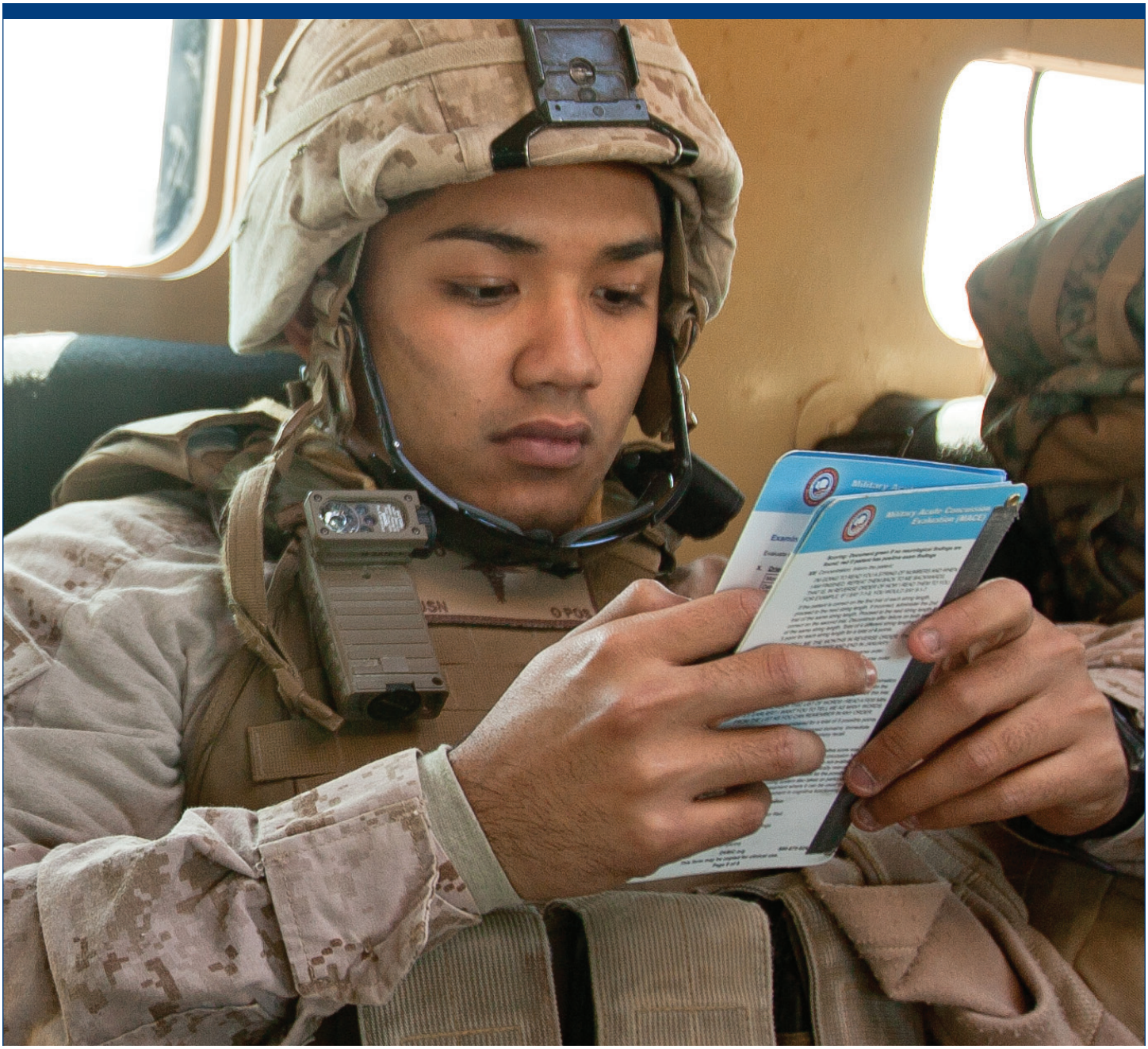
Defense and Veterans Brain Injury Center



ANNUAL REPORT

2011

DVBIC
Defense and Veterans Brain Injury Center

DVBIC MISSION

Defense and Veterans Brain Injury Center's mission is to serve active duty military, their beneficiaries, and veterans with traumatic brain injuries (TBIs) through state-of-the-art clinical care, innovative clinical research initiatives and educational programs, and support for force health protection services.

