

**REPORT DOCUMENTATION PAGE**

Form Approved  
OMB No. 0704-0188

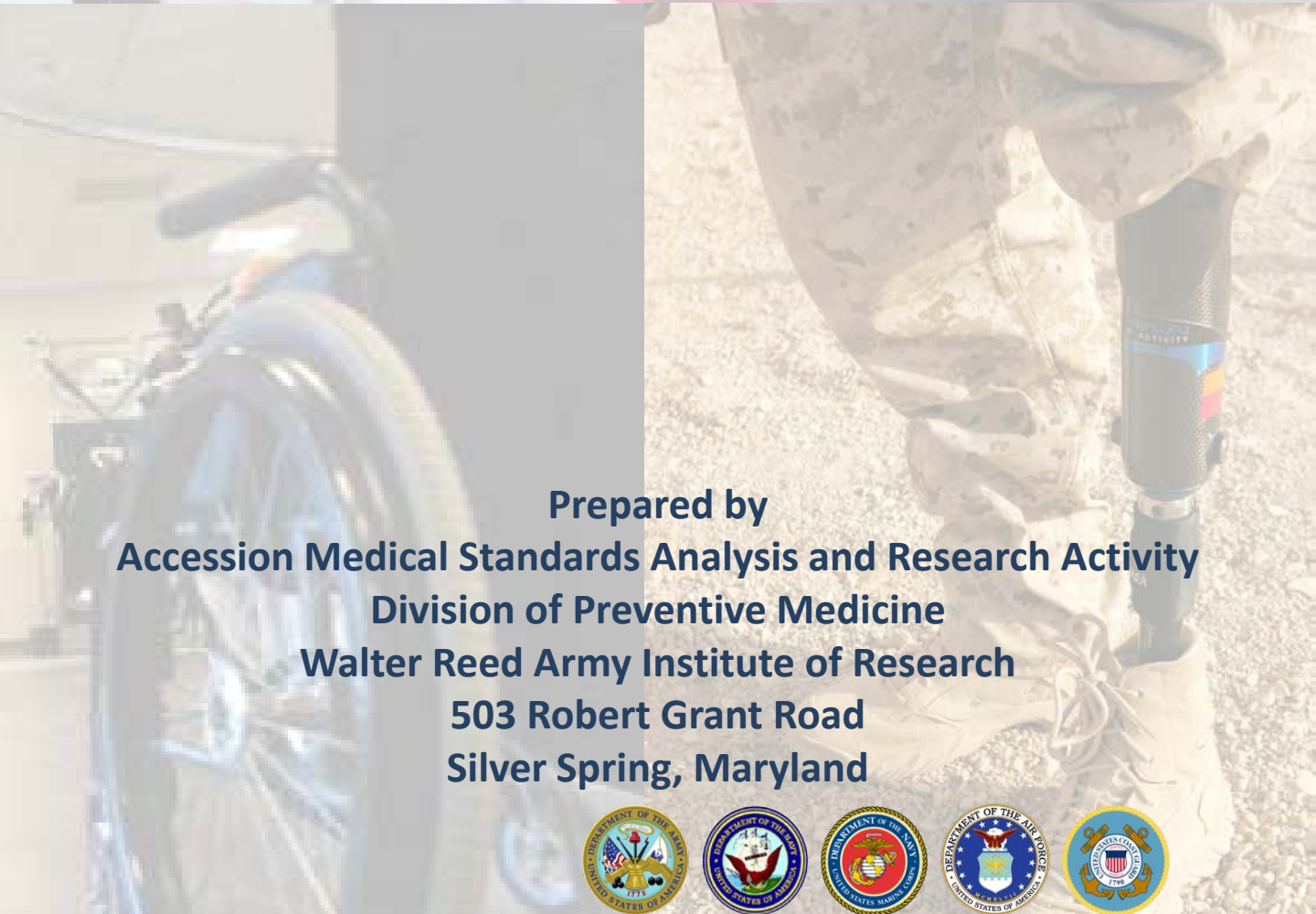
The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

**PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. REPORT DATE (DD-MM-YYYY) 04 April 2011			2. REPORT TYPE Annual Report		3. DATES COVERED (From - To) October 2008 - September 2009	
4. TITLE AND SUBTITLE Tri-Service Disability Evaluation System (DES) Database Review Annual Report 2010					5a. CONTRACT NUMBER W81XW11-07-F-0067	
					5b. GRANT NUMBER	
					5c. PROGRAM ELEMENT NUMBER 847714	
6. AUTHOR(S) Niebuhr, David, W, Gubata, Marlene, E, Cowan, David, N, Packnett, Elizabeth, R, Blandford, Caitlin, D, Chubb, Mikayla, C, Urban, Nadia, Gary, Janice, K					5d. PROJECT NUMBER	
					5e. TASK NUMBER 4	
					5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) AMSARA, Department of Epidemiology, Division of Preventive Medicine Walter Reed Army Institute of Research, 503 Robert Grant Road, Silver Spring, MD 20910					8. PERFORMING ORGANIZATION REPORT NUMBER XA-WRAIR/MD	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Walter Reed Army Institute of Research 503 Robert Grant Road Silver Spring, MD 20910					10. SPONSOR/MONITOR'S ACRONYM(S) WRAIR	
					11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.						
13. SUPPLEMENTARY NOTES The original document contains color photos.						
14. ABSTRACT Accession Medical Standards Analysis and Research Activity (AMSARA's) mission is to support the development of evidence based medical accession standards for the Department of Defense (DoD) by guiding improvement of medical and administrative databases and conducting epidemiologic and special studies. AMSARA's mission has recently expanded to include analysis and studies of existing disability tri-service evaluation system by the request of the Office of Assistant Secretary of Defense, Health Affairs. The DES Annual Report (AR) includes executive summary, methods, service descriptive analysis by service of DES databases from FY 01 to FY 09, DES database limitations, DES database recommendations, special studies and future research. The special studies presented in this AR included analyses of risk factors for Disability Retirement among the US Army and US Marines enlisted service members. DES database provide a basis for future studies of risk factors for disability processing, separations, and retirement.						
15. SUBJECT TERMS Military accession standards, disability discharges, risk factors, enlisted personnel, retirement, active duty, retention, attrition, medical waiver, and epidemiology of disability						
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON	
a. REPORT	b. ABSTRACT	c. THIS PAGE			Marlene E. Gubata, CPT (P), MC, USA	
U	U	U	SAR	61	19b. TELEPHONE NUMBER (Include area code) 301-319-9583	



# Tri-service Disability Evaluation Systems Database Review



Prepared by  
Accession Medical Standards Analysis and Research Activity  
Division of Preventive Medicine  
Walter Reed Army Institute of Research  
503 Robert Grant Road  
Silver Spring, Maryland



## Annual Report 2010



# Tri-service Disability Evaluation Systems Database Review

## Contributors

David W. Niebuhr, MD, MPH, MS  
COL, MC, US Army  
Director, Division of Preventive Medicine

Marlene E. Gubata, MD, MPH  
CPT, MC, US Army  
Chief, Accession Medical Standards Analysis & Research Activity

David N. Cowan, PhD, MPH  
Program Manager, AMSARA  
Contractor, Allied Technology Group, Inc.

Elizabeth R. Packnett, MPH  
DES Team Leader  
Senior Analyst, AMSARA  
Contractor, Allied Technology Group, Inc.

Caitlin D. Blandford, MPH  
Analyst, AMSARA  
Contractor, Allied Technology Group, Inc.

Mikayla C. Chubb, MS  
Senior Analyst, AMSARA  
Contractor, Allied Technology Group, Inc.

Nadia Urban, MHS  
Analyst, AMSARA  
Contractor, Allied Technology Group, Inc.

Edited by: Janice K. Gary  
Data Manager, AMSARA  
Contractor, Allied Technology Group, Inc.

**Disclaimer: The views expressed are those of the authors and should not be construed to represent the positions of the Department of the Army or the Department of Defense. This effort was funded by the Defense Health Program.**

# CONTENTS

Executive Summary.....	1
Introduction.....	3
<b>1. METHODS.....</b>	<b>7</b>
Study Population.....	7
VARIABLES.....	9
Demographic Characteristics.....	9
Medical Evaluation Board variables.....	9
Physical Evaluation Board variables.....	9
Combat Variables.....	10
OTHER DATA SOURCES.....	11
Applications for Military Service.....	11
Medical Accession Waivers.....	11
Accession and Discharge Records.....	11
Hospitalization.....	11
<b>2. RESULTS.....</b>	<b>12</b>
<b>3. SERVICE DISABILITY EVALUATION DATABASE LIMITATIONS.....</b>	<b>50</b>
<b>4. DISABILITY EVALUATION SYSTEM DATABASE RECOMMENDATIONS.....</b>	<b>51</b>
<b>5. SPECIAL STUDIES.....</b>	<b>52</b>
Risk Factors for Disability Retirement among Healthy Adults Joining the US Army.....	52
Risk Factors of Medical Disability Retirement in U.S. Enlisted Marines from FY 2001-2009.....	55
<b>6. FUTURE RESEARCH.....</b>	<b>58</b>
Descriptive epidemiology of disability related to traumatic brain injury.....	58
Descriptive epidemiology of disability related to post-traumatic stress disorder.....	58
Comorbidity associated with traumatic brain injury related disability.....	58
Risk factors for disability retirement in Navy service members.....	58
Risk factors for disability retirement in Air Force.....	58
Case-series review of post-traumatic stress disorder cases in the Navy and Marine Corps .....	58
References.....	60
Acronyms.....	61

# Tables and Figures

## Figures

Figure 1	Key Variables Collected at each Stage of Disability Evaluation.....	5
Figure 2	Disability Evaluation in the Army.....	5
Figure 3	Disability Evaluation in the Navy and Marine Corps.....	6
Figure 4	Disability Evaluation in the Air Force.....	6
Figure 5	Proportional distribution of DES evaluations by service: FY 2001-FY 2009.....	16
Figure 6	Proportional distribution of individuals evaluated by service: FY 2001-FY 2009.....	18

## Tables

Table 1	Characteristics of DES databases by service.....	7
Table 2	Key variables included by DES database.....	8
Table 3	Characteristics of all DES records FY 2001-FY 2009 .....	13
Table 4	Characteristics of all DES evaluations for an unfitting condition FY 2001-FY 2009.....	14
Table 5	DES individuals with records in other AMSARA data sources: FY2001-2009.....	15
Table 6	Total DES evaluations by service: FY 2001-FY 2009. ....	16
Table 7	Total individuals evaluated by service: FY 2001-FY 2009.....	18
Table 8A	Percent of population referred for DES evaluation by demographic characteristics and service: 2001-2009.....	20
Table 8B	Demographic Characteristics of individuals at time of Disability Evaluation: FY 2001-2009.....	21
Table 9A	Percent of population referred for DES evaluation by demographic characteristics and service: 2004-2008 vs. 2009.....	23
Table 9B	Demographic characteristics of individuals at time of disability evaluation: FY 2004-FY 2008 vs FY 2009.....	24
Table 10A	Leading body system categories and specific VASRD codes: Army, FY 2001-FY 2009.....	26
Table 10B	Leading body system categories and specific VASRD codes: Navy, FY 2001-FY 2009.....	26
Table 10C	Leading body system categories and specific VASRD codes: Marine Corps, FY 2001-FY 2009.....	27
Table 10D	Leading body system categories and specific VASRD codes: Air Force, FY 2001-FY 2009.....	28
Table 11A	Leading body system categories and specific VASRD codes: Army, FY 2004-FY 2008 vs. FY 2009.....	30
Table 11B	Leading body system categories and specific VASRD codes: Navy, FY 2004-FY 2008 vs. FY 2009.....	31
Table 11C	Leading body system categories and specific VASRD codes: Marine Corps, FY 2004-FY 2008 vs. FY 2009.....	32
Table 11D	Leading body system categories and specific VASRD codes: Air Force FY 2004-FY 2008 vs. FY 2009.....	33
Table 12A	Ten most common VASRD codes: Army, FY 2001-FY 2009.....	34
Table 12B	Ten most common VASRD codes: Navy, FY 2001-FY 2009.....	34
Table 12C	Ten most common VASRD codes: Marine Corps, FY 2001-FY 2009.....	35
Table 12D	Ten most common VASRD codes: Air Force FY 2001-FY 2009.....	35

Table 13A	Ten most common VASRD codes: Army, FY 2004-FY 2008 vs. FY 2009.....	37
Table 13B	Ten most common VASRD codes: Navy, FY 2004-FY 2008 vs FY 2009.....	37
Table 13C	Ten most common VASRD codes: Marine Corps, FY 2004-FY 2008 vs FY 2009.....	38
Table 13D	Ten most common VASRD codes: Air Force, FY 2004-FY 2008 vs FY 2009.....	38
Table 14A	A Latest disposition by service for all individuals: FY 2001-FY 2009 Figure 6: Proportional distribution of individuals evaluated by service and fiscal year.....	39
Table 14B	Latest disposition by service for individuals whose first disposition was placed on TDRL: FY 2001-FY 2009.....	40
Table 15A	Latest disposition by service for all disability discharge evaluations: FY 2004-FY 2008 vs FY 2009.....	41
Table 15B	Latest disposition by service for individuals whose first disposition was placed on TDRL: FY 2004-FY 2008 vs FY 2009.....	43
Table 16A	Latest percent rating among evaluations for disability discharge by service: FY 2001-FY 2009.....	44
Table 16B	Latest percent rating for individuals whose first disposition was placed on TDRL: FY 2001-FY 2009.....	45
Table 17A	Latest percent rating among evaluations for disability discharge by service: FY 2004-FY 2008 vs FY 2009.....	47
Table 17B	Latest percent rating for individuals whose first disposition was placed on TDRL: FY 2004-FY 2008 vs FY 2009.....	49
Table 18	Demographic characteristics of cases and controls.....	53
Table 19	Adjusted odds ratios for risk factors for disability retirement.....	54
Table 20	Demographic characteristics of cases and controls.....	56
Table 21	Crude and Adjusted odds ratios for risk factors for disability retirement.....	57

## Executive Summary

The Accession Medical Standards Analysis and Research Activity (AMSARA) has provided the Department of Defense with evidence-based evaluations of accession standards since 1996. As part of this ongoing research activity, data are collected from each service's Disability Evaluation System (DES). AMSARA's mission has recently expanded to include audits and studies of existing disability evaluation system by the request of the Office of Assistant Secretary of Defense, Health Affairs. This report describes analyses conducted in fiscal year 2010 of existing Disability Evaluation System data collected for accessions research through the end of fiscal year 2009.

Disability evaluation is administered at the service level, with each branch of service responsible for the evaluation of disability in its members. In addition, disability evaluation data were initially collected for purposes of surveillance and research related to the development of medical accession standards. Service level evaluation of disability and data collected for accession research have resulted in variability in the type of data available in existing AMSARA databases for each service. The most notable variability is observed in the population represented within each database. While the Department of the Navy provided data on all cases considered by the Physical Evaluation Board, including cases not evaluated for a separately unfitting condition, the Army and Air Force provided data on only cases evaluated for unfitting conditions. While the Navy and Army provided multiple records for individuals, the Air Force provided only one record per service member evaluated per year.

In the period from FY 2001 to FY 2009 data were collected on over 200,000 disability evaluations on over 170,000 service members; over half of which were Army disability evaluations. Regardless of service, the vast majority of disability evaluations were completed on active duty, enlisted personnel. Most personnel who undergo disability evaluation are male, aged 20-29 at the time of disability evaluation, and white.

Musculoskeletal conditions were the most common medical condition associated with disability and accounted for nearly half of all unfitting conditions in each service. Neurological and Psychiatric conditions were the next most common of unfitting conditions. The particular conditions associated with each body system category vary by service. Musculoskeletal conditions in the Army, Navy, and Marine Corps are most commonly attributable to degenerative arthritis while musculoskeletal conditions in the Air Force are most commonly attributed to intervertebral disc syndrome. Post-traumatic stress disorder was the most common condition associated with Psychiatric disability in the Army and Marine Corps, while major depressive disorder was the most common reason for psychiatric disability in the Navy and Air Force. Traumatic brain injury is the most common neurological condition among Army, grand mal seizures were the most common neurological condition in the Navy and Marine Corps, and migraines were most common neurological condition in the Air Force. Increases in the frequency of reported post-traumatic stress disorder and traumatic brain injury disabilities were observed in FY 2009 relative to previous years.

The majority of evaluations in the period from FY 2001 to FY 2009 were on individuals considered stable for purposes of rating, and thus these individuals were not placed on the temporary disability retirement list. Assignment to the temporary disability retirement list was most common in the Navy and Marine Corps. Among individuals not evaluated in conjunction

with temporary disability retirement, the most common final disposition was separated with severance in all services. Permanent disability retirement was the most common final disposition for those who had been on the temporary disability retirement list. From FY 2001 to FY 2009 10% was the most commonly assigned rating to disability in all services and approximately one-third of evaluations resulted in a disability rating of 30% or higher in all services except the Army where about 20% of evaluations were rated 30% or higher.

Based on the data presented in this report and the variability observed in service disability evaluation system data, we present the following programmatic recommendations:

1. Include Medical Evaluation Board (MEB) International Classification of Disease 9<sup>th</sup> Revision (ICD-9) diagnoses in all disability evaluation records, allowing for more in depth analyses of the specific medical conditions that result in disability evaluation, separation, and retirement.
2. Record electronically each service member's Military Occupational Specialty (MOS) and level of education at the time of disability evaluation.
3. Include variables to indicate whether the medical condition for which a service member is undergoing disability evaluation was due to trauma, infection and date of initial diagnosis.
4. Develop standards for selection of Veterans Administration System of Rating Disability (VASRD) codes in each service's DES electronic database to ensure correct interpretation of VASRD codes and associated analogous codes across services.
5. Include a variable in all databases that notes when multiple VASRD codes are used to rate a single condition.
6. Standardize the combat data fields collected across the services.

## Introduction

The Disability Evaluation System (DES) process follows guidelines laid out by the Department of Defense (DoD) and public law. Disability evaluation is administered at the service level, with each branch of service responsible for the evaluation of disability in its members. While inter-service differences exist, the disability evaluation process for all services includes two main components: an evaluation by the Medical Evaluation Board (MEB), and a determination by the Physical Evaluation Board (PEB) of a service member's ability to perform his/her military duties [1,2].

The disability evaluation process is described in DoDI 1332.38 and serves as the basis for each service's disability evaluation [3]. The process of disability evaluation begins when a service member is diagnosed with a condition or injury at a Military Treatment Facility (MTF). If the condition or injury is considered potentially disqualifying or significantly interferes with the service member's ability to carry out the duties of his/her office, grade, or ranking, the case is referred to the MEB. Service members who meet medical standards or deemed capable of carrying out his/her duties are returned to duty [1-2,4-6]. Those unable to perform assigned duties are forwarded to an Informal Physical Evaluation Board (IPEB) for a medical record review, and a determination regarding a service member's fitness for continued military service. Members deemed fit are returned to duty, while those who are deemed unfit are discharged or placed on limited duty. In the event a service member is dissatisfied with the determination made by the IPEB, he/she can appeal to the formal PEB (FPEB) and eventually to the final review authority (which varies by service, as detailed below) if the case is not resolved to the service member's satisfaction.

