLE 3.41. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1995–1999: AGE

Age	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
17–20 yr	291,579	1,062	0.4	1.00	
21–25 yr	122,522	545	0.4	1.22	1.1, 1.35
26–30 yr	23,098	120	0.5	1.43	1.18, 1.72
>30 yr	5,478	30	0.5	1.50	1.05, 2.16

TABLE 3.42. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1995–1999: RACE

Race	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
White	309,181	1,325	0.4	1.00	
Black	91,267	298	0.3	0.76	0.67, 0.86
Other	42,006	133	0.3	0.74	0.62, 0.88

TABLE 3.43. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1995–1999: EDUCATION LEVEL AT ACCESSION

Education level	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
HS diploma	374,949	1,498	0.4	1.00	
HS senior	18,393	61	0.3	0.83	0.64, 1.07
Some college	23,840	113	0.5	1.03	0.86, 1.22
Bachelor's	9,041	23	0.3		
Graduate	726	2	0.3		

TABLE 3.44. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1995–1999: AFQT SCORE

Percentile score	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
93–99	19,797	66	0.3	1.00	
65–92	160,136	663	0.4	1.24	0.96, 1.6
50–64	130,936	560	0.4	1.28	0.99, 1.65
31–49	121,528	444	0.4	1.10	0.85, 1.42
01-30	7,193	21	0.3	0.88	0.54, 1.43

Tables 3.45–3.50 show percentages of accessions that resulted in disability discharge within the first 2 years of accession among Army and Air Force enlisted personnel for 1995–1999. The patterns of disability discharges over the 2-year period were similar to the pattern over the 1-year period.

TABLE 3.45. PERCENTAGE OF ACTIVE DUTY ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 2 YEARS OF SERVICE IN 1995–1999

Service	Total accessed	Discharged within 2 years of accession	% Discharged	Relative risk	95% CI
Army	287,387	2,735	1.0	1.00	
Air Force	155,492	1,192	0.8	0.81	0.75, 0.86

TABLE 3.46. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 2 YEARS OF SERVICE IN 1995–1999: GENDER

Gender	Total accessed	Discharged within 2 years of accession	% Discharged	Relative risk	95% CI
Male	344,178	2,540	0.7	1.00	
Female	97,121	1,369	1.4	1.91	1.79, 2.04

TABLE 3.47. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 2 YEARS OF SERVICE IN 1995–1999: AGE

Age	Total accessed	Discharged within 2 years of accession	% Discharged	Relative risk	95% CI
17–20 yr	291,579	2,259	0.8	1.00	
21–25 yr	122,522	1,270	1.0	1.34	1.25, 1.43
26–30 yr	23,098	324	1.4	1.81	1.61, 2.03
>30 yr	5,478	74	1.4	1.74	1.39, 2.19

TABLE 3.48. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 2 YEARS OF SERVICE IN 1995–1999: RACE

Race	Total accessed	Discharged within 2 years of accession	% Discharged	Relative risk	95% CI
White	309,181	2,854	0.9	1.00	
Black	91,267	785	0.9	0.93	0.86, 1.01
Other	42,006	286	0.7	0.74	0.65, 0.83

TABLE 3.49. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 2 YEARS OF SERVICE IN 1995–1999: EDUCATION LEVEL AT ACCESSION

Education level	Total accessed	Discharged within 2 years of accession	% Discharged	Relative risk	95% CI
HS diploma	374,949	3,297	0.9	1.00	
HS senior	18,393	113	0.6	0.70	0.58, 0.84
Some college	23,840	241	1.0	1.07	0.96, 1.2
Bachelor's	9,041	70	0.8		
Graduate	726	6	0.8		

TABLE 3.50. PERCENTAGE OF ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 2 YEARS OF SERVICE IN 1995–1999: AFQT SCORE

Percentile score	Total accessed	Discharged within 2 years of accession	% Discharged	Relative risk	95% CI
93–99	19,797	165	0.8	1.00	
65–92	160,136	1,421	0.9	1.06	0.91, 1.25
50–64	130,936	1,275	1.0	1.17	0.99, 1.37
31–49	121,528	996	0.8	0.98	0.83, 1.16
01–30	7,193	62	0.9	1.03	0.77, 1.38

4. FUTURE DELIVERABLES

Early medical attrition is a complicated issue involving a mix of medical and non-medical issues. AMSARA has focused on the most common conditions contributing to attrition; asthma, mental health conditions and orthopedic problems. There is a need to develop assays or screening tests that require human research. AMSARA is currently funded out of operational money which makes this goal challenging. Recruit medicine needs to be identified as a critical area of research with dedicated research money to make strides in this arena. The goal of defining recruit medicine as a critical area of research will be actively pursued in the next year. Once targeted, recruit medicine (including accession standards) can be improved with various collaborative efforts among institutes, services, and civilian partners to improve accession standards, training and maintain the health of the active duty force.