DVBIC fulfills this mission through ongoing collaboration with the DoD, military services, Department of Veterans Affairs, civilian health partners, local communities, families and individuals with TBI.

Photo courtesy of DVIDS

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Photo courtesy of DVBIC

Dear Service Members, Veterans, Families and Friends:

2011 was a year of change and growth for the Defense and Veterans Brain Injury Center (DVBIC). More, bigger, and new are words that characterize seemingly everything we did last year. A few examples:

- *We moved. DVBIC's headquarters location moved after 19 years due to the Base Realignment and Closure merger of Walter Reed Army Medical Center in Washington, D.C., and National Naval Medical Center in Bethesda, Md.; a DVBIC network site was installed at the newly-created Walter Reed National Military Medical Center in Bethesda, and DVBIC's headquarters staff moved into nearby Silver Spring and Rockville office space.*
- *We began treating service members in a new location: Fort Belvoir Community Hospital.*
- *We launched **BrainLineMilitary.org** in August and went live with mobile sites for **BrainLine.org** and **BrainLineMilitary.org**.*
- *We convened our largest number of military medical providers yet at our 5th Annual Defense and Veterans TBI Summit.*
- *We shipped more than 960,000 educational materials — nearly triple the number we distributed in 2008.*

All of these accomplishments happened in a year in which I spent six months in Afghanistan! This list of show-stopping achievements demonstrates DVBIC's commitment to our mission of serving those who have served and are serving. It is the service members and veterans and their families who drive our motivation each day to do the best we can, plus a little bit more.

My own work in Afghanistan helped me see how extensively DVBIC materials are used and how important those tools really are, especially the MACE, for deployed providers of all services in screening and making the diagnosis of concussion. As the Theater Neurology/TBI Consultant, standardization of mTBI care and reporting was one of the key missions at hand at the 11 concussion care centers in-theater. I was inspired by the dedication and ingenuity of these concussion center providers in achieving this goal, including their outreach to commanders, providers and the very warriors themselves. As a result, we see 95 percent of wounded warriors with mTBI recovering in theater on average in five days (or less than one week). I returned from my deployment determined more than ever to ensure that DVBIC's network and headquarters work together seamlessly and with our partners to fulfill our mission not only in theater but back home, across the continuum of care.

Coming in 2012, I can promise you that there will never be a dull moment, and we will work our hardest to meet the needs of our nation's service members, veterans and families. As anticipated completion of contingency operations lead to fewer deployment injuries, we will continue to operate as DoD's enduring trusted TBI resource and enhance our focus on prevention and treatment of injuries stateside. Next year DVBIC will mark 20 years of service, a period which will surely prompt reflection of how our work has changed over the years past, and will change in years to come. On behalf of all of the DVBIC network and headquarters team, thank you for being a part of our mission.

Very respectfully,

COL Jamie Grimes, MD
National Director, DVBIC

Photo courtesy of DVBIC

DVBIC logo created to unify and present the DVBIC brand so those who see it instantly associate the logos, fonts and colors with the highest standards in the research, education and treatment of traumatic brain injury.

For DVBIC, 2011 was a year of change and increased capability.

We placed the first on-location government site directors for the Charlottesville and Johnstown Neurorehabilitation and Community Reintegration Centers this year. This ensures that each of these centers provide the very best care to our service members with TBI injuries.

We continued a productive relationship with a consulting company to help us conduct strategic planning. There was a change in the structure of our national meeting held in St. Petersburg, Fla., this year. We increased the breakout sessions and altered the makeup of the sessions, which provided an excellent opportunity for the staff to learn from each other, work out common problems in group sessions and establish professional relationships to strengthen the DVBIC family. Network communication was further facilitated through a poster presentation that each site and the headquarters team developed and shared during an evening event. Attendees not only had the opportunity to discuss their site, they were able to visit the other posters to learn more about the DVBIC network.

Our internal organizational growth coincided with major outward changes. Because of the closure of Walter Reed Army Medical Center, we moved our central office operations to Silver Spring, Md., and opened two new network sites: one at Walter Reed National Military Medical Center, in Bethesda, Md., and one at Fort Belvoir Community Hospital in Virginia. This expansion to Fort Belvoir provides increased TBI services to Marine Corps Base Quantico and northern Virginia.