Key variables collected at each stage of disability processing are shown in Figure 1. At the MEB, each case is diagnosed and it is determined whether the service member is able to perform assigned duties [4-6]. Cases are forwarded to the IPEB if it is determined that the member cannot perform his/her assigned duties or that the member does not meet medical retention standards. The IPEB panel must determine the member's fitness, and disability rating using the appropriate Veteran's Administration Schedule of Rating Disability (VASRD) code for the disabling condition, the appropriate disposition for the case and whether the condition is combat related [1]. If a service member does not agree with the determination of the IPEB, the decision can be appealed to the FPEB, and eventually to the final reviewing authority (Service Secretary), where the determination of the FPEB is reviewed. The FPEB is an independent board from the IPEB and the decision may be different from that of the IPEB. The final reviewing authority can either concur with the FPEB or revise the determination.

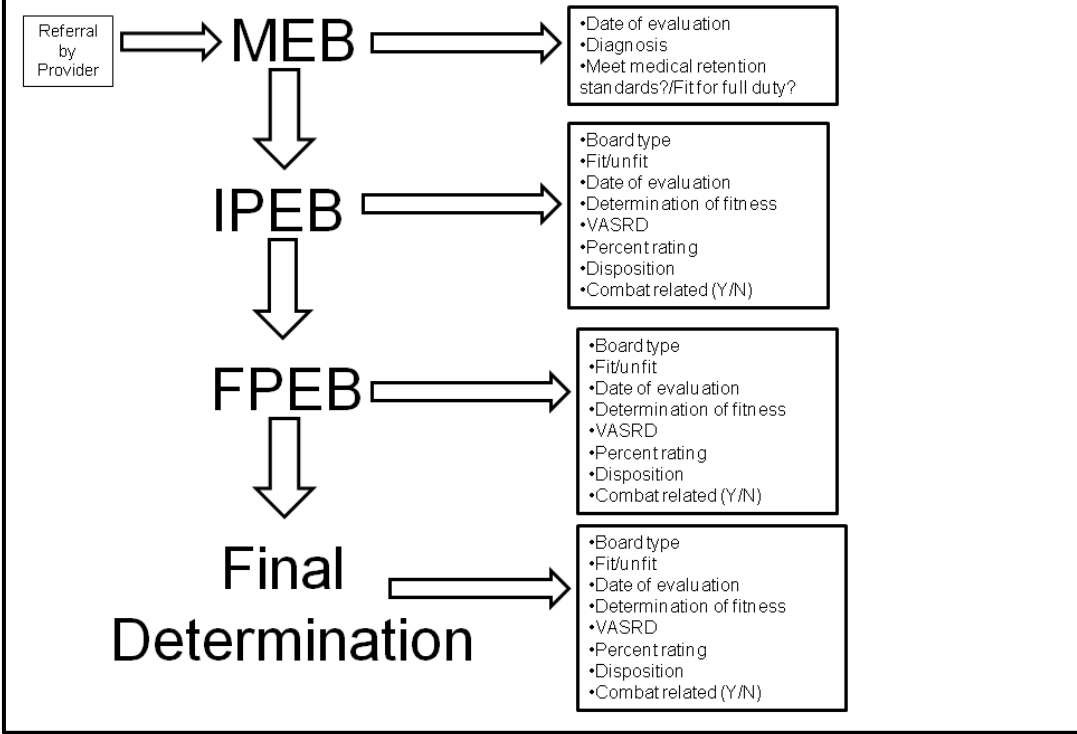
Figure 2 and Figure 3 describe the Army and Navy/Marine Corps disability evaluation processes, respectively. All cases are reviewed at the MEB to determine if a service member meets medical retention standards or is not able to perform military duties secondary to a medical condition that may constitute disability. Those who meet medical retention standards or are able to continue military duties are returned to duty, while cases that do not meet medical retention standards or are not able to perform military duties are forwarded to the IPEB for further review. The IPEB makes a fit/unfit determination and the service member is either returned to duty (deemed fit) or medically discharged (deemed unfit). The member can appeal the IPEB determination, though appeals to the FPEB may be denied if a member is deemed fit by the IPEB. Following service member appeal of the IPEB, the case is reviewed by the FPEB or reconsidered by the IPEB, again determining the fitness of the service member. An Army service member can appeal the FPEB determination to the United States Army Physical

Disability Authority (USAPDA); the USAPDA is the final appeal authority before separation or retirement. A Navy or Marine Corps service member can appeal an FPEB determination to the Secretary of the Navy; the Secretary of the Navy is also a final appeal authority before separation or retirement from Service. In the Navy and Marine Corps, all discharge recommendations are forwarded to the Service Headquarters where the recommendation for discharge can be accepted or denied (Figure 3). Both Services (Army and The Department of the Navy) have a Board for Correction of Military Records which can be petitioned once a Service member has left military service.

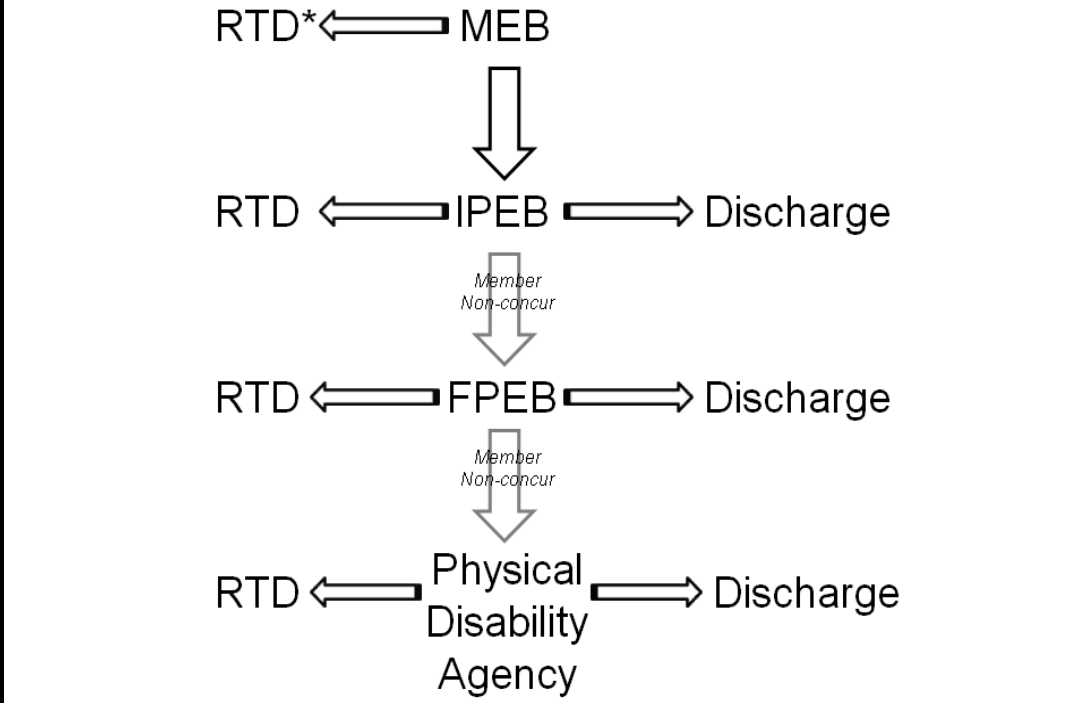
The Air Force disability evaluation process is described in Figure 4. The Air Force disability evaluation process is generally similar to that of the other services; disability evaluation begins with the MEB where cases are evaluated against medical retention standards, those not meeting retention standards are referred to the IPEB. If a service member disagrees with the decision of the IPEB, it can be appealed to the FPEB, and eventually to the Secretary of the Air Force. However, in contrast to other services, MEB cases not forwarded to the IPEB can be appealed through the component Surgeon General to determine if a case should be forwarded to the IPEB.

The objective of this report is to summarize the content of existing databases, comprised of data collected for purposes of accession research, to provide a basis for future studies of risk factors for disability processing, separation, and retirement. Though the general process for evaluating service members for disability discharge is similar across services, each service completes disability evaluation and collects and maintains disability evaluation data independent of one another. Small variations are present in the disability evaluation process across services and in the types of data collected across services. The Accession Medical Standards Analysis and Research Activity was established in 1996 for the purpose of supporting the development of evidence-based medical accession standards to mitigate morbidity and attrition among service members, and has received annual data extracts from the Army, Navy, and the Air Force since that time. These data were initially requested for the purpose of evaluating accession standards. AMSARA has been tasked by the Office of the Assistant Secretary of Defense, Health Affairs, for performing an audit of tri-service disability evaluation systems using existing AMSARA databases.

**FIGURE 1: KEY VARIABLES COLLECTED AT EACH STAGE OF DISABILITY EVALUATION**

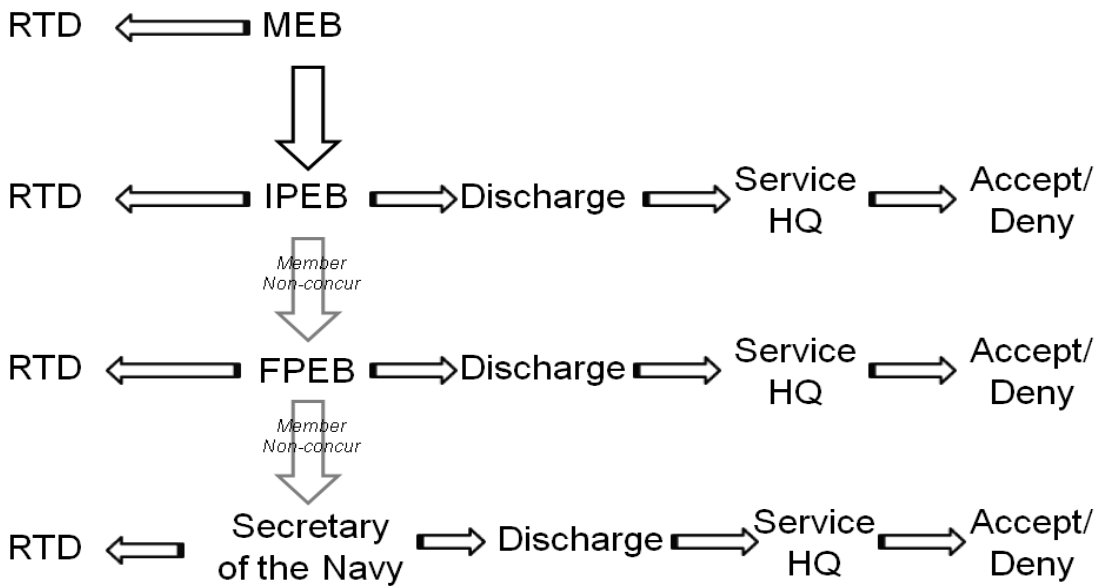


**FIGURE 2: DISABILITY EVALUATION IN THE ARMY**

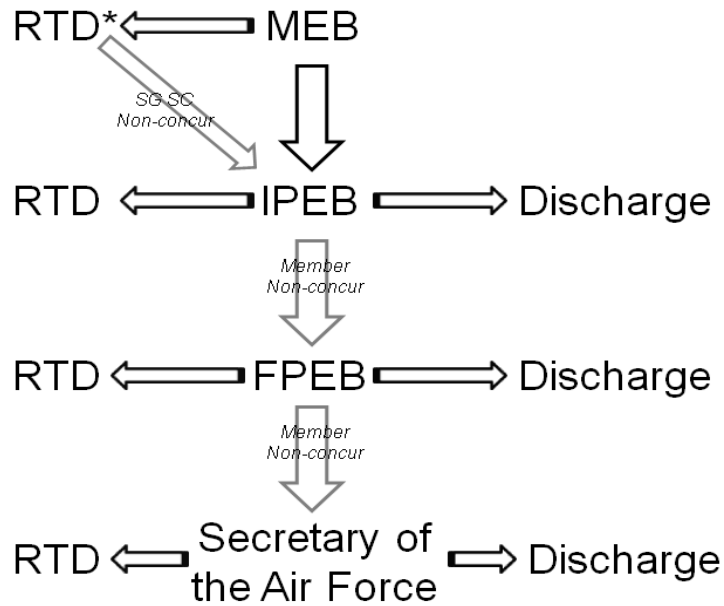


\* RTD may be full or restricted duty per AR 40-501

**FIGURE 3: DISABILITY EVALUATION IN THE NAVY AND MARINE CORPS**



**FIGURE 4: DISABILITY EVALUATION IN THE AIR FORCE**



\* RTD may be full or restricted duty per Air Force Instruction 48-123

# 1. METHODS

## Study Population

Table 1 shows the characteristics of the DES datasets, requested by AMSARA for accession research, by service. Databases maintained by the services may contain information not sent to AMSARA. Disability evaluation data were available for all services for the period between FY 2001 and FY 2009 for enlisted and officers as well as active duty and reserve components. However, the types of records received from each service varied. All PEB evaluations for separately unfitting conditions in the Army, Navy and Marine Corps are transmitted to AMSARA. Air Force disability data only includes disability retirements. In addition, while Army and Navy/Marine Corps send AMSARA multiple disability evaluations for individuals, the Air Force sends one record per person per year; for permanent disability retirements and separations with severance pay, only the record with the final disposition is received, for temporary disability retirements, only the first record is sent. Some duplication of individuals is observed across years, but represents a small percentage of all Air Force disability evaluations.

**TABLE 1: CHARACTERISTICS OF DES DATABASES BY SERVICE**

	<b>Army</b>	<b>Navy/Marine Corps</b>	<b>Air Force</b>
Years received	1990-2009	2001-2009	1995-2009
Type of evaluations included	All PEB considered	All PEB considered	Disability retirements only*
Ranks included	Enlisted, Officer	Enlisted, Officer	Enlisted, Officer
Components included	Active Duty, Reserve	Active Duty, Reserve	Active Duty, Reserve
Multiple evaluations per individual?	Yes	Yes	No

\*Per existing data use agreement (DUA) between WRAIR and AFPC

To create analytic files for this report, service-specific databases were restricted to unique records with a final disposition date between October 1, 2001 and September 30, 2009. All ranks and components were included in these analyses. Multiple records were available at the individual level, defined using Social Security Number (SSN), for the Army and the Navy/Marine Corps. When *individuals* were the unit of analysis, the last record per SSN was retained; when *evaluations* were the unit of analysis, multiple records were used per SSN. Unique evaluations were defined by SSN and date of final disposition. Therefore, an individual may appear more than once in the source population when evaluations are the unit of analysis.

**TABLE 2: KEY VARIABLES INCLUDED BY DES DATABASE**

	<b>Army</b>	<b>Navy/Marine Corps</b>	<b>Air Force</b>
<b>Demographic Characteristics*</b>			
Age/DOB	Y	Y	2008, 2009 only
Gender	Y	Y	Y
Race	Y	Y	2008, 2009 only
Education	N	N	N
Rank	Y	Y	Y
Component	Y	Y	Y
MOS	Y	N	N
<b>MEB</b>			
Date of MEB Evaluation	Y	Y	N
MEB diagnosis	N	Y	N
<b>PEB</b>			
Board type	Y	Y	N
Date of PEB Evaluation	Y	Y	Y
VASRD	Y	Y	Y
VASRD Analog**	Y	Y	Y
Percent Rating	Y	Y	Y
Disposition	Y	Y	Y
Disposition Date	Y	Y	Y
<b>COMBAT</b>			
Combat/Combat Related***	Y	Y	N
Combat Zone	Y	Y	N
On duty	Y	N	N
Armed Conflict	N	Y	N
Instrumentality of War	N	Y	N

\*Demographic characteristics at time of disability evaluation

\*\*Department of Navy database does not identify which VASRD is the analogous code

\*\*\*'Combat' variable corresponds to the variable 'combat related' in the Navy/Marine Corps. In the Army, the combat variable includes instrumentality of war, armed conflict, or other criteria, but the criteria a service member met for the condition to be considered combat related are not recorded.

## **Variables**

Table 2 shows the key variables included in each dataset received by AMSARA. Additional variables are included in each services database, but not presented in this report. Variables in the DES databases fall into four general categories: demographic characteristics, MEB variables, PEB variables, and combat variables.

### ***Demographic Characteristics***

Demographic variables including age at disability evaluation, date of birth, gender, race, rank, and component are available in all databases. Education was not available in any DES database and (MOS) was available only in Army data received by AMSARA. Air Force datasets received by AMSARA from FY 2001 to FY 2007 are lacking both age at processing or date of birth and race. AMSARA has traditionally utilized demographic variables from other sources, such as Defense Manpower Data Center (DMDC) personnel records and MEPS records, in the analysis of demographic variables and these sources can be used in combination with disability databases to obtain information on certain constant demographic characteristics (i.e. date of birth, race, gender). Characteristics which can vary over time, such as education, rank, component, and MOS, are most valuable when collected at the time of disability processing.

### ***MEB variables***

Date of MEB evaluation is present in all databases. However, MEB diagnosis is only available for Navy/Marine Corps disability evaluations. For Navy/Marine Corps evaluations, the MEB diagnosis is recorded as a text field. Recoding of this field into ICD-9 codes by a nosologist will be necessary before further analysis of this field can be conducted.

### ***PEB variables***

All AMSARA datasets contain several key variables regarding the PEB evaluation including date of PEB evaluation, VASRD codes and analogs, percent rating, disposition and disposition date. Board type, a variable identifying if the case was referred to the formal PEB or final review authority prior to final disposition, is available for datasets received from the Navy and Army. ICD-9 diagnoses are not included in AMSARA datasets from any service.

VASRD codes, specific for the unfitting condition, and analogous coding that also utilizes a VASRD code that best approximates the functional impairment rendered by a medical condition for which there is no specific VASRD code, are used to define unfitting medical conditions which prompted the disability evaluation. These codes are not diagnostic codes, but are derived from the MEB diagnosis, and specify criteria that are associated with disability percentages that determine disability compensation. The number of VASRD codes assigned to an individual diagnosis varies by service. In the Army and in the Air Force, each condition can have one VASRD code and one analogous code, with up to four conditions included per consideration. In the Navy and Marine Corps, the number of VASRD codes per condition is unlimited and there is no limit the number of conditions that can be assigned to an evaluation, with a maximum of 41 conditions per evaluation observed for the period 2001-2009.

There are two general disposition types for members determined unfit for duty: separation and disability retirement. Separations can be administered with or without severance pay and are further classified as separated with severance and separated without benefits. Severance pay is given when a service member's condition is found to be unfitting and assigned a disability

rating between 0 and 20 percent. Separation without benefits occurs when a service member is found unfit for duty, but the condition is determined to have occurred as a result of misconduct, negligence, or, if the member has less than eight years of service and the condition is the result of a medical condition that existed prior to service.