AMSARA has conducted a series of studies looking at the retention of those waived for various medical conditions. AMSARA will continue to look at the issue of waivers for specific medical conditions as more data accumulates, but it is clear that the current waiver process is generally admitting medically qualified individuals. Future analysis will focus on specific conditions where the waiver criteria has changed or liberalized to allow more individuals with known medical conditions to serve on active duty.

The problem of applicants concealing medical conditions persists resulting in an acceptable number of EPTS discharges. AMSARA is searching for the means to address these problems through better screening tests. The Small Business Initiative Research (SBIR) funded in 1998 will deliver a prototype for a screening tool for asthma using an electro-active polymer test to measure exhaled nitric oxide. Field-testing of this prototype should be possible by 2002.

Everyone involved in recruit training is concerned with early attrition. Many sites have developed programs to address specific aspects of the attrition problem. This year AMSARA successfully collaborated with Fort Jackson to evaluate their rehabilitation program. AMSARA welcomes collaboration with other basic training sties to fully evaluate the effectiveness of their programs to reduce attrition.

Project REMAIN

The Secretary of the Navy determined that retention of mild asthmatics in the Navy might be one reasonable approach to reduce attrition due to asthma. Before changing this standard, however, the Secretary requested a systematic study of the effect of such a decision. Consequently, in July 2000, AMSARA began the study entitled Retention of Mild Asthmatics in the Navy (Project REMAIN) at Great Lakes Naval Training Center. Project REMAIN is the first study to systematically examine the impact of a proposed change before implementation.
Recruits diagnosed at Great Lakes with moderate or severe asthma receive an EPTS discharge in accordance with DoD Directive 6130.3. Recruits determined to have mild asthma (intermittent

and persistent) at Great Lakes will be considered part of the study group; those who wish to remain on active duty will receive a waiver at the end of basic training.

This year Project REMAIN was approved by the Institutional Review Boards at WRAIR, Great Lakes, and the Navy Bureau of Medicine and Surgery. The study began to enroll cases on 26 July 2000. Preliminary results will be presented in the 2001 AMSARA Annual Report.

EPTS Asthma Study at Fort Jackson

AMSARA will be collecting additional information on those EPTSing due to asthma at Fort Jackson, SC by web-based questionnaire. The primary objectives are 1) to better understand how the recruit came on active duty with this condition (e.g., condition was waived, concealed, or unknown) and 2) to determine whether asthma was impacting their performance.

The web-based questionnaire development and internal testing of the secure WRAIR web site was completed in February 2001. It is anticipated that a 90-day pilot study will begin 1 April 2001. After successful completion of Phase I, Phase II will start at Fort Jackson and will include all EPTS discharges, with approximately 100 asthmatic and 300 non-asthmatic EPTS discharges.

Psychiatric Studies

AMSARA strengthened its relationship with the Division of Neuropsychiatry at WRAIR during 2000. Dr Stephen Messer, a research psychologist has recently joined the Division of Neuropsychiatry working with LTC (P) Charles Hoge Chief, Department of Behavioral Health and Epidemiology in the area of mental health disorders. Several projects are currently being developed jointly to better understand mental health disorders among recruits. A better screening tool is being developed in collaboration with the Centers for Disease Control and Prevention using a questionnaire about adverse childhood events. An interventional study aimed at helping recruits at higher risk of failure because of depression is being planned in collaboration with the University of Michigan. These studies should begin in 2001.

Quadrennial Timetable for Draft of DoD Instruction 6130.4

The Accession Medical Standards Working Group (AMSWG) has adopted a 4-year timetable (Table 5.1) for the next revision of DoD Directive 6130.3 and DoD Instruction 6130.4, "Physical Standards for Appointment, Enlistment, or Induction." Each service specialty consultant will be asked to review the relevant accession standards for validity and completeness. Evidence-based changes will carry more weight in recommended changes in accession standards compared with expert opinion. AMSWG anticipates that all 19 specialty reviews will be completed from January 2001 to December 2003 with final approval for changes in the DODI 6130.4 in December 2004.

AMSARA will provide input into each accession standard specialty grouping. Information provided will vary by condition and may include counts of disqualifications, waivers applied and granted, condition-related hospitalizations, and medical and administrative discharges.