During 2011, we hired our first full-time, dedicated Contracting Officer's Representative, a vital government position to oversee the organizational relationship between the government and contracting company, as well as the contracts themselves. DVBIC continued the challenging process this year of separating our current contract into three more manageable and service-specific contracts. We successfully awarded a headquarters support contract, one of the three projected. The lengthy process continues for the other two contracts, and we look forward to its fruition.

Overall, DVBIC's internal changes are intended to strengthen operations at headquarters and our network sites; serve our health care partners of the military and VA better; and ultimately, improve care to the service members, veterans, families and providers who are affected by TBI.

DVBIC RESEARCH MISSION

DVBIC's Division of Research brings together leading experts from the DoD and VA, as well as other federal and non-federal partners, to study the effects of TBI on service members, veterans, and their family members and caregivers. Together, these experts investigate interventions that prevent or treat the effects of TBI. This work, much of which is congressionally mandated, is accomplished through clinical investigations across all TBI severity levels in active duty and veteran populations, in epidemiological and longitudinal studies to understand the long-term effects of TBI and assess the efficacy of TBI treatments and interventions.

HIGH PROFILE STUDIES

15-Year Longitudinal Study on TBI

Section 720, HR 5122 of the 2007 National Defense Authorization Act (NDAA) requires a longitudinal study on TBI sustained by service members in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). The study is to be conducted over a 15-year period and address: 1) the long-term physical and mental health effects of TBI incurred by members of the Armed Forces during service in OIF and OEF; 2) the care and rehabilitation needs of these members with TBI; 3) the type and availability of care and rehabilitation programs and services within and outside the DoD and the DVA for these service members and veterans with TBI; and 4) the effect this injury has on family members and caregivers.

This study will collect information on service members and veterans with deployment-related TBI for up to 15 years after injury. Patients can enroll in one of two pathways: a comprehensive pathway in which intensive clinical evaluations every three years will provide neuroimaging, neurocognitive, neurobehavioral, blood specimen, and clinical data; or a brief pathway in which phone/web-based abbreviated clinical evaluations are conducted annually for up to 15 years. Participants will fall into one of three cohorts: (a) those who have sustained a mild, moderate or severe TBI, (b) those who have sustained a non-TBI related injury such as an orthopedic or soft tissue injury (injured non-TBI trauma controls), or (c) are those who are injury free (non-injured controls). There will be 2,800 study participants.

This 15-year longitudinal study will also address health-related quality of life issues for caregivers of service members and veterans with moderate or severe TBI. Focus groups, cognitive interviews and field-testing will be used to assess the mental and physical health of these caregivers, as well as develop validated TBI quality of life care items to measure their well-being and health care needs.

Photo courtesy of iStockphoto

The study began at the former Walter Reed Army Medical Center and was transferred to the Walter Reed National Military Medical Center (WRNMMC) with the Base Closure and Realignment (BRAC). In April 2011, the study achieved the milestone of receiving all final regulatory approvals and started enrolling patients. By the end of 2011, 43 service members had been enrolled into the comprehensive pathway. In 2012, enrollment into the comprehensive pathway will continue, and enrollment into the brief pathway and caregiver studies will begin.