Disability retirements can be classified as either permanent disability retirement or temporary disability retirement. Permanent disability is assigned when the member is found unfit, and either has a length of service greater than 20 years or has a disability rating that is 30 percent or higher, and the condition is considered unlikely to improve or worsen. Temporary disability is assigned when a member is deemed unfit for continued service and either has a length of service greater than 20 years or has a disability percent rating of 30 percent or higher. However, those with temporary disabilities differ from those with permanent disabilities in that their condition, while considered disabling, is not considered stable for purposes of rating. Service members placed on the temporary disability retirement list (TDRL) are re-evaluated every 6-18 months, for up to five years following initial placement on the TDRL. Once the unfitting condition is considered stable for purposes of rating by the PEB, the case is assigned a final disposition and percent rating. Therefore, a re-evaluation may result in a service member returning to duty or converting to any other disposition, though most on the TDRL eventually convert to permanent disability retired [1].

### ***Combat Variables***

Data received by AMSARA from the Army, Navy, and Marine Corps include variables regarding combat; the values of which are described per the DoDI 1332.38 [6]. These variables are used as a part of the percent rating determination taking into account if the disability was caused by, exacerbated by, or had no relation to combat experiences.

*Combat* indicates the physical disability is a disease or injury incurred in the line of duty in combat with an enemy of the United States as defined by the U.S. State Department [6,7].

*Combat related* is the standard that covers those injuries and diseases attributable to the special dangers associated with armed conflict or the preparation or training for armed conflict. [6,7].

*Line of duty* indicates that the injury or disease of a member performing military duty was incurred in a duty status; if not in a duty status, whether it was aggravated by military duty; and whether incurrence or aggravation was due to the member's intentional misconduct or willful negligence [6,7].

*Armed conflict* is described as the physical disability being a disease or injury incurred in the line of duty as a direct result of armed conflict. There must be a definite causal relationship between the armed conflict and the resulting unfitting disability. Armed conflict includes a war, expedition, occupation of an area or territory, battle, skirmish, raid, invasion, rebellion, insurrection, guerrilla action, riot, or any other action in which Service members are engaged with a hostile or belligerent nation, faction, force, or terrorists. Armed conflict may also include such situations as related to prisoner of war or detained status [6,7].

*Instrumentality of war* is described as a vehicle, vessel, or device designed primarily for Military Service and intended for use in such Service at the time of the occurrence of the injury. There must be a direct causal relationship between the use of the instrumentality of war and the disability, and the disability must be incurred incident to a hazard or risk of the service [6,7].

## **Other Data Sources**

### ***Applications for Military Service***

AMSARA receives data on all applicants who undergo an accession medical examination for active duty or reserve service at any of the 65 Military Entrance Processing Stations (MEPS) sites. These data, provided by US Military Entrance Processing Command (USMEPCOM) Headquarters (North Chicago, IL), contain several hundred demographic, medical, and administrative elements on recruit applicants for each applicable branch (regular enlisted, reserve, National Guard) of each service (Air Force, Army, Marine Corps, and Navy). These data also include records on a relatively small number of officer recruit applicants and other non-applicants receiving periodic physical examinations.

### ***Medical Accession Waivers***

AMSARA receives records on all recruits considered for an accession medical waiver, i.e. those who received a permanent medical disqualification at the MEPS and sought a waiver for that disqualification. Each service is responsible for its own waiver decisions about applicants, and information on these decisions is generated and provided to AMSARA by each service waiver authority. Specifically, AMSARA receives Air Force waiver data by request from US Air Force Directorate of Medical Services and Training (Lackland AFB, TX); Army waiver data by monthly electronic transmission from the US Army Recruiting Command (USAREC, Fort Knox, KY); Marine Corps waiver data on request from the US Navy Bureau of Medicine and Surgery (BUMED, Washington, DC); and Navy waiver data from the Office of the Commander, US Navy Recruiting Command (Millington, TN).

### ***Accession and Discharge Records***

The DMDC (Defense Manpower Data Center) provides data on individuals entering military service and on individuals exiting military service. Data are provided to AMSARA annually for active duty accessions into service and discharges from military service.

### ***Hospitalization***

AMSARA receives Military Health System (MHS) direct care hospitalization data on a yearly basis from the US Medical Command (USMEDCOM) Patient Administration Systems and Biostatistics Activity (PASBA), Fort Sam Houston, TX. These data contain information on admissions of active duty officers and enlisted personnel, as well as medically eligible reserve component personnel, to any military hospital.

## 2. Results

The service-specific characteristics of DES records are shown in Table 3. For the purpose of these analyses, and throughout this report, records are defined as units of a dataset (i.e. lines of data). In the Army and Air Force, one record contains multiple conditions per individual while in the Navy and Marine Corps the number of records is representative of the number of conditions adjudicated. Evaluations are defined as an individual's unique encounter with the PEB, defined using SSN and date of final decision. Therefore, each individual in this report may have more than one record. The Army has more records, considerations, and individuals evaluated for disabilities than the other services. The highest number of records per evaluation is found in the Navy (3.11) and Marine Corps (2.99). Across services the average number of evaluations per individual is fairly similar; the Air Force has not included multiple evaluations. VASRD codes per evaluation were highest in the Army (2.63). The Navy had the fewest VASRD codes per evaluation (1.33) but has the most evaluations per individual (1.36) and records per evaluation (3.11).

Observed differences in the number of records, individuals, and evaluations can be partially accounted for by the differences in the types of records AMSARA received from each service. While the Army sends data on only those who were evaluated for an unfitting condition by the PEB, Navy/Marine Corps sends data on any individual evaluated by the PEB including those without any unfitting conditions. The inclusion of all PEB evaluations contributes a larger proportion of individuals without VASRD codes in the Navy/Marine Corps and thus a lower average across all records. The Air Force has only provided data on disability retirements to date with one record included per person per year, making determination of the number of evaluations per individual or the number of records per evaluation impossible.

**TABLE 3: CHARACTERISTICS OF ALL DES RECORDS FY 2001-FY 2009**

	Army	Navy*	Marine Corps*	Air Force**
Total records	132,255	121,001	75,915	20,879
Total individuals	100,455	28,622	20,279	20,866
Total evaluations	117,054	38,940	25,398	20,879
Average records/evaluation	1.13	3.11	2.99	1
Average evaluations/individual	1.17	1.36	1.25	1
Non-TDRL	1.05	1.08	1.04	N/A
TDRL	1.66	1.89	1.67	N/A
Average VASRD/evaluation	2.63	1.33	1.55	1.69

Records are defined as lines of data, including duplicates. Evaluations are defined as individual encounters with the PEB.

\*The Department of the Navy adjudicates both Navy and Marine Corps disability cases

\*\*Per existing DUA with AFPC AMSARA received only one evaluation per individual per year.

Table 4 shows the characteristics for DES evaluations with an unfitting condition. Records received by AMSARA from the Army and Air Force include only evaluations for individuals with an unfitting condition. Navy and Marine Corps disability evaluations included all individuals evaluated by the PEB regardless if the condition was deemed unfitting. In order to directly compare the Navy and Marine Corps disability evaluations to the Army and Air Force, only evaluations for unfitting conditions (78% of Navy considerations, 85% of Marine considerations) are shown in this table. When only evaluations with an unfitting condition were included, the Navy and Marine Corps had the highest number of records per consideration and the highest average number of evaluations per individual. Among individuals who had been placed on the TDRL, the Navy (1.87) had the highest average number of evaluations prior to final disposition while the Army (1.66) and Marine Corps (1.65) had similar averages for evaluations per individual placed on the TDRL. Average evaluations/individual among those never placed on the TDRL were similar across services. Army remained the highest in average number of VASRD codes per evaluation (2.63), even when Navy (1.71) and Marines (1.81) were restricted to those with unfitting conditions only.

**TABLE 4: CHARACTERISTICS OF ALL DES EVALUATIONS FOR AN UNFITTING CONDITION FY 2001-FY 2009**

	<b>Army</b>	<b>Navy</b>	<b>Marines</b>	<b>Air Force*</b>
Total records	132,255	98,094	66,950	20,879
Total individuals	100,455	21,171	17,174	20,866
Total evaluation	117,054	30,219	21,615	20,879
Average records per evaluation	1.13	3.25	3.10	1
Average evaluations per individual	1.17	1.43	1.26	1
Non-TDRL	1.05	1.04	1.01	N/A
TDRL	1.66	1.87	1.65	N/A
Average VASRD per evaluations	2.63	1.71	1.81	1.69

\*Per existing DUA with AFPC AMSARA received only one evaluation per individual per year.

Table 5 shows the number and percentages of individuals in the DES records with records in other datasets collected by AMSARA. Individuals were counted as present or absent in each AMSARA database based on a SSN match. Records were not checked to determine if the dates associated with each record located in another AMSARA database followed a logical sequence (i.e. applicant record prior to waiver). Therefore, the data should be considered preliminary and the percentage of individuals undergoing disability evaluation appearing in other AMSARA databases can be expected to decrease once longitudinal records are created.

Applicant and waiver data are for both active duty and reserve components, while accession, hospitalization, and loss information were only available for active duty at the time these analyses were completed. Regardless of service, the majority of those who were evaluated for disability had both an applicant and a loss record. Missing applicant and active duty accession data may represent accessions prior to 1995, when AMSARA began receiving data. In the case of accession, missing data can also be attributed to the inclusion of only active duty accessions in AMSARA datasets. Air Force had a markedly lower percentage of applicant (67.2%) and active duty accession (46.7%) records relative to other services, which may indicate more individuals with more than ten years of service or a higher proportion of reserve accessions. However, Air Force service members evaluated for disability had a lower percentage of records in other AMSARA databases relative to other services for all databases except the loss database. The highest percentages of individuals evaluated for disabilities with waiver records from any waiver authority were found in the Army (5.7%) and the Marine Corps (5.0%). These services also had the highest percentage of hospitalization records. Among Marines evaluated for disability, (22%) had hospitalization records and (20%) of Army service members evaluated for disability had hospitalization records.

**TABLE 5: DES INDIVIDUALS WITH RECORDS IN OTHER AMSARA DATA SOURCES: FY 2001-FY 2009**

	Army		Navy		Marine Corps		Air Force	
	Count	%	Count	%	Count	%	Count	%
Applicant record	83,412	83.0	23,401	81.8	18,782	92.6	14,022	67.2
Medical waiver record*	5,710	5.7	1,212	4.2	1,006	5.0	492	2.4
Approved	3,733	3.7	831	2.9	736	3.6	402	1.9
Denied	1,971	2.0	386	1.3	318	1.6	89	0.4
Accession record (Active Duty)	51,941	51.7	17,320	60.5	13,832	66.0	9,737	46.7
Hospitalization record	20,102	20.0	4,934	17.2	4,452	22.0	3,021	14.5
Discharge record	86,092	85.7	23,571	82.4	17,430	86.0	18,501	88.7
Total Individuals	100,455		21,171		17,174		20,866	

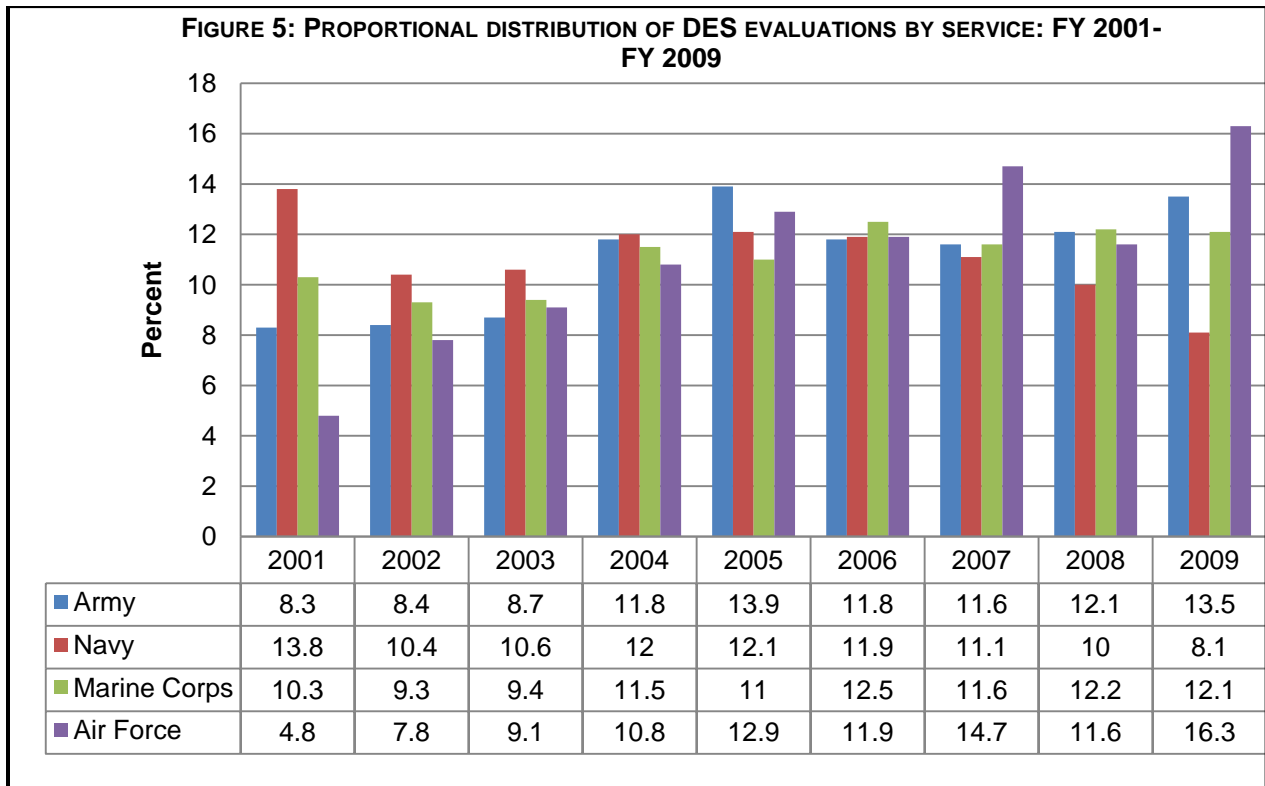
\*There were six Army waiver applicants and one Air Force waiver applicant with a disposition of pending without an updated disposition as of 30 September 2009.

Total DES evaluations are shown by service and fiscal year in Table 6 with proportional distributions illustrated in Figure 5. Individuals may be counted more than once in these analyses in the case of TDRL re-evaluations. Disability evaluations have generally increased from 2001 to 2009 in all services. The largest increase in disability evaluations over time was in the Air Force, with (16.3%) of all evaluations occurring in FY 2009 relative to (4.8%) in FY 2001. The Army and Marine Corps also had a relative increase in evaluations in FY 2009 as compared to FY 2001, with a notable increase in disability evaluations occurring in FY 2004. From FY 2004 to FY 2009 disability evaluations remained relatively consistent in the Army and Marine Corps. Navy disability evaluations appear to have decreased from FY 2001 (13.8%) to FY 2009 (8.1%) but the number of disability evaluations in the intervening years is relatively consistent by year with no notable trends.

**TABLE 6: TOTAL DES EVALUATIONS BY SERVICE: FY 2001- FY 2009**

	Army*		Navy*		Marine Corps*		Air Force	
	Count	%	Count	%	Count	%	Count	%
2001	9,700	8.3	5,379	13.8	2,613	10.3	994	4.8
2002	9,864	8.4	4,034	10.4	2,372	9.3	1,636	7.8
2003	10,161	8.7	4,122	10.6	2,384	9.4	1,905	9.1
2004	13,765	11.8	4,687	12.0	2,932	11.5	2,263	10.8
2005	16,259	13.9	4,704	12.1	2,806	11.0	2,698	12.9
2006	13,758	11.8	4,629	11.9	3,177	12.5	2,489	11.9
2007	13,539	11.6	4,306	11.1	2,957	11.6	3,070	14.7
2008	14,182	12.1	3,908	10.0	3,086	12.2	2,421	11.6
2009	15,826	13.5	3,171	8.1	3,071	12.1	3,403	16.3
<b>Total</b>	<b>117,054</b>	<b>100.0</b>	<b>38,940</b>	<b>100.0</b>	<b>25,398</b>	<b>100.0</b>	<b>20,879</b>	<b>100.0</b>

\* Army and Navy/Marine Corps include evaluations of both fit and unfit individuals



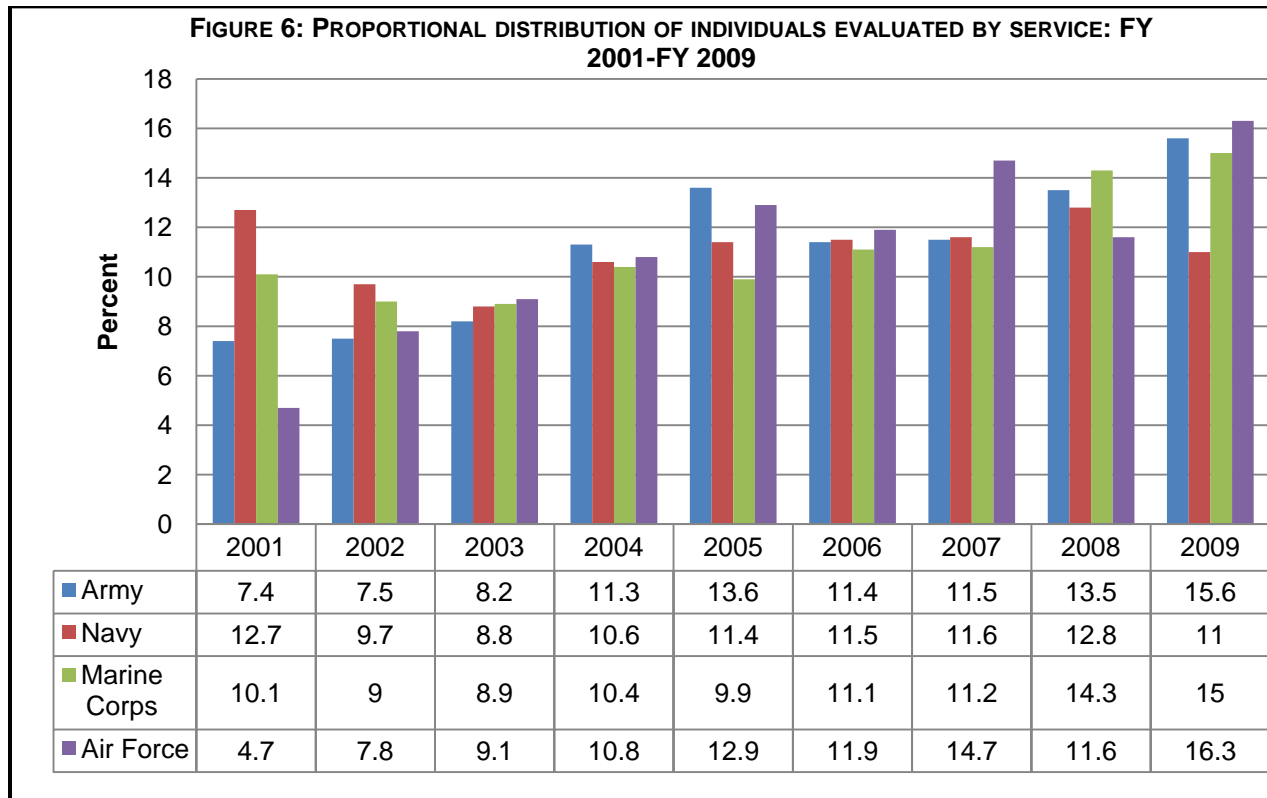
Frequencies and percentages of individuals evaluated for disability are shown by service and fiscal year in Table 7, with proportional distributions illustrated in Figure 6. In cases where individuals had multiple evaluations, the last evaluation per individual was used. There is a general trend towards increased numbers of individuals evaluated for disabilities over time for all services with the exception of the Navy, where numbers of individuals evaluated remained relatively constant over time. It is notable that the Navy also has the highest number of evaluations per individual and thus has removed the greatest number of earlier evaluations; some of the apparent increase over time in other services is due to this selection procedure. Between FY 2002 and FY 2004 there was a decrease in the number of individuals evaluated for disability after which the number of individuals evaluated returned to the FY 2001 level.