TABLE 4.1. TIMETABLE FOR REVISION OF DoD 6130.4

2001				2002				2003			
Jan–Mar	Apr–Jun	Jul–Sep	Oct–Dec	Jan–Mar	Apr–Jun	Jul–Sep	Oct–Dec	Jan–Mar	Apr–Jun	Jul–Sep	Oct–Dec
AMSWG corresponding with consultants					AMSWG 6130.4 draft				Draft revised		
GI E1.1 E1.36 Hematol/ Oncol E1.2 E1.35 E1.36 Dental E1.3 E1.36 Endocr E1.6.1 E1.6.2 E1.6.3 E1.6.4 E1.6.5 E1.6.6 E1.6.7 E1.6.8 E1.36	Gynecol E1.12 E1.14.1 E1.14.2 E1.28.3. 1 E1.36 Urol E1.13 E1.14.1 E1.14.2 E1.14.3 E1.14.4 E1.14.5 E1.28.3 E1.36 Nephrol E1.14.6 E1.36	ENT E1.4 E1.5 E1.15.2 E1.15.3 E1.16.2 E1.23 E1.24 E1.36 AMSWG E1.19 E1.20	Orthop E1.7 E1.8 E1.9 E1.16.1 E1.16.3 E1.21 E1.32 E1.36	Derm E1.31 E1.36 Allergy E1.34.1 E1.36	Neurol E1.15.1 E1.25.1 E1.25.2 E1.25.3 E1.25.4 E1.25.5 E1.25.6 E1.25.8 E1.25.9 E1.25.10 E1.25.11 E1.36	Cardiol E1.17 E1.36 Rheum E1.33.4 E1.33.6 E1.33.7 E1.33.8 E1.33.11 E1.33.13 E1.36	Internal Med E1.6.9 E1.6.10 E1.18.1 E1.18.2 E1.18.4 E1.18.5 E1.25.7 E1.33.1 E1.33.2 E1.33.3 E1.33.5 E1.33.9 E1.33.10 E1.34.2 E1.34.3 E1.34.4 E1.34.5 E1.34.7 E1.34.8 E1.34.9 E1.34.11 E1.36	Psych E1.26 E1.27 E1.28 E1.29 E1.30 E1.36	Pulm E1.18.3 E1.22 E1.36	Ophth E1.10 E1.11 E1.36	Infect Dis E1.33.12 E1.34.6 E1.34.10 E1.34.12 E1.34.13 E1.34.14 E1.34.15 E1.36

2004			
Jan–Mar	Apr–Jun	Jul–Sep	Oct–Dec
Coordination for submission of SD Form 106			To Deputy Secretary for signature

THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301-1200

HEALTH AFFAIRS

DEC 0 6 1995

MEMORANDUM FOR SURGEON GENERAL OF THE ARMY

SUBJECT: Military Medical Standards Analysis and Evaluation Data Set

The personnel community has asked OASD/HA to develop a fact based accessions policy to minimize medical attrition, quantitate risk in medical waivers, and to defend accession decisions when challenged.

The offices of Clinical Services and Military Personnel Policy have worked closely with epidemiologists at Walter Reed Army Institute of Research on the concept of a Military Medical Standard Analysis and Evaluation Data Set (MMSABDS) to apply quantitative analysis to a longitudinal data base.

The Army Center for Health Promotion and Preventive Medicine (CHPPM) maintains a data base of personnel, hospitalization, deployment and separation information for all Services. I would like WRAIR, in coordination with CHPPM, to serve as consultants to the Accession Medical Standard Steering Committee, modify and maintain the data base, and coordinate field research to answer specific questions germane to accession policy.

Therefore, I request that, by the end of December 1995, a proposal be submitted through you from WRAIR, outlining the consultant role and modifications needed to the data base. This should include funding requirements.

Edward D. Martin /for
Stephen C. Joseph, M.D., M.P.H.

cc:
Commander WRAIR

HA Control #: NONE
Due Date: NONE

February 28, 1995

ASSISTANT SECRETARY OF DEFENSE
(HEALTH AFFAIRS)
EXECUTIVE SUMMARY/COVER BRIEF

MEMORANDUM FOR THE ASSISTANT SECRETARY OF DEFENSE
(HEALTH AFFAIRS)

THROUGH: Dr. Sue Bailey, DASD (CS)

FROM: Action Officer, Colonel Ed Miller

SUBJECT: Accession Medical Standards Analysis and Research Activity (AMSARA)

PURPOSE:

SIGNATURE--on request that the Assistant Surgeon General of the Army (Research and Development) establish an Accession Medical Standards Analysis and Research Activity (AMSARA).

DISCUSSION:

The Accessions Medical Standards Working Group which met over the summer sponsored through MFIM funding completed a functional economic analysis of the medical accessions examination process. One of the critical recommendations made by the Group was to establish a research activity to provide the Medical Accessions Standards Council (also recommended) with an evidence-based analysis of DoD accessions medical standards. The memorandum tasks the Army with the responsibility of establishing the activity resourced under the Defense Health Program. This has already been staffed with the Assistant Surgeon General of the Army (Research and Development)

RECOMMENDATION:
Sign tasking memorandum to Army Surgeon General.