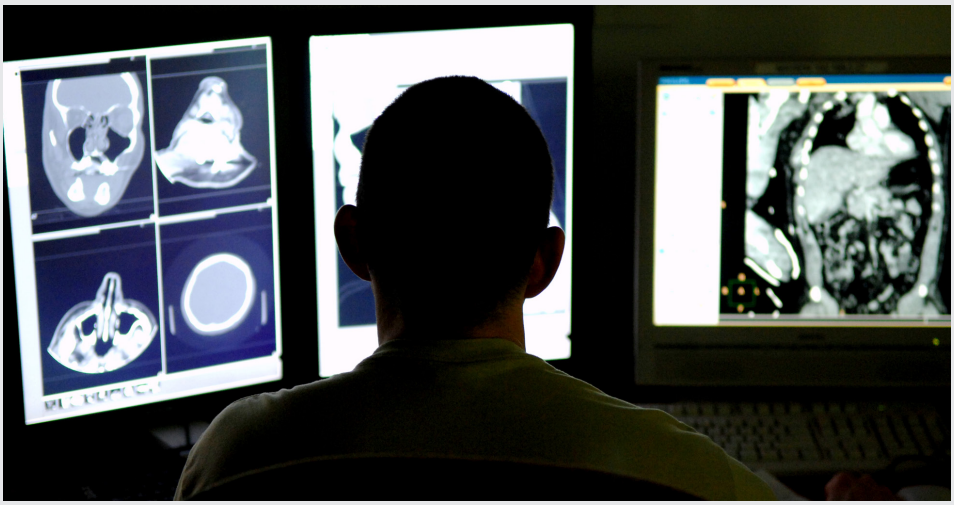


Photo courtesy of Department of Defense

Head-to-Head Study

The DVBIC study titled, "A psychometric comparison of brief computerized neuropsychological assessment batteries," abbreviated as H2H for "Head-to-Head" study was developed as a result of HR 4986, Section 1673 of the 2008 NDAA requirements, to improve assessment of cognitive functioning of a deployed service member after a potential mild TBI. The time requirements for administering pencil-and-paper neuropsychological evaluation (traditionally used to test cognitive functional abilities) limit its feasibility for use in-theater where quick decisions need to be made and space and resources may be sparse. The H2H study, being conducted at Fort Bragg, N.C., was designed to provide information regarding the utility of four different computerized tests to identify soldiers who are at risk for brain injury-related problems. This study will compare the psychometric properties of commercially available computerized neuropsychological tools (ANAM, ImPACT, CogState Sport, and CNS Vital Signs) to establish the test-retest reliability and validity of these computerized batteries in an active duty military population, and to allow informed decisions regarding best practices for the use of a computerized mild TBI assessment program.

Phase I of this study seeks to establish the test-retest reliability of several leading computerized batteries. The goal is to measure the test-retest reliability in a homogenous sample of active duty military personnel with approximately 30 days between testing periods. This will allow for more direct comparisons of the psychometric properties of these assessment tools. This phase of the H2H study began recruiting participants in February 2011. Enrollment was nearly complete by the end of the year. Data analysis is expected to begin in early spring 2012, with distribution of results and conclusion by the fall.

Phase II of this study seeks to establish the validity of the computerized neuropsychological batteries to detect cognitive dysfunction as determined by traditional neuropsychological evaluation, in service members with and without mild TBI. Phase II of H2H received all required regulatory approvals in June 2011, and had enrolled 22 of a target of 260 participants with mild TBI, 5 of a target of 260 control participants, and 0 of 260 non-TBI injured control participants. Enrollment will continue in 2012.

SCORE! Study

The DVBIC Division of Research responded to HR 2647, section 723 of NDAA 2010, by developing the Study of Cognitive Rehabilitation Effectiveness for Mild Traumatic Brain Injury (SCORE!), being conducted at San Antonio Military Medical Center in Texas. This is a prospective, randomized, control treatment trial of cognitive rehabilitation for OEF/OIF service members with a history of mild TBI and persistent (3-24 months post-injury) cognitive complaints. This study will assess the efficacy of computerized, group, and individual therapies in order to provide TRICARE Management Activity an evidence-based assessment of the effectiveness of cognitive rehabilitation therapy to care for service members with mild TBI. Recruitment began in June 2011, with 28 participants enrolled in the study by the end of the year. Enrollment will continue in 2012.

DVBIC RESEARCH PORTFOLIO

TBI Screening

The Division of Research is committed to the care of wounded warriors across the continuum of care for TBI. Early identification of TBI is critical in delivering appropriate services and support to those who need them. In the area of TBI screening, DVBIC's research portfolio includes studies designed to validate or improve TBI screening tools. In one such study that was completed in 2011, DVBIC collected normative data in a military population on the Military Acute Concussion Evaluation (MACE). Across three DVBIC study sites (Naval Medical Center at San Diego/Camp Pendleton, Brooke Army Medical Center, and Carl R. Darnall Army Medical CenterFort Hood), 544 normative cases were collected by the spring of 2011. This study concluded that the different versions of the standardized assessment of concussion (SAC) were equivalent across all forms (including the new additional forms), and that MACE performance and score distribution for the military population is highly consistent with SAC data in athletes.

TBI Assessment

Once an individual has been diagnosed with a TBI, determining the severity of the injury will help inform injury prognosis and guide the course of treatment. The DVBIC research portfolio includes a number of studies in the area of TBI assessment, including the H2H study described above.