**TABLE 7: TOTAL INDIVIDUALS EVALUATED BY SERVICE: FY 2001- FY 2009\*\***

	Army*		Navy*		Marine Corps*		Air Force	
	Count	%	Count	%	Count	%	Count	%
2001	7,454	7.4	3,630	12.7	2,051	10.1	990	4.7
2002	7,558	7.5	2,765	9.7	1,832	9.0	1,632	7.8
2003	8,234	8.2	2,519	8.8	1,808	8.9	1,905	9.1
2004	11,400	11.3	3,035	10.6	2,113	10.4	2,262	10.8
2005	13,655	13.6	3,270	11.4	2,015	9.9	2,697	12.9
2006	11,408	11.4	3,289	11.5	2,252	11.1	2,489	11.9
2007	11,541	11.5	3,320	11.6	2,277	11.2	3,068	14.7
2008	13,521	13.5	3,659	12.8	2,906	14.3	2,420	11.6
2009	15,684	15.6	3,135	11.0	3,035	15.0	3,403	16.3
<b>Total</b>	<b>100,455</b>	<b>100.0</b>	<b>28,622</b>	<b>100.0</b>	<b>20,279</b>	<b>100.0</b>	<b>20,866</b>	<b>100.0</b>

\* Army and Navy/Marine Corps include individuals evaluated for both fit and unfit individuals

\*\*Only the latest record was used for each individual



Estimates of the percent of the total military population who underwent disability evaluation from 2001 to 2009 are shown in Table 8A by service and demographic characteristics. Note that the total number of individuals who underwent disability evaluation in the Air Force included only those who were retired and should be considered an under-estimate. Army had the highest percentage of individuals referred for disability evaluation (2.2%). The percent of individuals who underwent disability evaluation in the Navy (0.7%), Marine Corps (1.1%), and Air Force (0.7%) were similar. Females were referred more frequently than males for disability evaluation and enlisted were referred more frequently than officers regardless of service. The age distribution of individuals referred to disability varied by service. Individuals over 40 were most frequently evaluated for disability in the Army (4.1%), Navy (1.4%), and Marine Corps (1.3%). In the Air Force the frequency of disability evaluation did not vary by age. No substantive variance in the frequency of disability evaluation was observed by race.

Demographic characteristics of individuals who underwent disability evaluation from FY 2001 to FY 2009 are shown in Table 8B. The vast majority of disability evaluations were performed on enlisted, active duty personnel, regardless of service. Army and Air Force had higher percentages of Reserve component disability evaluations, likely due to the inclusion of National Guard service members not present in the Navy and Marine reserve component. In addition, most individuals evaluated for disability were male, aged 20-29 at the time of disability evaluation, and white, in all four services.

**TABLE 8A: PERCENT OF POPULATION REFERRED FOR DES EVALUATION BY DEMOGRAPHIC CHARACTERISTICS AND SERVICE : 2001-2009\***

	Army		Navy		Marine Corps		Air Force	
	PY	%**	PY	%**	PY	%**	PY	%**
<b>Gender</b>								
Male	3,856,102	2.0	2,722,820	0.8	1,533,326	1.2	2,522,219	0.6
Female	648,666	3.3	462,436	1.5	100,023	2.2	611,683	1.1
Missing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Age</b>								
<20	327,216	1.1	226,930	0.3	235,427	0.5	171,290	0.1
20-24	1,472,434	1.9	1,033,855	0.7	773,588	1.2	907,939	0.1
25-29	1,001,550	2.4	677,422	1.0	284,804	1.8	683,965	0.2
30-34	685,161	2.2	472,695	1.0	153,409	1.4	479,169	0.2
35-39	567,557	2.0	425,897	1.0	111,752	1.0	469,508	0.2
≥ 40	450,883	4.1	348,440	1.4	74,374	1.3	422,035	0.3
Missing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Race</b>								
White	2,934,690	2.4	2,109,318	0.9	1,214,258	1.2	2,307,727	N/A
Black	1,017,465	2.2	608,255	0.9	195,571	1.1	471,479	N/A
Other	552,796	1.6	467,688	0.8	223,526	1.6	354,701	N/A
Missing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Rank</b>								
Enlisted	3,768,712	2.5	2,706,893	1.0	1,461,506	1.3	2,506,997	0.8
Officer	736,238	0.9	478,368	0.4	171,849	0.4	626,911	0.2
Missing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Individuals</b>	4,504,951	2.2	3,185,261	0.7	1,633,355	1.1	3,133,907	0.7

PY: Person-years

\*Data on total service population was generated using queries of the Defense Medical Epidemiology Database (DMED) which is only available in aggregate by calendar year.

\*\*Percent referred is an estimate based on the number of individuals referred into the DES from FY 2001- FY 2009 (numerator) and DMED population estimates from CY 2001- CY 2009 (denominator)

**TABLE 8B: DEMOGRAPHIC CHARACTERISTICS OF INDIVIDUALS AT TIME OF DISABILITY EVALUATION: FY 2001-2009**

	Army		Navy		Marine Corps		Air Force	
	Count	%	Count	%	Count	%	Count	%
<b>Gender</b>								
Male	78,980	78.6	21,693	75.8	18,107	89.3	14,240	68.2
Female	21,408	21.3	6,904	24.1	2,156	10.6	6,638	31.8
Missing	67	<0.1	25	0.1	16	0.1	1	<0.1
<b>Age at disability evaluation</b>								
<20	3,645	3.63	708	2.5	1,209	6.0	93	0.5
20-24	27,907	27.8	7,058	24.7	9,588	47.3	1,355	6.5
25-29	23,639	23.5	6,962	24.3	5,264	26.0	1,436	6.9
30-34	15,156	15.1	4,801	16.8	2,081	10.3	969	4.6
35-39	11,397	11.4	4,136	14.5	1,122	5.5	738	3.5
≥40	18,711	18.6	4,884	17.1	970	4.8	1,247	6.0
Missing*	0	0.0	73	0.3	45	0.2	15,041	72.0
<b>Race</b>								
White	69,262	69.0	19,432	67.9	14,502	71.5	N/A	N/A
Black	22,228	22.1	5,462	19.1	2,165	10.7	N/A	N/A
Other	8,965	8.9	3,629	12.7	3,548	17.5	N/A	N/A
Missing	0	0.0	99	0.3	64	0.3	N/A	N/A
<b>Rank</b>								
Enlisted	93,935	93.5	26,546	92.7	19,606	96.7	19,360	92.7
Officer	6,497	6.5	2,073	7.2	672	3.3	1,519	7.3
Missing	23	<0.1	3	0.0	1	0.0	0	0.0
<b>Component</b>								
Active	82,895	82.5	26,129	91.3	18,565	91.5	17,402	83.4
Reserve	17,536	17.5	2,493	8.7	1,714	8.5	3,477	16.7
Missing	24	<0.1	0	0.0	0	0.0	0	0.0
<b>Total Individuals</b>	100,455		21,171		20,280		20,866	

\*Dates of birth for Air Force disability considerations were only provided in FY 2008 and FY 2009

Estimates of the percent of the total military population who underwent disability evaluation from 2004 to 2009 are shown in Table 9A by service and demographic characteristics. 2009 numbers are compared to the previous five years in aggregate. Note that the total number of individuals who underwent disability evaluation in the Air Force included only those who were retired and should be considered an under-estimate. Marines had the highest percentage of individuals referred for disability evaluation in 2004-2008 (6.0%); but Army had the highest percentage in 2009 (2.9%). The percent of individuals who underwent disability evaluation in the Navy and Air Force were similar in the period from 2004-2008 and in 2009. Females were referred more frequently than males for disability evaluation and enlisted were referred more frequently than officers regardless of service in both 2004-2008 and 2009. The age distribution of individuals referred to disability varied by service. Individuals over 40 were most frequently evaluated for disability in all services in 2009. In the prior five years, the frequency of disability evaluation did not vary by age in the Air Force, but disability evaluations were most frequent in those over 40 in all other services. No substantive variance in the frequency of disability evaluation was observed by race.

Characteristics of individuals who underwent disability evaluation from FY 2004 to FY 2009 are shown in Table 9B, comparing FY 2009 evaluations to FY 2004 through FY 2008 in aggregate. The vast majority of disability evaluations are performed on enlisted, active duty personnel, regardless of service. Army and Air Force had higher percentages of Reserve component disability evaluations, likely due to the inclusion of National Guard service members not present in the Navy and Marine Corps reserve component. In addition, most individuals evaluated for disability were male, aged 20-29 at the time of disability evaluation, and white, in all four services.

**TABLE 9A: PERCENT OF POPULATION REFERRED FOR DES EVALUATION BY DEMOGRAPHIC CHARACTERISTICS AND SERVICE: 2004-2008 VS. 2009\***

	2004-2008								2009							
	Army		Navy		Marine Corps		Air Force		Army		Navy		Marine Corps		Air Force	
	PY	%**	PY	%**	PY	%**	PY	%**	PY	%**	PY	%**	PY	%**	PY	%**
<b>Gender</b>																
Male	2,158,127	2.3	1,484,650	0.8	853,608	1.2	1,390,516	0.6	473,815	2.7	276,127	0.9	190,117	1.5	263,970	0.9
Female	353,710	3.6	251,908	1.6	56,137	2.1	339,289	1.2	73,676	3.9	49,787	1.4	12,808	2.1	64,066	1.6
Missing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Age</b>																
<20	171,683	1.2	113,989	0.3	130,045	0.5	83,748	0.1	32,659	1.4	19,499	0.2	27,320	0.4	16,083	0.2
20-24	827,596	2.0	564,588	0.7	431,834	1.3	507,347	0.1	170,220	2.3	104,021	0.7	97,792	1.4	93,362	0.7
25-29	566,777	2.5	384,586	1.1	159,793	1.9	395,392	0.2	135,280	3.0	76,407	1.1	38,336	2.3	80,475	1.0
30-34	375,432	2.4	256,956	1.1	86,105	1.4	262,835	0.2	81,965	2.8	49,108	1.1	18,230	1.9	52,383	1.1
35-39	313,692	2.2	225,445	1.0	60,780	1.0	243,446	0.1	68,108	2.8	41,578	1.0	13,024	1.3	43,756	1.1
≥ 40	256,601	4.9	190,987	1.4	41,186	1.2	237,033	0.2	59,254	5.2	35,297	1.5	8,221	1.4	41,974	2.1
Missing***	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Race</b>																
White	1,667,539	2.5	1,142,529	1.0	684,339	1.2	1,272,963	N/A	379,752	3.0	206,915	1.0	158,281	1.4	240,398	N/A
Black	539,032	2.5	330,157	1.0	101,234	1.2	254,670	N/A	110,181	2.5	60,457	0.9	20,831	1.1	48,015	N/A
Other	305,265	1.8	263,871	0.8	124,171	1.7	202,172	N/A	57,555	2.3	58,541	0.9	23,812	2.5	39,622	N/A
Missing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Rank</b>																
Enlisted	2,098,484	2.7	1,476,289	1.0	813,710	1.4	1,379,270	0.9	457,286	3.2	274,064	1.1	182,107	1.6	262,840	1.2
Officer	413,352	1.0	263,269	0.4	96,034	0.4	350,535	0.2	90,203	1.1	51,850	0.5	20,818	0.5	65,195	0.6
Missing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total Individuals</b>	2,511,835	2.4	1,736,557	1.0	193,908	6.0	1,726,804	0.7	547,489	2.9	325,914	1.0	202,925	1.5	328,035	1.0

PY: Person-years

\*Data on total service population was generated using queries of the Defense Medical Epidemiology Database (DMED) which is only available in aggregate by calendar year.

\*\*Percent referred is an estimate based on the number of individuals referred into the DES from FY 2001- FY 2009 (numerator) and DMED population estimates from CY 2001- CY 2009 (denominator)

\*\*\*Dates of birth for Air Force disability considerations were only provided in FY 2008 and FY 2009

**TABLE 9B: DEMOGRAPHIC CHARACTERISTICS OF INDIVIDUALS AT TIME OF DISABILITY EVALUATION: FY 2004-FY 2008 vs FY 2009**

	FY 2004-FY 2008								FY 2009							
	Army		Navy		Marine Corps		Air Force		Army		Navy		Marine Corps		Air Force	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
<b>Gender</b>																
Male	48,675	79.2	12,586	75.9	10,362	89.6	8,770	67.8	12,812	81.7	2,418	77.1	2,758	91.2	2,362	69.4
Female	12,811	20.8	3,968	23.9	1,188	10.3	4,171	32.2	2,862	18.3	715	22.8	266	8.8	1,041	30.6
Missing	39	<0.1	19	0.1	13	0.1	0	0.0	10	<0.1	2	0.1	1	<0.1	0	0.0
<b>Age at disability evaluation</b>																
<20	2,053	3.3	326	2.0	688	6.0	54	0.4	450	2.9	43	1.4	108	3.6	39	1.2
20-24	16,749	27.2	4,200	25.3	5,515	47.7	678	5.2	3,913	25.0	705	22.5	1,403	46.4	677	19.9
25-29	14,016	22.8	4,215	25.4	3,017	26.1	662	5.1	4,025	25.7	871	27.8	869	28.7	774	22.7
30-34	9,146	14.9	2,799	16.9	1,193	10.3	403	3.1	2,299	14.7	556	17.7	353	11.7	566	16.6
35-39	6,991	11.4	2,347	14.2	629	5.4	258	2.0	1,924	12.3	428	13.7	170	5.6	480	14.1
≥ 40	12,570	20.4	2,672	16.1	508	4.4	380	2.9	3,073	19.6	530	16.9	117	3.9	867	25.5
Missing*	0	0.0	14	0.1	13	0.1	10,506	81.2	0	0.0	2	0.1	5	0.2	0	0.0
<b>Race</b>																
White	42,431	22.3	11,155	67.3	8,297	71.8	N/A	N/A	11,577	73.8	2,070	66.0	2,185	72.2	N/A	N/A
Black	13,745	8.8	3,158	19.1	1,174	10.2	N/A	N/A	2,804	17.9	547	17.4	230	7.6	N/A	N/A
Other	5,439	68.8	2,228	13.4	2,068	17.9	N/A	N/A	1,303	8.3	514	16.4	607	20.1	N/A	N/A
Missing	0	0.0	32	0.2	24	0.2	N/A	N/A	0	0.0	4	0.1	3	0.1	N/A	N/A
<b>Rank</b>																
Enlisted	57,422	93.3	15,359	93.0	11,199	96.9	12,114	93.6	14,681	93.7	2,881	91.9	2,922	96.6	3,027	89.0
Officer	4,094	6.7	1,162	7.0	364	3.1	827	6.4	989	6.3	254	8.1	103	3.4	376	11.1
Missing	9	<0.1	0	0.0	0	0.0	0	0.0	14	<0.1	0	0.0	0	0.0	0	0.0
<b>Component</b>																
Active	48,768	79.3	15,114	91.5	10,484	90.7	10,765	83.2	12,965	82.7	2,890	92.2	2,736	90.4	2,785	81.8
Reserve	12,752	20.7	1,407	8.5	1,079	9.3	2,176	16.8	2,719	17.3	245	7.8	289	9.6	618	18.2
Missing	5	<0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<b>Total Individuals</b>	<b>61,525</b>		<b>16,521</b>		<b>11,563</b>		<b>12,941</b>		<b>15,684</b>		<b>3,135</b>		<b>3,025</b>		<b>3,403</b>	

\*Dates of birth were only provided for Air Force disability considerations in FY 2008 and FY 2009

Tables 10A through 10D show the leading body system categories and the leading component VASRD codes that contributed to the larger body system category from FY 2001 to FY 2009 for the Army (Table 10A), Navy (Table 10B), Marine Corps (Table 10C), and Air Force (Table 10D). Though a single condition is not counted more than once per individual, individuals may be considered for multiple conditions, including multiple conditions in the same body system; therefore the total number of diagnoses exceeds the number of individuals evaluated.

Musculoskeletal conditions are the most common reason for discharge in all services followed by psychiatric and neurological conditions. When comparing services the Army had the highest percentage of musculoskeletal diagnoses (59.7%) followed by the Marine Corps (50.8%), Navy (40.7%), and Air Force (33.2%). Neurological disorders are the second most common body system evaluated for disability in the Navy (18.4%) and Marine Corps (17.3%) but third most common body system evaluated in the Army (11.3%) and Air Force (18.0%). The Air Force had the highest proportion of psychiatric disorders among disability evaluations, with (22.1%) of all diagnoses categorized as psychiatric disorders. Psychiatric disorders were also the second leading body system for which disabilities were evaluated in the Army, accounting for 11.3% of diagnoses. Psychiatric disorders were the third leading body system category in the Navy (17.0%) and Marine Corps (15.5%).

Among musculoskeletal conditions, degenerative arthritis was the most common diagnosis in the Army (38.2%), Navy (34.3%), and Marine Corps (36.9%). Intervertebral disc syndrome (16.8%) was the most common musculoskeletal condition among Air Force disability evaluations for musculoskeletal conditions. Post-traumatic stress disorder was the most commonly diagnosed psychiatric condition among Army (47.6%) and Marine Corps (37.7%) disability evaluations. Among Navy and Air Force evaluations for psychiatric disability, major depressive disorder was the most common diagnosis (26.0% and 32.8% respectively). More variation in common neurological conditions was apparent when comparing by service. The most common neurological condition in Army disability evaluations was brain disease due to trauma (19.7%). In the Navy and Marine Corps the leading neurologic condition was grand mal seizures (15.3% and 11.4% respectively) and migraine was the leading neurologic condition (17.9%) among Air Force disability evaluations.