COORDINATION:
✓ Mr. Conte, PDUSD(P&R)_____
✓ Mr. Maddy, HB&P: See attached memo
✓ Mr. Richards, EO: _____
Dr. Martin, PDASD: _____

DEPARTMENT OF DEFENSE
ACCESSION MEDICAL STANDARDS
STEERING COMMITTEE

CHARTER

I. ESTABLISHMENT, PURPOSE AND SCOPE

A. ESTABLISHMENT

The Under Secretary of Defense (Personnel and Readiness) establishes a Department of Defense Accession Medical Standards Steering Committee (hereafter referred to as the "Committee".) The Committee shall operate under the joint guidance of the Assistant Secretaries of Defense (Force Management Policy and Health Affairs [FMP & HA].)

B. PURPOSE

The Committee's main objective is to ensure the appropriate use of military members with regard to medical/physical characteristics, assuring a cost-efficient force of healthy members in military service capable of completing initial training and maintaining worldwide deployability. The primary purposes of the Committee are: (1) integrating the medical and personnel communities in providing policy guidance and establishing standards for accession medical/physical requirements, and (2) establishing accession medical standards and policy based on evidence-based information provided by analysis and research.

C. SCOPE OF ACTIVITY

1. The Committee's responsibility involves:

a. Providing policy oversight and guidance to the accession medical/physical standards setting process.

b. Directing research and studies necessary to produce evidenced-based accession standards making the best use of resources.

c. Ensuring medical and personnel coordination when formulating accession policy changes.

d. Overseeing the common application of the accession medical standards as outlined in DoD Directive 6130.3, "Physical Standards for Appointment, Enlistment, and Induction."

e. Interfacing with other relevant Department of Defense and Department of Transportation organizations.

f. Recommending promulgation of new DoD directives as well as revisions to existing directives.

g. Recommending legislative proposals concerning accession medical/physical processing.

h. Reviewing, analyzing, formulating and implementing policy concerning the accession physical examination.

i. Issuing policy letters or memoranda providing interpretation of provisions of DoD directives.

j. Resolving conflicts of application of accession medical/physical standards and policies among the Military Services and other authorized agents.

k. Maintaining records and minutes of Committee meetings.

II. ORGANIZATION

A. The Committee will be co-chaired by the Deputy Assistant Secretary of Defense (Military Personnel Policy) and the Deputy Assistant Secretary of Defense (Clinical Services). This will facilitate tasking the Deputy Chiefs of Staff for Personnel and the Surgeons General to assign staffers to relevant working groups, and to ensure DCS/Personnel and Surgeon General personal involvement with the various issues. The Committee will convene semiannually, at a minimum, and at the discretion of the Chairpersons.

B. Committee members are appointed by the Under Secretary of Defense (Personnel and Readiness) and provide ongoing liaison with their respective organizations concerning matters of medical/physical accession policy.

C. The Committee shall be composed of representatives from the following:

Office of the Assistant Secretary of Defense (Force Management Policy)

Office of the Assistant Secretary of Defense (Health Affairs)

Office of the Assistant Secretary of Defense (Reserve Affairs)

Office of Service Surgeons General

Office of Service Deputy Chiefs of Staff for Personnel, and Chief of Personnel and Training, HQ U.S. Coast Guard.

D. Representatives from the Office of the Assistant Secretary of Defense (Force Management Policy) and the Office of the Assistant Secretary of Defense (Health Affairs) shall serve as executive secretaries for the Committee, and maintain a working group, composed of representatives from each of the offices mentioned above, to receive and review issues pertinent to accession policy.

E. The Commander, U.S. Military Entrance Processing Command, and the Director, DoD Medical Examination Review Board shall serve as advisors to the Committee.

F. The Committee may invite consultants (i.e., training, recruiting, epidemiology) at the discretion of the Chairpersons.

Approved: JAN 16 1996
Date

EDWIN DORN

Acronyms

ADHD	attention deficit hyperactivity disorder
AFQT	armed forces qualifying test
AMSARA	Accession Medical Standards Analysis and Research Activity
AMSWG	Accession Medical Standards Working Group
ASD	academic skills defect
BMI	body mass index
CI	confidence interval
CNS	central nervous system
CY	calendar year
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DoDMERB	DoD Medical Evaluation Review Board
DQ	disqualification
EPTS	existed prior to service
FEV	forced expiratory volume
HS	high school
ICD9	international classification of diseases, 9th revision
MEPCOM	military entrance processing command
MEPS	military entrance processing station
NA	not applicable
PFT	pulmonary function test
ROTC	reserve officer training corp
RR	relative risk
SSN	social security number
USMA	U.S. Military Academy
USMEPCOM	U.S. Military Entrance Processing Command
WRAIR	Walter Reed Army Institute of Research

Accession Medical Standards Analysis & Research Activity

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