**TABLE 10A: LEADING BODY SYSTEM CATEGORIES\* AND SPECIFIC VASRD CODES: ARMY, FY 2001- FY 2009**

	Count	Percent
<b>Musculoskeletal</b>	<b>61,049</b>	<b>59.7</b>
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	23,319	38.2
5237: Lumbosacral or cervical strain	7,956	13.0
5295: Lumbosacral strain	3,593	5.9
Other VASRD codes	26,181	42.9
<b>Psychiatric disorders</b>	<b>13,186</b>	<b>12.8</b>
9411: Post-traumatic stress disorder	6,276	47.6
9434: Major depressive disorder	2,251	17.1
9432: Bipolar disorder	1,376	10.4
Other VASRD codes	3,283	24.9
<b>Neurological</b>	<b>11,551</b>	<b>11.3</b>
8045: Brain disease due to trauma (TBI)**	2,276	19.7
8100: Migraine	1,660	14.4
8520: Sciatic nerve, paralysis	691	6.0
Other VASRD codes	6,924	59.9
<b>All Other</b>	<b>16,522</b>	<b>16.1</b>
<b>Total Diagnoses</b>	<b>102,308</b>	

\*Categories are not mutually exclusive. Individuals may be counted more than once per condition category and within more than one condition category.

\*\*Effective FY 2009 VASRD code 8045 is defined as 'residual effects of traumatic brain injury'.

**TABLE 10B: LEADING BODY SYSTEM CATEGORIES\* AND SPECIFIC VASRD CODES: NAVY, FY 2001- FY 2009**

	Count	Percent
<b>Musculoskeletal</b>	<b>9,987</b>	<b>40.7</b>
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	3,426	34.3
5295: Lumbosacral strain	776	7.8
5237: Lumbosacral or cervical strain	646	6.5
Other VASRD codes	5,139	51.5
<b>Psychiatric disorders</b>	<b>4,168</b>	<b>17.0</b>
9434: Major depressive disorder	1,083	26.0
9432: Bipolar disorder	676	16.2
9411: Post-traumatic stress disorder	571	13.7
Other VASRD codes	1,838	44.1
<b>Neurological</b>	<b>4,519</b>	<b>18.4</b>
8910: Grand mal seizures	690	15.3
8100: Migraine	614	13.6
8018: Multiple sclerosis	393	8.7
Other VASRD codes	2,822	62.4
<b>All Other</b>	<b>5,884</b>	<b>24.0</b>
<b>Total Diagnoses</b>	<b>24,558</b>	

\*Categories are not mutually exclusive. Individuals may be counted more than once per condition category and within more than one condition category

**TABLE 10C: LEADING BODY SYSTEM CATEGORIES\* AND SPECIFIC VASRD CODES: MARINE CORPS, FY 2001- FY 2009**

	Count	Percent
<b>Musculoskeletal</b>	<b>10,351</b>	<b>50.8</b>
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	3,817	36.9
5255: Femur, impairment	578	5.6
5295: Lumbosacral strain	530	5.1
Other VASRD codes	5,426	52.4
<b>Psychiatric disorders</b>	<b>3,167</b>	<b>15.5</b>
9411: Post-traumatic stress disorder	1,193	37.7
9304: Dementia due to head trauma	663	20.9
9434: Major depressive disorder	345	10.9
Other VASRD codes	2,201	69.5
<b>Neurological</b>	<b>3,520</b>	<b>17.3</b>
8910: Grand mal seizures	401	11.4
8100: Migraine	329	9.3
8520: Sciatic nerve, paralysis	241	6.8
Other VASRD codes	2,549	72.4
<b>All Other</b>	<b>3,346</b>	<b>16.4</b>
<b>Total Diagnoses</b>	<b>20,384</b>	

\*Categories are not mutually exclusive. Individuals may be counted more than once per condition category and within more than one condition category

**TABLE 10D: LEADING BODY SYSTEM CATEGORIES\* AND SPECIFIC VASRD CODES: AIR FORCE, FY 2001- FY 2009**

	Count	Percent
<b>Musculoskeletal</b>	<b>8,010</b>	<b>33.2</b>
5243: Intervertebral disc syndrome	1,342	16.8
5295: Lumbosacral strain	983	12.3
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	706	8.8
Other VASRD codes	4,979	62.2
<b>Psychiatric disorders</b>	<b>5,325</b>	<b>22.1</b>
9434: Major depressive disorder	1,674	32.8
9432: Bipolar disorder	747	14.7
9411: Post-traumatic stress disorder	694	13.6
Other VASRD codes	2,210	41.5
<b>Neurological</b>	<b>4,337</b>	<b>18.0</b>
8100: Migraine	599	17.9
8910: Grand mal seizures	347	10.4
8018: Multiple sclerosis	191	5.7
Other VASRD codes	3,200	73.8
<b>All Other</b>	<b>6,445</b>	<b>26.7</b>
<b>Total Diagnoses</b>	<b>24,117</b>	

\*Categories are not mutually exclusive. Individuals may be counted more than once per condition category and within more than one condition category.

Tables 11A through 11D show the leading body system categories and the leading component VASRD codes that contributed to the larger body system category from FY 2001 to FY 2009 for the Army (Table 11A), Navy (Table 11B), Marine Corps (Table 11C), and Air Force (Table 11D). Individuals may be considered for multiple conditions; therefore the total number of conditions exceeds the number of individuals evaluated.

Musculoskeletal conditions are the most common reason for discharge in all services for both time periods. The percentage of disabling conditions which are musculoskeletal also remained relatively constant over time, with the exception of the Army where a slight decrease was observed in FY 2009 (47.6%) relative to FY 2004-FY 2008 (60.7%). Slight increases in the percent of disabling conditions classified as neurological were observed when comparing FY 2009 to FY 2004-FY 2008 for all services except the Navy where the percent of disability evaluations for neurological conditions remained relatively constant. Evaluations for disabling conditions classified as psychiatric increased slightly in all services except the Air Force, where a decrease in the proportion of disabling conditions classified as psychiatric was observed when comparing FY 2004-FY 2008 (18.3%) to FY 2009 (15.5%).

Among musculoskeletal conditions, degenerative arthritis was the most common diagnosis in the Army, Navy, and Marine Corps. The proportion of musculoskeletal conditions classified as degenerative arthritis did not vary when comparing FY 2009 to FY 2004-FY 2008 in Marines. Decreases in the proportion of musculoskeletal conditions accounted for by degenerative arthritis were observed in the Army and Navy. Intervertebral disc syndrome was the most common condition among Air Force disability evaluations for musculoskeletal conditions in both

time periods though the proportion of musculoskeletal evaluations for intervertebral disc syndrome increased in FY 2009 relative to the prior five years.

In FY 2009, post-traumatic stress disorder was the most commonly diagnosed psychiatric condition among Army (65.8%) and Marine Corps (57.1%) and Navy (25.5%) disability evaluations, with large increases observed relative to FY 2004-FY 2008. Among Air Force evaluations for psychiatric disability, major depressive disorder was the most common diagnosis in FY 2009, but represented a smaller proportion of psychiatric diagnoses than in previous years. Though post-traumatic stress disorder was not the leading reason for psychiatric disability evaluation, a sharp increase was observed in the proportion of psychiatric disability cases of post-traumatic stress disorder in FY 2009 (23.3%) relative to the previous five years (14.2%). Increases in post-traumatic disorder in all services in FY 2009 are likely associated with changes in DoD guidance on determinations of disability related to post-traumatic stress disorder and may not reflect a true increase in the proportion of disability evaluations for post-traumatic stress disorder.

The definition associated with the VASRD code 8045 changed to 'residual effects of traumatic brain injury' along with DoD guidance on rating VASRD code 8045 in FY 2009. Prior to FY 2009, VASRD code 8045 was defined as 'brain disease due to trauma'. Increases in the percent of neurological cases attributable to VASRD code 8045 were observed in FY 2009 in the Army and Marine Corps relative to the period from FY 2004-FY 2009. In FY 2009 32.1% of Army disability evaluations for neurological disability were due to residual effects of traumatic brain injury as compared to 17.1% in the preceding five years. Among Marines Corps personnel, residual effects of traumatic brain injury accounted for 9.4% of neurological disability evaluations in FY 2009 representing the second leading cause of neurological disability. Brain disease due to trauma was not among the leading neurological diagnoses for the Marine Corps in the preceding years. Leading causes of neurological disability evaluations in the Navy and Air Force were similar in FY 2009 and in FY 2004-FY 2008.

**TABLE 11A: LEADING BODY SYSTEM CATEGORIES AND SPECIFIC VASRD CODES: ARMY, FY 2004-FY 2008 vs. FY 2009**

FY 2004-FY 2008			FY 2009		
	Count	%		Count	%
<b>Musculoskeletal</b>	<b>37,112</b>	<b>60.7</b>	<b>Musculoskeletal</b>	<b>9,119</b>	<b>47.6</b>
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	13,884	37.4	5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	2,453	26.9
5237: Lumbosacral or cervical strain	6,706	18.1	5237: Lumbosacral or cervical strain	1,250	13.7
5243: Intervertebral disc syndrome	2,194	5.9	5243: Intervertebral disc syndrome	832	9.1
Other VASRD codes	14,328	38.6	Other VASRD codes	4,584	50.2
<b>Neurological</b>	<b>6,695</b>	<b>11.0</b>	<b>Neurological</b>	<b>2,908</b>	<b>15.2</b>
8045: Brain disease due to trauma	1,142	17.1	8045: Residuals of traumatic brain injury	932	32.1
8100: Migraine	931	13.9	8100: Migraine	385	13.2
8520: Sciatic nerve, paralysis	456	6.8	8520: Sciatic nerve, paralysis	160	5.5
Other VASRD codes	4,166	62.2	Other VASRD codes	1,431	49.2
<b>Psychiatric disorders</b>	<b>7,161</b>	<b>11.7</b>	<b>Psychiatric disorders</b>	<b>4,505</b>	<b>23.5</b>
9411: Post-traumatic stress disorder	3,142	43.9	9411: Post-traumatic stress disorder	2,966	65.8
9434: Major depressive disorder	1,311	18.3	9434: Major depressive disorder	518	11.5
9432: Bipolar disorder	838	11.7	9413: Anxiety disorder, not otherwise specified	302	6.7
Other VASRD codes	1,870	26.1	Other VASRD codes	719	16.0
<b>All Other</b>	<b>10,162</b>	<b>16.6</b>	<b>All Other</b>	<b>2,616</b>	<b>13.7</b>
<b>Total</b>	<b>61,130</b>		<b>Total</b>	<b>19,148</b>	

**TABLE 11B: LEADING BODY SYSTEM CATEGORIES AND SPECIFIC VASRD CODES: NAVY, FY 2004-FY 2008 vs. FY 2009**

FY 2004-FY 2008			FY 2009		
	Count	%		Count	%
<b>Musculoskeletal</b>	<b>5,539</b>	<b>39.9</b>	<b>Musculoskeletal</b>	<b>1,115</b>	<b>36.4</b>
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	1,783	32.2	5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	275	24.7
5237: Lumbosacral or cervical strain	490	8.8	5237: Lumbosacral or cervical strain	156	14.0
5241: Spinal fusion	270	4.9	5241: Spinal fusion	85	7.6
Other VASRD codes	2,996	54.1	Other VASRD codes	599	53.7
<b>Psychiatric disorders</b>	<b>2,400</b>	<b>17.3</b>	<b>Psychiatric disorders</b>	<b>627</b>	<b>20.5</b>
9434: Major depressive disorder	585	24.4	9411: Post-traumatic stress disorder	160	25.5
9432: Bipolar disorder	415	17.3	9434: Major depressive disorder	150	23.9
9411: Post-traumatic stress disorder	329	13.7	9432: Bipolar disorder	101	16.1
Other VASRD codes	1,071	44.6	Other VASRD codes	216	34.4
<b>Neurological</b>	<b>2,660</b>	<b>19.2</b>	<b>Neurological</b>	<b>607</b>	<b>19.8</b>
8910: Grand mal seizures	436	16.4	8910: Grand mal seizures	108	17.8
8100: Migraine	332	12.5	8018: Multiple sclerosis	61	10.0
8018: Multiple sclerosis	219	8.2	8100: Migraine	56	9.2
Other VASRD codes	1,673	63.0	Other VASRD codes	382	63.0
<b>All Other</b>	<b>3,285</b>	<b>23.7</b>	<b>All Other</b>	<b>717</b>	<b>23.4</b>
<b>Total</b>	<b>13,884</b>		<b>Total</b>	<b>3,066</b>	

**TABLE 11C: LEADING BODY SYSTEM CATEGORIES AND SPECIFIC VASRD CODES: MARINE CORPS, FY 2004-FY 2008 vs FY 2009**

FY 2004-FY 2008			FY 2009		
	Count	%		Count	%
<b>Musculoskeletal</b>	<b>5,571</b>	<b>48.9</b>	<b>Musculoskeletal</b>	<b>1,633</b>	<b>42.9</b>
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	1,847	33.2	5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	527	32.3
5255: Femur, impairment	426	7.6	5237: Lumbosacral or cervical strain	152	9.3
5237: Lumbosacral or cervical strain	308	5.5	5255: Femur, impairment	93	5.7
Other VASRD codes	2,990	53.7	Other VASRD codes	861	52.7
<b>Psychiatric disorders</b>	<b>1,921</b>	<b>16.9</b>	<b>Psychiatric disorders</b>	<b>837</b>	<b>22.0</b>
9411: Post-traumatic stress disorder	685	35.7	9411: Post-traumatic stress disorder	478	57.1
9304: Dementia due to head trauma	490	25.5	9434: Major depressive disorder	86	10.3
9432: Bipolar disorder	197	10.3	9432: Bipolar disorder	78	9.3
Other VASRD codes	549	28.6	Other VASRD codes	195	23.3
<b>Neurological</b>	<b>1,948</b>	<b>17.1</b>	<b>Neurological</b>	<b>828</b>	<b>21.7</b>
8910: Grand mal seizures	251	12.9	8910: Grand mal seizures	196	23.7
8520: Sciatic nerve, paralysis	158	8.1	8045: Residuals of traumatic brain injury	78	9.4
8100: Migraine	129	6.6	8100: Migraine	74	8.9
Other VASRD codes	1,410	72.4	Other VASRD codes	480	60.0
<b>All Other</b>	<b>1,951</b>	<b>17.1</b>	<b>All Other</b>	<b>512</b>	<b>13.4</b>
<b>Total</b>	<b>11,391</b>		<b>Total</b>	<b>3,810</b>	

**TABLE 11D: LEADING BODY SYSTEM CATEGORIES AND SPECIFIC VASRD CODES: AIR FORCE FY 2004-FY 2008 vs. FY 2009**

FY 2004-FY 2008			FY 2009		
	Count	%		Count	%
<b>Musculoskeletal</b>	<b>5,297</b>	<b>30.8</b>	<b>Musculoskeletal</b>	<b>1,312</b>	<b>29.8</b>
5243: Intervertebral disc syndrome	1,019	19.2	5243: Intervertebral disc syndrome	323	24.6
5295: Lumbosacral strain	534	10.1	5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	181	13.8
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	453	8.6	5242: Degenerative arthritis	89	6.8
Other VASRD codes	3,291	62.1	Other VASRD codes	719	54.8
<b>Psychiatric disorders</b>	<b>3,147</b>	<b>18.3</b>	<b>Psychiatric disorders</b>	<b>682</b>	<b>15.5</b>
9434: Major depressive disorder	1,037	33.0	9434: Major depressive disorder	186	27.3
9432: Bipolar disorder	459	14.6	9411: Post-traumatic stress disorder	159	23.3
9411: Post-traumatic stress disorder	446	14.2	9432: Bipolar disorder	94	13.8
Other VASRD codes	1,205	38.3	Other VASRD codes	243	35.6
<b>Neurological</b>	<b>1,999</b>	<b>11.6</b>	<b>Neurological</b>	<b>582</b>	<b>13.2</b>
8100: Migraine	360	18.0	8100: Migraine	102	17.5
8910: Grand mal seizures	205	10.3	8910: Grand mal seizures	59	10.1
8018: Multiple sclerosis	120	6.0	8018: Multiple sclerosis	42	7.2
Other VASRD codes	1,314	65.7	Other VASRD codes	379	65.1
<b>All Other</b>	<b>6,763</b>	<b>60.7</b>	<b>All Other</b>	<b>1,832</b>	<b>41.6</b>
<b>Total</b>	<b>17,206</b>		<b>Total</b>	<b>4,408</b>	

Tables 12A through 12D show the ten most frequently listed VASRD codes utilized for FY 2001 to FY 2009 for the Army (Table 12A), Navy (Table 12B), Marine Corps (Table 12C), and Air Force (Table 12D). All VASRD codes, including analogous codes, were considered in the analyses. Therefore, these tables should not be interpreted as the most commonly considered conditions, but rather the most frequently utilized codes. The VASRD for degenerative arthritis was the most commonly utilized VASRD code among the Army (15.5%), Navy (8.6%), and Marine Corps (11.8%). The Air Force's topmost commonly utilized VASRD code was found to be asthma (6.7%). In all services, at least one musculoskeletal analogous code appears among the ten most frequent codes. The Army, Navy, and Marine Corps used more codes requiring an analogous code than the Air Force.

**TABLE 12A: TEN MOST COMMON VASRD CODES: ARMY, FY 2001- FY 2009**

	Count	%
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	27,154	15.5
5099: Musculoskeletal analogous code	24,716	14.1
5299: Musculoskeletal analogous code	15,868	9.0
5237: Lumbosacral or cervical strain	10,537	6.0
9411: Post-traumatic stress disorder	6,401	3.6
6602: Asthma, bronchial	4,339	2.5
5295: Lumbosacral strain	4,176	2.4
5243: Intervertebral disc syndrome	4,173	2.4
5242: Degenerative arthritis	3,988	2.3
8045: Brain disease due to trauma (TBI)*	2,745	1.6
<b>All Other</b>	<b>71,438</b>	<b>40.7</b>
<b>Total</b>	<b>175,535</b>	

\*Effective FY 2009 VASRD code 8045 is defined as 'residual effects of traumatic brain injury'.

**TABLE 12B: TEN MOST COMMON VASRD CODES: NAVY, FY 2001- FY 2009**

	Count	%
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	4,441	8.6
5299: Musculoskeletal analogous code	4,016	7.7
9434: Major depressive disorder	1,657	3.2
7913: Diabetes mellitus	1,498	2.9
8910: Grand mal seizure	1,293	2.5
7323: Colitis, ulcerative	1,258	2.4
5099: Musculoskeletal analogous code	1,227	2.4
9432: Bipolar disorder	1,100	2.1
5295: Lumbosacral strain	1,079	2.1
8018: Multiple sclerosis	965	1.9
<b>All Other</b>	<b>33,374</b>	<b>64.3</b>
<b>Total</b>	<b>51,908</b>	

**TABLE 12C: TEN MOST COMMON VASRD CODES: MARINE CORPS, FY 2001- FY 2009**

	Count	%
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	4,638	11.8
5299: Musculoskeletal analogous code	4,375	11.1
8045: Brain disease due to trauma (TBI)*	1,559	4.0
9411: Post-traumatic stress disorder	1,535	3.9
5099: Musculoskeletal analogous code	1,274	3.2
9304: Dementia due to head trauma	982	2.5
5255: Femur, impairment	753	1.9
5237: Lumbosacral or cervical strain	708	1.8
8910: Grand mal seizures	675	1.7
5295: Lumbosacral strain	653	1.7
<b>All Other</b>	<b>22,148</b>	<b>56.4</b>
<b>Total</b>	<b>39,300</b>	

\*Effective FY 2009 VASRD code 8045 is defined as 'residual effects of traumatic brain injury'.

**TABLE 12D: TEN MOST COMMON VASRD CODES: AIR FORCE FY 2001-FY 2009**

	Count	%
6602: Asthma, bronchial	2,370	6.7
5243: Intervertebral disc syndrome	2,204	6.2
9434: Major depressive disorder	2,072	5.9
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	1,536	4.4
5295: Lumbosacral strain	1,055	3.0
9411: Post-traumatic stress disorder	1,010	2.9
8100: Migraine	930	2.6
9432: Bipolar disorder	926	2.6
5099: Musculoskeletal analogous code	847	2.4
7913: Diabetes mellitus	801	2.3
<b>All Other</b>	<b>21,512</b>	<b>61.0</b>
<b>Total</b>	<b>35,263</b>	

Tables 13A through 13D show the top ten most common VASRD codes utilized for FY 2004-FY 2008 as compared to FY 2009 for the Army (Table 13A), Navy (Table 13B), Marine Corps (Table 13C), and Air Force (Table 13D). All VASRD codes were utilized in the analyses. Therefore, these tables should not be interpreted as the most commonly considered conditions, but rather the most frequently utilized codes. The VASRD for degenerative arthritis was the most commonly used code among the Army, Navy, and Marine Corps for all time periods presented. The Air Force's most commonly used VASRD code was for intervertebral disc syndrome in both FY 2004-FY 2008 and in FY 2009. In all services, at least one musculoskeletal analogous code appears in the ten most frequent VASRD codes utilized. The Army, Navy, and Marine Corps used more codes requiring and analogous code than the Air Force in both FY 2009 and in previous years.

Increases in the proportion of post-traumatic stress disorder among all VASRD codes were apparent in FY 2009 relative to previous years in all services. In FY 2009, 9.2% of Army VASRD codes were for post-traumatic stress disorder as compared to 3.1% in the previous five years. Post-traumatic stress disorder accounted for 3.8% of all VASRD codes in the Navy in FY 2009, while in the previous five years post-traumatic stress disorder was not among the top ten most utilized VASRD codes. Among Marines, post-traumatic stress disorder was the third most commonly used VASRD code in FY 2009, accounting for 9.1% of all codes used and was three times more common than in the previous five year period. A small increase in the proportion of VASRD codes for post-traumatic stress disorder used in the Air Force was also observed in FY 2009 (3.6%) relative to the previous five years (2.9%).

The proportion of all VASRD codes that were classified using code 8045 increased in both the Army and the Marines when comparing FY 2009 percentages to those in the prior years. Residual effects of traumatic brain injury accounted for 3.4% of all VASRD codes in FY 2009 as compared to 1.3% of all VASRD codes in the period from FY 2004 to FY 2008 in the Army. Among Marines, residual effects of traumatic brain disease increased from 4.2% of all VASRD codes between FY 2004-FY 2008 to 6.1% of VASRD codes in FY 2009.

**TABLE 13A: TEN MOST COMMON VASRD CODES: ARMY, FY 2004-FY 2008 vs. FY 2009**

FY 2004-FY 2008			FY 2009		
	Count	%		Count	%
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	15,959	15.4	5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	3,551	11.0
5099: Musculoskeletal analogous code	15,244	14.7	5099: Musculoskeletal analogous code	3,451	10.6
5237: Lumbosacral or cervical strain	8,817	8.5	9411: Post-traumatic stress disorder	2,989	9.2
5299: Musculoskeletal analogous code	8,365	8.0	5299: Musculoskeletal analogous code	2,052	6.3
9411: Post-traumatic stress disorder	3,206	3.1	5237: Lumbosacral or cervical strain	1,720	5.3
5243: Intervertebral disc syndrome	2,875	2.8	5243: Intervertebral disc syndrome	1,298	4.0
5242: Degenerative arthritis	2,702	2.6	5242: Degenerative arthritis	1,286	4.0
6602: Asthma, bronchial	2,559	2.5	8045: Residuals of traumatic brain injury	1,116	3.4
5241: Spinal fusion	1,818	1.7	5284: Foot injuries, other	656	2.0
8045: Brain disease due to trauma	1,387	1.3	5241: Spinal fusion	569	1.8
<b>All Other</b>	<b>41,451</b>	<b>39.9</b>	<b>All Other</b>	<b>13,744</b>	<b>42.4</b>
<b>Total</b>	<b>103,928</b>		<b>Total</b>	<b>32,432</b>	

**TABLE 13B: TEN MOST COMMON VASRD CODES: NAVY, FY 2004- FY 2008 vs FY 2009**

FY 2004- FY 2008			FY 2009		
	Count	%		Count	%
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	2,327	8.1	5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	332	7.6
5299: Musculoskeletal analogous code	2,080	7.3	5099: Musculoskeletal analogous code	284	6.5
9434: Major depressive disorder	894	3.1	5237: Lumbosacral or cervical strain	173	4.0
7913: Diabetes mellitus	885	3.1	5299: Musculoskeletal analogous code	167	3.8
5099: Musculoskeletal analogous code	812	2.8	9411: Post-traumatic stress disorder	165	3.8
8910: Grand mal seizure	780	2.7	9434: Major depressive disorder	155	3.6
7323: Colitis, ulcerative	725	2.5	7323: Colitis, ulcerative	138	3.2
5237: Lumbosacral or cervical strain	646	2.3	8910: Grand mal seizure	111	2.5
9432: Bipolar disorder	646	2.3	7913: Diabetes mellitus	101	2.3
8100: Migraine	511	1.8	9432: Bipolar disorder	101	2.3
<b>All Other</b>	<b>18,297</b>	<b>64.0</b>	<b>All Other</b>	<b>2,638</b>	<b>60.4</b>
<b>Total</b>	<b>28,603</b>		<b>Total</b>	<b>4,365</b>	

**TABLE 13C: TEN MOST COMMON VASRD CODES: MARINE CORPS, FY 2004- FY 2008 vs FY 2009**

FY 2004- FY 2008			FY 2009		
	Count	%		Count	%
5299: Musculoskeletal analogous code	2,377	10.5	5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	636	11.5
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	2,343	10.3	5099: Musculoskeletal analogous code	516	9.3
9411: Post-traumatic stress disorder	982	4.3	9411: Post-traumatic stress disorder	502	9.1
8045: Brain disease due to trauma	955	4.2	8045: Residuals of traumatic brain injury	339	6.1
5099: Musculoskeletal analogous code	704	3.1	5299: Musculoskeletal analogous code	264	4.8
9304: Dementia due to head trauma	702	3.1	5237: Lumbosacral or cervical strain	168	3.0
5237: Lumbosacral or cervical strain	540	2.4	5262: Tibia and fibula, impairment	100	1.8
5255: Femur, impairment	461	2.0	5255: Femur, impairment	97	1.8
8910: Grand mal	427	1.9	9434: Major depressive disorder	89	1.6
5262: Tibia and fibula, impairment	375	1.7	9304: Dementia due to head trauma	82	1.5
<b>All Other</b>	12,784	56.4	<b>All Other</b>	2,743	49.6
<b>Total</b>	<b>22,650</b>		<b>Total</b>	<b>5,536</b>	

**TABLE 13D: TEN MOST COMMON VASRD CODES: AIR FORCE, FY 2004- FY 2008 vs FY 2009**

FY 2004- FY 2008			FY 2009		
	Count	%		Count	%
5243: Intervertebral disc syndrome	1,478	7.2	5243: Intervertebral disc syndrome	726	8.1
6602: Asthma, bronchial	1,391	6.8	6602: Asthma, bronchial	562	6.3
9434: Major depressive disorder	1,225	6.0	9434: Major depressive disorder	380	4.3
5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	995	4.9	5003: Arthritis, degenerative (hypertrophic or osteoarthritis)	336	3.8
5099: Musculoskeletal analogous code	656	3.2	9411: Post-traumatic stress disorder	324	3.6
9411: Post-traumatic stress disorder	595	2.9	7913: Diabetes mellitus	312	3.5
5295: Lumbosacral strain	564	2.8	6847: Sleep apnea syndromes	308	3.5
9432: Bipolar disorder	543	2.6	8100: Migraine	212	2.4
8100: Migraine	540	2.6	5241: Spinal fusion	204	2.3
5241: Spine fusion	418	2.0	5242: Degenerative arthritis	198	2.2
<b>All Other</b>	12,127	59.1	<b>All Other</b>	5,363	60.1
<b>Total</b>	<b>20,532</b>		<b>Total</b>	<b>8,925</b>	

Table 14A shows the distribution of latest dispositions by service for all individuals evaluated for disability discharge from FY 2001 to FY 2009. This table excludes periodic TDRL re-evaluations in all services except Air Force where only last disposition is available. Air Force data received by AMSARA includes only permanent disability retired, separated without severance, and placed on TDRL dispositions. Therefore, Air Force data presented here is not comparable to data provided by the other services.

The most common disposition in the Air Force (73.1%), Army (52.3%), Marine Corps (43.2%) and Navy (28.1%) was separated with severance pay. Placed on the temporary disability retirement list was the second most common disposition in all services except the Air Force. This is expected based on the nature of the Air Force disability data sent to AMSARA, which includes only permanent disability retired, placed on the TDRL and separated with severance pay dispositions. Navy disability cases were more frequently deemed fit for duty (26.5%) when compared to Army (7.6%) and Marine Corps (15.2%).

**TABLE 14A: LATEST DISPOSITION BY SERVICE FOR ALL INDIVIDUALS: FY 2001 - FY 2009**

	Army		Navy		Marine Corps		Air Force*	
	Count	%	Count	%	Count	%	Count	%
Permanent Disability Retired	6,149	6.1	781	2.9	398	2.0	3,103	26.9
Placed on the TDRL	17,425	17.4	7,046	26.0	5,411	27.6	4,920	23.6
Separated without Benefit	5,915	5.9	1,372	5.1	1,114	5.7	N/A	N/A
Separated with Severance Pay	52,343	52.3	7,631	28.1	8,462	43.2	8,439	73.1
Fit	7,608	7.6	7,178	26.5	2,969	15.2	N/A	N/A
Administrative Termination	4,453	4.5	27	0.1	72	0.4	N/A	N/A
Other**	6,142	6.1	2,615	9.6	983	5.0	4,152	19.9
<b>Missing</b>	<b>0</b>	<b>0.0</b>	<b>486</b>	<b>1.8</b>	<b>169</b>	<b>0.9</b>	<b>265</b>	<b>1.3</b>
<b>Total Evaluations</b>	<b>100,035</b>		<b>27,136</b>		<b>19,578</b>		<b>20,879</b>	

\*Air Force data includes only one disposition per person per year. The first disposition is included for TDRL and final disposition is included for PDRL and Severance. Evaluations resulting in SWOB and Fit dispositions are not included in the data transmitted to AMSARA.

\*\*Including, but not limited to, evaluations resulting in determinations of fit and unfit where condition was not related to duty, transferred to retired reserves, limited duty, and no action.

Table 14B shows the distribution of latest dispositions by service for individuals who had a first disposition of 'Placed on the TDRL' from FY 2001 to FY 2009. Therefore, the outcome of some TDRL re-evaluations is not included in this table if the initial evaluation, which placed the service member on the TDRL, occurred prior to the beginning of FY 2001. The category 'No re-evaluation' represents service members who were placed on the TDRL, but have not yet undergone periodic TDRL re-evaluation. The most common final disposition after being placed on the TDRL was permanent disability retired in the Army (32.5%), Marine Corps (28.4%) and Navy (36.4%) personnel. Follow up data on individuals placed on the TDRL was not available at time of analysis for the Air Force. At the end of FY 2009, the Army (54%) and Marine Corps (55%) had the highest percentage of individuals placed on the TDRL who remained on the TDRL (i.e. last disposition available is retained on TDRL or the service member has not had a TDRL re-evaluation), followed by the Navy (45%).

**TABLE 14B: LATEST DISPOSITION BY SERVICE FOR INDIVIDUALS WHOSE FIRST DISPOSITION WAS PLACED ON TDRL: FY 2001- FY 2009**

	Army		Navy		Marine Corps		K	
	Count	%	Count	%	Count	%	Count	%
Permanent Disability Retired	5,661	32.5	2,561	36.4	1,534	28.4	N/A	N/A
Retained on TDRL	908	5.2	758	10.8	485	9.0	N/A	N/A
Separated without Benefit	4	0	6	0.1	1	0.0	N/A	N/A
Separated with Severance Pay	1,903	10.9	680	9.7	538	9.9	N/A	N/A
Fit	251	1.4	200	2.8	167	3.1	N/A	N/A
No re-evaluation**	8,522	48.9	2,447	34.8	2,503	46.3	4,920	100
Administrative Termination	50	0.3	0	0.0	0	0.0	N/A	N/A
Other***	126	0.7	211	3.0	89	1.6	N/A	N/A
<b>Missing</b>	<b>0</b>	<b>0</b>	<b>178</b>	<b>2.5</b>	<b>92</b>	<b>1.7</b>	<b>N/A</b>	<b>N/A</b>
<b>Total Evaluations</b>	<b>17,425</b>		<b>7,041</b>		<b>5,409</b>		<b>4,920 100</b>	

\*Air Force data includes only one disposition per person per year. Only the first disposition is included for individuals placed on the TDRL. Therefore, no follow-up information is available on Air Force service members placed on the TDRL.

\*\*Number of individuals who were placed on the TDRL in FY 2001 to FY 2009 but have not had a re-evaluation.

\*\*\*Including, but not limited to, individuals with dispositions of no action, limited duty, or administrative removal from TDRL.

Table 15A shows the distribution of latest dispositions by service for all disability discharge evaluations the comparing FY 2009 to FY 2004-FY 2009. This table excludes periodic TDRL re-evaluations in all services except Air Force where only last disposition is available. Air Force data received by AMSARA includes only permanent disability retired, separated without severance, and placed on TDRL dispositions. Therefore, Air Force data presented here is not comparable to data provided by the other services.

When considering the most recent disposition for all disability evaluations, the most common dispositions in FY 2009 among the Army (33.8%) were separation with severance and placed on the TDRL (33.4%). Placement on the TDRL was the most common disposition following disability discharge evaluation in the Navy (36.8%), Marine Corps (41.3%), and the Air Force (34.9%). Second most common in the Navy, Marine Corps, and Air Force was separated with severance (24%, Navy, 38.3% Marine Corps, 37% Air Force). Fit determinations were most common in the Navy, accounting for 22% of disability discharge dispositions in FY 2009.

In the period from FY 2004 to FY 2008, the Army had a smaller proportion of individuals with a most recent disposition of permanent disability retired (5%) relative to FY 2009 Army evaluations (15.9%) and to other services during the same time period. In addition, the proportion of individuals separated with severance pay is higher in the period from FY 2004-FY 2008 (54%) when compared to FY 2009 (33.8%). Among Navy and Marine Corps evaluations, the proportion of discharge evaluations with a most recent disposition of separated with severance pay (28% and 39% respectively) in FY 2004-FY 2008 was higher than the corresponding dispositions in FY 2009. The proportion of dispositions found fit in the Navy and Marine Corps also decreased in FY 2009 relative to previous year. Finally, the percentage of TDRL is smaller, relative to FY 2009, across all services. However, this increase over time is expected as individuals are placed on the TDRL but have not been re-evaluated is expected to increase as FY increases.

**TABLE 15A: LATEST DISPOSITION BY SERVICE FOR ALL DISABILITY DISCHARGE EVALUATIONS: FY 2004-FY 2008 vs FY 2009**

	FY 2004-FY 2008								FY 2009							
	Army		Navy		Marine Corps		Air Force**		Army		Navy		Marine Corps		Air Force*	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Permanent Disability	3,131	5	371	2.3	244	2.1	2,158	19.9	2,185	15.9	65	2.9	67	3.1	520	23.4
Retired																
Placed on TDRL	9,457	15.2	4,112	26	3,517	30.1	2,957	27.3	4,583	33.4	829	36.8	906	41.3	877	39.5
Separated without Benefit	3,881	6.3	802	5.1	704	6	0	0.0	143	1	75	3.3	76	3.5	0	0.0
Separated with Severance	33,534	54	4,445	28.1	4,613	39.5	5,727	52.8	4,642	33.8	541	24	840	38.3	822	37.0
Fit	4,568	7.4	4,390	27.7	1,929	16.5	0	0.0	1,155	8.4	497	22.1	186	8.5	0	0.0
Administrative Termination	2,432	3.9	0	0	0	0	0	0.0	448	3.3	0	0	0	0	0	0.0
Other**	5,072	8.2	1,277	8.1	534	4.6	2,099	16.2	577	4.2	184	8.2	96	4.4	1,184	34.8
<b>Missing</b>	<b>0</b>	<b>0</b>	<b>427</b>	<b>2.7</b>	<b>145</b>	<b>1.2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>59</b>	<b>2.6</b>	<b>24</b>	<b>1.1</b>	<b>0</b>	<b>0.0</b>
<b>Total Evaluations</b>	<b>62,075</b>		<b>15,824</b>		<b>11,686</b>		<b>12,941</b>		<b>13,733</b>		<b>2,250</b>		<b>2,195</b>		<b>3,403</b>	

\*Air Force data includes only one disposition per person per year. First disposition is included for TDRL and final disposition is included for PDRL and Severance. Evaluations resulting in SWOB and Fit dispositions are not included in the data transmitted to AMSARA.

\*\* Including, but not limited, individuals with dispositions of no action, limited duty, or administrative removal from TDRL.

Table 15B shows the distribution of latest dispositions by service for individuals who had a first disposition of 'Placed on the TDRL' from FY 2001 to FY 2009. The category 'No re-evaluation' represents service members who were placed on the TDRL, but have not yet undergone periodic TDRL re-evaluation. The most common final disposition in FY 2009 after being placed on the TDRL was permanent disability retired in the Army (23.7%), Navy (27.2%), and Marine Corps (26.6%) evaluations. At the end of FY 2009, the Army had the highest percentage of individuals placed on the TDRL who had not yet required re-evaluation (68.7%), followed by the Marine Corps (50.5%) and the Navy (48.0%).

In the period from FY 2004-FY 2008, a higher proportion of Army personnel placed on the TDRL had a most recent disposition of permanent disability retired (36.9%) relative to FY 2009 (23.7%). However, this is due to the fact that in FY 2009, a higher proportion of individuals had not yet required a TDRL re-evaluation in the Army, likely because these individuals were placed on the TDRL in FY 2009. Conversely, the proportion of TDRL re-evaluations with a most recent disposition of permanent disability retired in the Navy and Marine Corps increased in FY 2009 (27.2% and 26.6 % respectively). relative to FY 2004-FY 2008 (23.1% and 19.7% respectively).

**TABLE 15B: LATEST DISPOSITION BY SERVICE FOR INDIVIDUALS WHOSE FIRST DISPOSITION WAS PLACED ON TDRL:FY 2004-FY 2008 vs FY 2009**

	FY 2004-FY 2008								FY 2009							
	Army		Navy		Marine Corps		Air Force**		Army		Navy		Marine Corps		Air Force*	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Permanent Disability	3,623	36.9	744	23.1	524	19.7	0	0	1,572	23.7	468	27.2	468	26.6	0	0
Retired																
Retained on TDRL	623	6.4	509	15.8	255	9.6	N/A	N/A	276	4.2	243	14.1	218	12.4	N/A	N/A
Separated without Benefit	4	0	3	0.1	0	0	N/A	N/A	0	0	1	0.1	1	0.1	N/A	N/A
Separated with Severance	1,521	15.5	225	7	188	7.1	N/A	N/A	147	2.2	109	6.3	125	7.1	N/A	N/A
Fit	192	2.0	76	2.4	74	2.8	N/A	N/A	39	0.6	38	2.2	35	2	N/A	N/A
No re-evaluation**	3,732	38.0	1,587	49.3	1,589	59.7	2,957	100	4,557	68.7	826	48.0	888	50.5	877	100
Administrative Termination	36	0.4	0	0	0	0	N/A	N/A	13	0.2	0	0.0	0	0	N/A	N/A
Other***	85	0.9	74	2.3	30	1.1	N/A	N/A	33	0.5	17	1.0	16	0.9	N/A	N/A
<b>Missing</b>	0	0	0	0	1	0	0	0.0	0	0	18	1.0	9	0.5	0	0.0
<b>Total Evaluations</b>	<b>9,816</b>		<b>3,218</b>		<b>2,661</b>		<b>2,957</b>		<b>6,637</b>		<b>1,720</b>		<b>1,760</b>		<b>877</b>	

\*Air Force data includes only one disposition per person per year. First disposition is included for TDRL and final disposition is included for PDRL and Severance. Evaluations resulting in SWOB and RTD dispositions are not included in the data transmitted to AMSARA

\*\*Number of individuals who were placed on the TDRL from FY 2004 to FY 2009 but have not had a re-evaluation.

\*\*\*Includes individuals with dispositions of no action, limited duty, or administrative removal from TDRL.

Latest percent rating is shown by service for those evaluated for disability discharge in the period from FY 2001 to FY 2009 for all services is shown Table 16A. Air Force data received by AMSARA includes only permanent disability retired, separated without severance, and placed on TDRL dispositions. Therefore, distribution of Air Force percent ratings do not represent complete data and cannot be directly compared to data received from other services.

The most frequently assigned rating is 10% in all services. Second most commonly assigned rating in the Navy (13.7%), Marine Corps (14.3%), and Air Force (12.9%) is 30%. Among Army disability evaluations, the second most commonly assigned percent rating is rating of 0% (15.3%) followed by 20% (10.9%). The highest percentage of ratings of 100% was found among Navy disability evaluations (4.2%). Ratings in excess of 30% were most common in the Navy and Marine Corps, constituting 31% of all evaluations for disability discharge. Approximately 23% of all Army discharge evaluations receive a rating of 30% or higher.

**TABLE 16A: LATEST PERCENT RATING AMONG EVALUATIONS FOR DISABILITY DISCHARGE BY SERVICE: FY 2001-FY 2009**

	Army			Navy			Marine Corps			Air Force		
	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP
Unrated	6,792	6.8	N/A	9,383	34.6	N/A	4,526	23.1	N/A	44	0.2	N/A
0	15,269	15.3	19.3	1,433	5.3	8.1	973	5.0	6.5	392	1.9	2.7
10	29,525	29.5	56.7	5,514	20.3	39.1	6,024	30.8	46.5	5,612	26.9	41.8
20	10,858	10.9	70.4	2,326	8.6	52.2	1,985	10.1	59.7	2,048	9.8	56.1
30	9,272	9.3	82.2	3,722	13.7	73.2	2,801	14.3	78.3	2,687	12.9	74.8
40	4,391	4.4	87.7	2,256	8.3	85.9	1,415	7.2	87.7	1,190	5.7	83.1
50	2,705	2.7	91.1	582	2.1	89.2	494	2.5	91.0	878	4.2	89.2
60	2,727	2.7	94.6	492	1.8	92.0	389	2.0	93.5	499	2.4	92.7
70	1,331	1.3	96.3	154	0.6	92.8	263	1.3	95.3	231	1.1	94.3
80	821	0.8	97.3	107	0.4	93.4	112	0.6	96.0	99	0.5	95.0
90	392	0.4	97.8	37	0.1	93.6	60	0.3	96.4	31	0.1	95.2
100	1,733	1.7	100	1,130	4.2	100	536	2.7	100	685	3.3	100
<b>Missing</b>	<b>14,219</b>	<b>14.2</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>6,470</b>	<b>31.0</b>	<b>N/A</b>
<b>Total</b>	<b>100,035</b>			<b>27,136</b>			<b>19,578</b>			<b>20,866</b>		

CP=Cumulative Percent, excluding missing and unrated

Latest percent rating is shown by service for the period from FY 2001 to FY 2009 for individuals whose first disposition was placed on the TDRL is shown Table 16B. Air Force data received by AMSARA includes only permanent disability retired, separated without severance, and placed on TDRL dispositions. Therefore, Air Force percent ratings for TDRL re-evaluations cannot be identified from the existing data and are not shown in this table.

The most frequently assigned rating to individuals placed on the TDRL is 30% in all services, accounting for 24% of percent ratings in the Army and about 39% in both the Navy and Marine Corps. Second most commonly assigned rating in the Navy (21.9%), Marine Corps (20%), and Army (12.5%) is 40%. The highest percentage of ratings of 100% was found among Navy TDRL re-evaluations (9.2%). Navy and Marine Corps TDRL re-evaluations were more frequently given ratings of 30% or higher; about 85% of TDRL re-evaluations completed by the Department of the Navy received a rating of 30% or higher. Among Army TDRL re-evaluations, 75% had a rating of 30% or higher.

**TABLE 16B: LATEST PERCENT RATING FOR INDIVIDUALS WHOSE FIRST DISPOSITION WAS PLACED ON TDRL: FY 2001-FY 2009**

	Army*			Navy			Marine Corps			Air Force		
	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP
Unrated	404	2.3	N/A	231	3.3	N/A	177	3.3	N/A	N/A	N/A	N/A
0	536	3.1	3.3	91	1.3	1.3	63	1.2	1.2	N/A	N/A	N/A
10	1,724	9.9	14.0	366	5.2	6.7	348	6.4	7.9	N/A	N/A	N/A
20	745	4.3	18.7	270	3.8	10.7	157	2.9	10.9	N/A	N/A	N/A
30	4,199	24.1	44.7	2,731	38.8	50.8	2,100	38.8	51.0	N/A	N/A	N/A
40	2,168	12.5	58.2	1,539	21.9	73.4	1,081	20.0	71.7	N/A	N/A	N/A
50	2056	11.8	71.0	507	7.2	80.8	468	8.7	80.6	N/A	N/A	N/A
60	1953	11.2	83.1	410	5.8	86.8	357	6.6	87.4	N/A	N/A	N/A
70	1061	6.1	89.7	133	1.9	88.8	236	4.4	91.9	N/A	N/A	N/A
80	549	3.2	93.1	84	1.2	90.0	84	1.6	93.5	N/A	N/A	N/A
90	194	1.1	94.3	31	0.4	90.5	46	0.9	94.4	N/A	N/A	N/A
100	916	5.3	100	648	9.2	100	292	5.4	100	N/A	N/A	N/A
<b>Missing</b>	<b>920</b>	<b>5.1</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Total</b>	<b>17,425</b>			<b>7,041</b>			<b>5,409</b>			<b>N/A</b>		

CP=Cumulative Percent, excluding missing and unrated

\*Excluded those Army personnel who were administratively removed and therefore did not get a final disposition and percent rating

Latest percent rating among those whose first disposition was placed on the TDRL is shown by service for the period for FY 2009 vs FY 2004-FY 2008 for all services is shown Table 17A. Air Force data received by AMSARA includes only permanent disability retired, separated without severance, and placed on TDRL dispositions. Therefore, distribution of Air Force percent ratings do not represent complete data and cannot be directly compared to data received from other services.

In FY 2009, the most frequently assigned rating is 10% in the Army (19.3%). In the Navy and Marine Corps the most frequently assigned rating is 30% (16.9 % and 14.1% respectively). The second most commonly assigned percent rating in the Army is a rating of 20% (14.7%). Navy considerations were most frequently rated at 100% when compared to other services (4.2%). Disability ratings greater than 30% in the Navy and Marine Corps accounted for about 45% of disability discharge evaluations while about 50% Army cases were rated higher than 30% at TDRL re-evaluation. In the period from FY 2004 to FY 2008, 10% was the most commonly assigned rating but was more frequently utilized relative to FY 2009 in all service. Other ratings followed patterns similar to those observed in FY 2009.

**TABLE 17A: LATEST PERCENT RATING AMONG EVALUATIONS FOR DISABILITY DISCHARGE BY SERVICE: FY 2004-FY 2008 vs FY 2009**

	FY 2004-FY 2008												FY 2009												
	Army			Navy			Marine Corps			Air Force			Army			Navy			Marine Corps			Air Force			
	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	
Unrated	4,645	7.5	N/A	5,847	37.0	N/A	2,985	25.5	N/A	0	0.0	N/A	152	1.1	N/A	682	30.3	N/A	330	15.0	N/A	44	2.0	N/A	
0	10,094	16.3	20.9	474	3.0	4.8	466	4.0	5.4	360	4.1	4.1	218	1.6	1.9	58	2.6	3.7	72	3.3	3.9	0	0.0	0.0	
10	19,051	30.7	60.4	3,059	19.3	35.4	3,149	26.9	36.2	3,499	39.9	44.0	2,654	19.3	24.5	313	13.9	23.7	534	24.3	32.5	619	28.0	28.5	
20	6,702	10.8	74.3	1,314	8.3	48.6	1,090	9.3	12.5	1,263	14.4	58.4	2,014	14.7	41.6	198	8.8	36.3	244	11.1	45.6	320	14.5	43.3	
30	5,682	9.2	86.1	2,357	14.9	72.2	1,984	17.0	22.8	1,552	17.7	76.1	1,344	9.8	53.1	381	16.9	60.6	309	14.1	62.1	462	20.9	64.6	
40	2,688	4.3	91.7	1,348	8.5	85.7	979	8.4	11.3	699	8.0	84.0	1,030	7.5	61.8	233	10.4	75.4	154	7.0	70.4	273	12.3	77.2	
50	1,100	1.8	93.9	311	2.0	88.8	255	2.2	2.9	523	6.0	90.0	1,362	9.9	73.4	145	6.4	84.7	195	8.9	80.9	227	10.3	87.6	
60	1,144	1.8	96.3	279	1.8	91.6	212	1.8	2.4	286	3.3	93.3	1324	9.6	84.7	77	3.4	89.6	138	6.3	88.3	148	6.7	94.5	
70	464	0.8	97.3	70	0.4	92.3	130	1.1	1.5	129	1.5	94.7	789	5.8	91.4	47	2.1	92.6	112	5.1	94.3	80	3.6	98.2	
80	312	0.5	97.9	61	0.4	92.9	67	0.6	0.8	57	0.7	95.4	451	3.3	95.3	18	0.8	93.8	34	1.5	96.1	29	1.3	99.5	
90	152	0.2	98.2	23	0.1	93.2	38	0.3	0.4	15	0.2	95.6	219	3.3	97.2	3	0.1	93.9	18	0.8	97.1	10	0.5	100	
100	852	1.4	100	681	4.3	100	331	2.8	3.8	390	4.5	100	334	2.4	100	95	4.2	100	55	2.5	100	1	0.1	100	
<b>Missing</b>	<b>4,645</b>	<b>7.5</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4,168</b>	<b>32.2</b>	<b>N/A</b>	<b>1,842</b>	<b>13.4</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1,190</b>	<b>35.0</b>	<b>N/A</b>
<b>Total</b>	<b>62,075</b>			<b>15,824</b>			<b>11,686</b>			<b>12,941</b>			<b>13,733</b>			<b>2,250</b>			<b>2,195</b>			<b>3,403</b>			

CP=Cumulative Percent, excluding missing and unrated

Latest percent rating among evaluations for disability discharge is shown by service for the period for FY 2009 vs FY 2004-FY 2008 for all services is shown Table 17B. Air Force data received by AMSARA includes only permanent disability retired, separated without severance, and placed on TDRL dispositions. Therefore, Air Force percent ratings for TDRL re-evaluations cannot be identified from the existing data and are not shown in this table.

In FY 2009, the most frequently assigned rating at TDRL re-evaluation was 30% in the Navy (39.8%) and Marine Corps (35.4%). In the Army the most frequently assigned rating at TDRL re-evaluation is 50% (18.9). Navy considerations were most frequently rated at 100% when compared to other services (7.2%). Disability ratings greater than 30% were highest in the Navy and Marine Corps accounting for about 90% of disability discharge evaluations while about 87% Army cases were rated higher than 30% at TDRL re-evaluation. In the period from FY 2004 to FY 2008 the distribution of percent ratings is similar to that observed in FY 2009.

**TABLE 17B: LATEST PERCENT RATING FOR INDIVIDUALS WHOSE FIRST DISPOSITION WAS PLACED ON TDRL: FY 2004-FY 2008 vs FY 2009**

	FY 2004-FY 2008												FY 2009											
	Army			Navy			Marine Corps			Air Force			Army			Navy			Marine Corps			Air Force		
	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP	Count	%	CP
Unrated	152	1.1	N/A	93	2.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	78	1.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0	218	1.6	3.5	23	0.7	0.7	18	0.7	0.7	N/A	N/A	N/A	27	0.4	0.4	9	0.5	0.5	8	0.5	0.5	N/A	N/A	N/A
10	2,654	19.3	24.5	125	3.9	4.7	132	5.0	5.8	N/A	N/A	N/A	290	4.4	5.1	53	3.1	3.7	83	4.7	5.3	N/A	N/A	N/A
20	2,014	14.7	41.6	89	2.8	7.6	42	1.6	7.4	N/A	N/A	N/A	185	2.8	8.0	49	2.9	6.6	39	2.2	7.5	N/A	N/A	N/A
30	1,344	9.8	53.1	1,372	42.6	51.5	1178	44.3	53.1	N/A	N/A	N/A	1,076	16.2	25.2	685	39.8	47.4	623	35.4	43.7	N/A	N/A	N/A
40	1,030	7.5	61.8	775	24.1	76.3	605	22.7	76.5	N/A	N/A	N/A	751	11.3	37.1	345	20.1	68.0	290	16.5	60.5	N/A	N/A	N/A
50	1,362	9.9	73.4	192	6.0	82.4	172	6.5	83.2	N/A	N/A	N/A	1,253	18.9	57.1	195	11.3	79.6	251	14.3	75.1	N/A	N/A	N/A
60	1,324	9.6	84.7	174	5.4	88.0	153	5.8	89.1	N/A	N/A	N/A	1,202	18.1	76.3	134	7.8	87.6	162	9.2	84.5	N/A	N/A	N/A
70	789	5.8	91.4	45	1.4	89.4	78	2.9	92.1	N/A	N/A	N/A	745	11.2	88.2	55	3.2	90.8	139	7.9	92.5	N/A	N/A	N/A
80	451	3.3	95.3	28	0.9	90.3	39	1.5	93.6	N/A	N/A	N/A	394	5.9	94.5	27	1.6	92.4	40	2.3	94.8	N/A	N/A	N/A
90	219	3.3	97.2	19	0.6	90.9	22	0.8	94.5	N/A	N/A	N/A	132	2.0	96.6	3	0.2	92.6	22	1.3	96.1	N/A	N/A	N/A
100	334	2.4	100	283	8.8	100	142	5.3	100	N/A	N/A	N/A	216	3.3	100	124	7.2	100	67	3.8	100	N/A	N/A	N/A
<b>Missing</b>	<b>1,842</b>	<b>13.4</b>	<b>N/A</b>	<b>93</b>	<b>2.9</b>	<b>N/A</b>	<b>80</b>	<b>3.0</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>288</b>	<b>4.3</b>	<b>N/A</b>	<b>4</b>	<b>2.4</b>	<b>N/A</b>	<b>36</b>	<b>2.1</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Total</b>	<b>9,816</b>			<b>3,218</b>			<b>2,661</b>			<b>N/A</b>			<b>6,637</b>			<b>1,720</b>			<b>1,760</b>			<b>N/A</b>		

CP=Cumulative Percent, excluding missing and unrated

### 3. Service Disability Evaluation Database Limitations

- Data utilized in the generation of this report were initially collected for purposes of supporting the Accession Medical Standards Working Group (AMSWG) in the development of evidence-based medical accession standards to reduce morbidity and attrition due to pre-existing conditions. Data use agreements reflected data elements and study populations to support this research and required revision to support this new analysis. Therefore, not all data elements were available for the full study period for all services.
- Variables representing education at the time of disability processing are not available in either existing AMSARA data or service disability data sent to AMSARA. MOS at disability evaluation is complete for Army for the study period. The Department of the Navy collects information regarding MOS, but these variables were not included in the initial data extracts that were sent to AMSARA. Both MOS and education have been associated with disability in civilian and military literature and are essential to understanding the precise risk factors associated with disability evaluation, separation, and retirement in the military.
- MEB ICD-9 diagnosis codes of the medical condition that precipitated the disability evaluation are not included in any of the service disability datasets received by AMSARA. VASRD codes give some indication of the unfitting conditions referred to the PEB, but do not contain the level of detail available when diagnoses are coded using ICD-9 codes. In particular, it cannot be reliably determined from VASRD codes alone whether the condition for which a service member is being evaluated was due to trauma or infection or whether the condition was chronic or acute.
- While the majority of disability evaluations had an accession record in the AMSARA databases, many who undergo disability processing do not have an accession record. In addition, this report did not apply restrictions to date of the accession records, only determined whether records were present or absent. After ensuring accession records precede disability evaluation, the percentage of disability evaluation with a matching accession record can be expected to decrease. Therefore, this may limit the ability to study the relationship between characteristics of service members at accession and disability evaluation, separation, and retirement in detail.
- Changes in instruction in FY 2009 with respect to post-traumatic stress disorder and traumatic brain injury disability evaluations present significant challenges to future research. The observed increase in both conditions prior to FY 2009 suggests that VASRD codes alone will likely underestimate the incidence and prevalence of these conditions prior to FY 2009. Without reliable case identification strategies, it will be difficult to accurately determine the risk factors associated with post-traumatic stress disorder and traumatic brain injury.
- None of the VASRD codes associated with medical conditions for which service members are evaluated for disability is identified as primary in the databases. Therefore, it cannot be determined which condition was the primary condition which precipitated disability evaluation and the impact and prevalence of some conditions in the population may be incorrectly characterized.

## 4. Disability Evaluation System Database Recommendations

- Each service's DES database should include one or more MEB ICD-9 diagnoses in all disability evaluation records, allowing for more in-depth analyses of the specific medical conditions that result in disability evaluation, separation, and retirement. These codes can be included in addition to VASRD codes and are not intended to replace the VASRD coding system.
- Each service's DES database should record electronically each service member's MOS and level of education at the time of disability evaluation. This will allow for the evaluation of the role of MOS and education on disability evaluation, separation, and retirement, including changes in these characteristics throughout the term of service.
- Include additional VASRD codes or other variables within each service's DES database to indicate whether the medical condition for which a service member is undergoing disability evaluation was due to trauma, infection, or other cause, and whether condition is either chronic or acute.
- Develop standards for the selection of VASRD codes into each service's electronic DES database to allow for enhanced comparability of VASRD codes and the associated analogous codes across services.
- Include a variable in all databases that indicates when multiple VASRD codes are used for one diagnosis.
- Standardize the combat data fields collected across the services.

## 5. Special Studies

### Risk Factors for Disability Retirement among Healthy Adults Joining the US Army

COL David W. Niebuhr, Rebekah L. Krampf, Jonathan A. Mayo, Caitlin D. Blandford, Lynn I. Levin, David N. Cowan

**Objective:** From 2001-2006 the Army deployed over 717,000 personnel to Iraq and Afghanistan, with over 15,000 troops wounded. Little is known about the impact of military and demographic factors, particularly deployment, occupation, and pre-existing medical status, on disability retirement.

**Methods:** A nested case-control study of first time, active duty Army personnel entering from 1997-2004. Cases, individuals granted a medical disability retirement from 1997-2006, were identified by the Army Physical Disability Agency (PDA). Five controls were matched by year of entrance to each case.

**Results:** Several factors were associated with increased risk of disability retirement, including sex, age, BMI, and military occupation; deployment was associated with a lower risk. Accession medical disqualification was not associated with risk of disability retirement.

**Conclusions:** The decreased risk associated with deployment probably reflects a “healthy warrior effect”, while the increased risk for combat arms may reflect combat exposures among deployed and more rigorous training among non-deployed.

**TABLE 18: DEMOGRAPHIC CHARACTERISTICS OF CASES AND CONTROLS**

	<b>Cases (n=2,453)</b>		<b>Controls (n=12,265)</b>	
	Count	Percent	Count	Percent
<b>Sex</b>				
Male	1,930	78.8	10,110	82.4
Female	523	21.3	2,155	17.6
<b>Age<sup>a</sup></b>				
<20	1,100	44.8	6,850	55.9
20-24	962	39.2	4,030	32.8
25-29	287	11.7	1,042	8.5
≥30	104	4.3	343	2.8
<b>Race/Ethnicity</b>				
White, Non-Hispanic	1,496	61.0	7,534	61.4
Black, Non-Hispanic	564	23.0	2,928	24.0
Other, Non-Hispanic	144	5.9	1,041	8.5
Hispanic	249	10.2	762	6.2
<b>BMI<sup>a</sup></b>				
<18.5	35	1.4	242	2.0
18.5-24.9	1,368	55.8	7,252	59.1
25-29.9	868	35.4	4,088	33.3
≥30	182	7.4	683	5.6
<b>Education<sup>a</sup></b>				
< High school	154	6.3	752	6.1
High school	2,142	87.3	10,722	87.4
≥ Some college	157	6.4	791	6.5
<b>Medical Qualification Status<sup>b</sup></b>				
Fully qualified	2,039	83.1	10,365	84.5
Temporary disqualification	265	10.8	1,110	9.1
Permanent disqualification	149	6.1	790	6.4
<b>Deployment</b>				
No	1,532	62.4	6,655	54.3
Yes	921	37.6	5,610	45.7

BMI, body mass index.

<sup>a</sup> Measured at accession.

**TABLE 19: ADJUSTED<sup>a</sup> ODDS RATIOS FOR RISK FACTORS FOR DISABILITY RETIREMENT**

			<b>OR</b>	<b>95% CI</b>
<b>Effect of Deployment on association between sex and disability</b>	Deployed	Ref: Men	1.00	-
		Women	0.82	0.65-1.03
	Non-deployed	Ref: Men	1.00	-
		Women	1.45	1.27-1.70
<b>Effect of Deployment on association between sex and disability</b>	Men	Ref: Non-deployed	1.00	-
		Deployed	0.71	0.63-0.79
	Women	Ref: Non-deployed	1.00	-
		Deployed	0.39	0.31-0.51
<b>Age<sup>b</sup></b>	Ref:<20		1.00	
	20-24		1.54	1.40-1.70
	25-29		1.80	1.54-2.10
	≥30		1.98	1.55-2.52
<b>Education<sup>b</sup></b>	< High school		1.12	0.93-1.36
	Ref: High school		1.00	-
	≥ Some college		0.73	0.61-0.89
<b>BMI<sup>b</sup></b>	Underweight		0.77	0.53-1.10
	Ref: Normal		1.00	-
	Overweight		1.07	0.97-1.18
	Obese		1.34	1.11-1.61
<b>Race/Ethnicity</b>	Ref: White, Non-Hispanic		1.00	-
	Black, Non-Hispanic		0.90	0.80-1.00
	Other, Non-Hispanic		0.66	0.55-0.80
	Hispanic		1.60	1.36-1.86
<b>Medical Qualification Status<sup>b</sup></b>	Ref: Fully qualified		1.00	-
	Temporary disqualification		1.10	0.95-1.27
	Permanent disqualification		0.89	0.74-1.07

CI, confidence interval; OR, odds ration; BMI, body mass index; Ref: referent group

<sup>a</sup> Each variable was adjusted for the presence of all other variables in the model.

<sup>b</sup> Measured at accession.

## **Risk Factors of Medical Disability Retirement in U.S. Enlisted Marines from FY 2001-2009**

CDR Cynthia Sikorski, COL David W. Niebuhr, CAPT Maura Emerson, David N. Cowan, Elizabeth R. Packnett, Caitlin D. Blandford

**Objective:** No prior studies have characterized the incidence and issues associated with U.S. Marine Corps medical disability retirement. Our objective was to assess factors associated with medical disability retirement in the U.S. Marine Corps.

**Methods:** Case-control study enrolling 11,557 medical disability retirement cases of U.S. Marines referred to the Physical Evaluation Board FY 2001-2009 and 42,216 controls, matched to cases in a 4:1 ratio on year of accession into the service were analyzed utilizing bivariate and multivariate logistic regression analysis which adjusted for age, sex, race, deployment history, and medical waiver status at accession.

**Results:** Increased age at accession, which was most pronounced at age  $\geq 30$  (OR adjusted= 2.4, 95% CI 1.7-3.2) was associated with higher odds of medical retirement disability (adjusted for sex, race, deployment history, and medical waiver status at accession.) BMI at accession for overweight (OR adjusted = 1.2, 95% CI 1.1-1.2) and obesity (OR adjusted =1.4, 95% CI 1.3-1.5) was associated with higher odds of disability. Women (OR adjusted = 1.3, 95% CI 1.2-1.3) have higher odds of disability than men. "Healthy Warrior Effect" was observed in that those who deployed (OR adjusted= 0.48, 95% CI 0.46-0.50) had decreased odds of medical disability retirement than those who did not deploy. Medical waivers at accession (OR adjusted= 1.12, 95% CI 1.01-1.23) increase the odds of medical disability retirement.

**Conclusions:** Increased age and increased BMI at accession are associated with higher odds of disability. The "Healthy Warrior Effect" was noted in that those who deployed had lower odds of medical retirement disability. Women have higher odds of medical disability retirement than men. Medical waivers at accession increase odds of medical disability retirement. Continued surveillance of the disability evaluation system is needed to help develop preventive measures and to help policy makers establish evidence-based policies on accession, deployment, and retention standards over the lifecycle of service members.

**TABLE 20: DEMOGRAPHIC CHARACTERISTICS OF CASES AND CONTROLS**

	<b>Cases (n=11,554)</b>		<b>Controls (n=46,216)</b>	
	Count	Percent	Count	Percent
<b>Sex</b>				
Male	10,364	89.7	42,913	92.9
Female	1,190	10.3	3,301	7.1
<b>Age<sup>a</sup></b>				
<20	7,663	66.3	33,199	71.3
20-24	3,284	28.4	11,578	25.1
25-29	544	4.7	1,322	2.9
≥30	63	0.6	117	0.3
<b>BMI<sup>a</sup></b>				
<18.5	364	3.2	1,452	3.2
18.5-24.9	6,458	55.9	27,649	59.8
25-29.9	3,396	29.4	2,720	5.9
≥30	878	7.6	2,720	5.9
Missing	458	4.0	1,920	4.2
<b>Deployment</b>				
No	7,831	67.8	22,856	49.4
Yes	3,723	32.2	23,360	50.6
<b>Medical Waiver<sup>a</sup></b>				
No	10,947	95.0	44,122	95.0
Yes	582	5.0	2,039	4.0
Missing	25	0	55	1.0
<b>Race</b>				
White	9,371	81.1	35,749	77.4
Black	1,077	9.3	4,879	10.6
Other	354	3.1	1,652	3.6
Missing	752	6.5	3,936	8.5

CI, confidence interval; OR, odds ratio; BMI, body mass index; Ref: referent group

<sup>a</sup> Measured at accession.

**TABLE 21: CRUDE AND ADJUSTED<sup>a</sup> ODDS RATIOS FOR RISK FACTORS FOR DISABILITY RETIREMENT**

	<b>Crude OR</b>	<b>95% CI</b>	<b>Adjusted OR</b>	<b>95% CI</b>
<b>Sex</b>				
Ref: Male	1.0	-	1.0	-
Female	1.5	1.4-1.5	1.4	1.3-1.5
<b>Age<sup>b</sup></b>				
Ref: <20	1.0	-	1.0	-
20-24	1.3	1.2-1.3	1.2	1.1-1.2
25-29	1.2	1.1-1.2	1.2	1.1-1.2
≥30	1.4	1.3-1.5	1.4	1.3-1.5
<b>BMI<sup>b</sup></b>				
<18.5	1.1	1.0-1.2	1.1	0.9-1.2
Ref: 18.5-24.9	1.0	-	1.0	-
25-29.9	1.2	1.1-1.2	1.2	1.1-1.2
≥30	1.4	1.3-1.5	1.4	1.3-1.5
<b>Deployment</b>				
No	1.0	-	1.0	-
Yes	0.47	0.45-0.49	0.34	0.28-0.41
<b>Medical Waiver<sup>b</sup></b>				
No	1.0	-	1.0	-
Yes	1.15	1.04-1.26	1.12	1.01-1.23
<b>Race</b>				
White	1.0	-	1.0	-
Black	0.84	0.79-0.90	0.79	0.73-0.84
Other	0.82	0.73-0.92	0.86	0.77-0.97

CI, confidence interval; OR, odds ratio; BMI, body mass index; Ref: referent group

<sup>a</sup> Each variable was adjusted for the presence of all other variables in the model.

<sup>b</sup> Measured at accession.

## 6. Future Research

***Descriptive epidemiology of disability related to traumatic brain injury.*** Neurological conditions are one of the leading causes of disability in all services. The epidemiology of traumatic brain injury related disability cases will be described using data on Army and Marine service members who were evaluated for disability using cross sectional analytic techniques. Temporal variation in rates of TBI related disability will be examined, particularly as related to NDAA 2008. We will generate age-adjusted rates of disability and examine the data for variation in the rates of TBI related disability by demographic characteristics, deployment, and combat exposure. In addition, we will compare and contrast the population who presents with traumatic brain injury related disability in the Army and the Marine Corps.

***Descriptive epidemiology of disability related to post-traumatic stress disorder.*** Psychiatric conditions are one of the leading causes of disability in all services. The epidemiology of post-traumatic stress disorder related disability cases will be described using data on Army and Marine service members who were evaluated for disability using cross sectional analytic techniques. Temporal variation in rates of PTSD related disability will be examined, particularly as related to NDAA 2008. We will generate age-adjusted rates of disability and examine the data for variation in the rates of PTSD related disability by demographic characteristics, deployment, and combat exposure. In addition, we will compare and contrast the population who presents with traumatic brain injury related disability in the Army and the Marine Corps.

***Comorbidity associated with traumatic brain injury related disability.*** The comorbidity of traumatic brain injury related disability cases will be described using data on Army and Marine service members who were evaluated for disability using cross sectional analytic techniques. Information on comorbid conditions will be obtained from disability evaluation records as well as inpatient and outpatient databases. We will describe the prevalence of comorbid conditions among those evaluated for TBI related disability and examine the data for variation in comorbid conditions by demographic characteristics, deployment, and combat exposure. In addition, we will compare and contrast comorbidity associated with traumatic brain injury related disability by service and PTSD comorbidity.

***Risk factors for disability retirement in Navy service members.*** Using a case control study, we will determine which demographic and medical characteristics are most strongly associated with disability retirement in first time enlisted active duty Navy service members. Cases will be defined as service members whose first enlisted active duty ended in a disability retirement. Controls will be frequency matched to cases by year of accession. Risk factors to be evaluated include age, education, and BMI at accession as well as race, deployment, and receipt of medical disqualification or medical accession waiver.

***Risk factors for disability retirement in Air Force.*** Using a case control study, we will determine which demographic and medical characteristics are most strongly associated with disability retirement in first time enlisted active duty Air Force service members. Cases will be defined as service members whose first enlisted active duty ended in a disability retirement. Controls will be frequency matched to cases by year of accession. Risk factors to be evaluated include age, education, and BMI at accession as well as race, deployment, and receipt of medical disqualification or medical accession waiver.

***Case-series review of post-traumatic stress disorder cases in the Navy and Marine Corps.*** Data on demographic and medical characteristics of those evaluated for disability is not

available for many service members. Abstraction from paper DES medical records will be performed on a sample of disability cases evaluated for PTSD in the Navy and Marine Corps, collecting. Data collected will include evidence of conditions that existed prior to service, concealment, and evidence of service aggravation. We will also evaluate the degree to which data not currently available in electronic format can be abstracted from medical records including, but not limited to, ICD-9 coding of diagnoses, MOS at time of disability evaluation, and BMI at disability evaluation.

***Variations in time on the Temporary Disability Retirement List and changes in disability rating.*** A case study of individuals placed on the TDRL will be performed to assess the frequency with which changes in disability rating and VASRD codes associated with conditions. We will also determine the prevalence of changes in either rating or VASRD code among individuals placed on the TDRL and describe the distribution of time to change in rating or VASRD code. In addition, we will compare and contrast Army, Navy, and Marine Corps TDRL cases and assess both total time spent on the TDRL and time to changes in rating or VASRD for variations over time.

***Musculoskeletal conditions associated with use of analogous codes.*** Many musculoskeletal related disabilities are coded using musculoskeletal analogous codes and identifying the particular musculoskeletal condition which resulted in disability is not possible. Therefore, we will conduct a case review of musculoskeletal disability cases where analogous codes for musculoskeletal conditions were utilized. Inpatient and outpatient data records will be obtained to determine which ICD-9 musculoskeletal diagnoses (both inpatient and outpatient) most frequently occur in individuals with analogous codes.

## References

1. US Department of Defense. *Wounded, Ill and Injured Compensation and Benefits Handbook for Seriously Ill and Injured Members of the Armed Forces*. Washington, DC: 2008. Available at <http://www.pdhealth.mil/hss/des.asp>; Accessed August 13, 2010.
2. Peck CA. The U.S. Army Physical Disability System. In: *Surgical Combat Casualty Care: Rehabilitation of the Injured Combatant*, edited by Belandres PV and Dillingham TR. Washington, D.C.: Borden Institute, Walter Reed Army Medical Center and the Office of the Surgeon General, United States Army, 1999; 863-885.
3. Department of Defense Instruction 1332.38. Physical Disability Evaluations. 10 Jul 2006.
4. US Department of the Air Force. *Physical Evaluation for Retention, Retirement, and Separation*. Washington, DC: DAF; 2006. Air Force Instruction 36-3212.
5. US Department of the Army. *Physical Evaluation for Retention, Retirement, and Separation*. Washington, DC: DA; 2006. Army Regulation 635-40.
6. US Department of the Navy. *Disability and Evaluation Manual*. Washington, DC: 2002. Secretary of the Navy Instruction 1850.4E.
7. National Defense Authorization Act FY 2008. HR1585

## Acronyms

AFPC	Air Force Personnel Center	OMF	Objective Medical Finding
AMSARA	Accession Medical Standards Analysis and Research Activity	PASBA	Patient Administration Systems and Biostatistics Activity
AMSWG	Accession Medical Standards Working Group	PDA	Army Physical Disability Agency
BMI	Body Mass Index	PDRL	Permanent Disability Retirement List
BUMED	United States Navy Bureau of Medicine and Surgery	PEB	Physical Evaluation Board
DES	Disability Evaluation System	PTSD	Post traumatic stress disorder
DMDC	Defense Manpower Data Center	RTD	Returned to duty
DoD	Department of Defense	SC	Service Component
DUA	Data Use Agreement	SECNAVCORB	Secretary of the Navy Council of Review Boards
FPEB	Formal Physical Evaluation Board	SG	Secretary General
FRA	Final Review Authority	SSN	Social Security Number
FY	Fiscal Year	SWOB	Separated without Benefit
ICD-9	<i>International Classification of Diseases and Conditions, 9<sup>th</sup> revision</i>	TBI	Traumatic Brain Injury
IPEB	Informal Physical Evaluation Board	TDRL	Temporary Disability Retirement List
MEB	Medical Evaluation Board	USAPDA	United States Army Physical Disability Agency
MEPS	Military Entrance Processing Stations	USAREC	US Army Recruiting Command
MHS	Military Health System	USMEDCOM	US Medical Command
MOS	Military Occupational Specialty	USMEPCOMUS	Military Entrance Processing Command
MTF	Military Treatment Facility	VASRD	Veterans Administration Schedule for Rating Disability
NRC	United States Navy Recruiting Command		



Accession Medical Standards Analysis & Research Activity

Division of Preventive Medicine  
Walter Reed Army Institute of Research  
503 Robert Grant Road  
Forest Glen Annex  
Silver Spring, MD 20910  
(301)319-9600

<http://www.amsara.amedd.army.mil>