Another study which is designed to meet the goal of improving TBI assessment is *A Provider Validated Traumatic Brain Injury (TBI) Assessment Trial in Post Deployed Soldiers*, being done at Fort Carson DVBIC. The aims of the study are: to establish the cutoff criteria that optimize sensitivity and specificity, as well as the positive and negative predictive value of the VA/DoD TBI screening tool in relation to clinician-confirmed diagnosis of TBI using the Warrior Administered Retrospective Casualty Assessment Tool (WARCAT) as the instrument for the basis of a Structured Clinical Interview (WARCAT Plus); to determine the degree to which positive TBI screening using the VA/DoD screening tool and WARCAT Plus predict post-concussion symptom reporting, independent of PTSD status; and to determine the degree to which positive TBI screening using a VA/DoD screening tool and WARCAT Plus each predict increased psychiatric and other health care utilization and outcomes, as well as discharge from military service at one year post screening. Enrollment for this study closed in 2011. Results from this research were published in the following manuscript: Terrio HP, Nelson LA, Betthauser LM, Harwood JE and Brenner LA. 2011. Postdeployment traumatic brain injury screening questions: sensitivity, specificity, and predictive values in returning soldiers. Rehabil Psychol 56(1):26-31.

TBI Treatment

Taking care of all of our wounded warriors is a top priority for DVBIC, and the Division of Research is working to find the best therapies for every challenge that TBI presents to this population. No current FDA-approved treatment exists for TBI, so it is very important to find the best treatments for the various symptoms that present following a TBI and the common co-morbidities co-occurring with TBI.

DVBIC is conducting a TBI clinical treatment trial at San Antonio Military Medical Center (SAMMC). This trial, known as ProTECT III, will determine if progesterone, a hormone normally found in the human body, is useful in limiting the amount of brain damage from TBI. Progesterone is inexpensive and safe, and early studies show it is effective for moderate and severe TBI. ProTECT III will test intravenous progesterone in improving functional outcomes in adults acutely after moderate to severe TBI. This national, multisite study is using the National Institutes of Health Neurological Emergencies Treatment Trials network and includes 17 civilian sites. DVBIC SAMMC was invited to collaborate and participate in the study as the only DoD arm of the trial. In 2011, the study team completed the community consultation and public disclosure, and had received conditional regulatory approval, pending an approval from the Secretary of Defense for waiving the informed consent requirement for this research.

Post-traumatic headache is one of the most commonly occurring sequelae after TBI and can persist or become recurring in the months or years after the brain injury. DVBIC WRNMMC is conducting a study entitled *A Randomized Exploratory Study to Evaluate Two Acupuncture Methods for the Treatment of Headaches Associated with TBI*. The purpose of the study is to determine if standardized auricular acupuncture or semi-standardized traditional Chinese acupuncture alleviates headaches more effectively than usual care alone, in a cohort of active duty service members with mild to moderate TBI. DVBIC hopes to use the study to obtain preliminary estimates for future trial design. By the end of 2011, 17 of 90 participants had been enrolled. Enrollment continues in this study and is expected to increase in 2012, after the study team settles into its new space.

Photo courtesy of Department of Defense

TBI Rehabilitation

Rehabilitation is a vital part of the recovery process for TBI patients to return to their pre-injury state. The Division of Research is working on exciting studies to find the best possible solutions for successfully rehabilitating survivors of TBI. As mentioned previously, the SCORE! study is a randomized clinical trial determining the efficacy of cognitive rehabilitation for persistent symptoms after mild TBI. In concert with this study at SAMMC is *the Imaging Support of Study of Cognitive Rehabilitation Effectiveness in Mild Traumatic Brain Injury (iSCORE)*. DVBIC is planning to partner with the Research Imaging Institute at the University of Texas Health Science Center at San Antonio to conduct this study. The goals of this study are to investigate longitudinal structural and functional imaging changes over time that correlate with outcome following a trial of cognitive rehabilitation, as well as to investigate the neural correlates of fatigue and misperception of effort as they relate to treatment outcome following mild TBI. Patients enrolled in SCORE! who agree to participate in iSCORE are consented, enrolled and undergo MRI imaging, complete several behavioral measures, a submaximal grip strength measurement and a cognitive task. Enrollment for this study began at the end of 2011 and will continue until there are 200 subjects, which could take until 2013.

Also in the area of TBI rehabilitation, the research team at DVBIC Fort Carson is conducting a study entitled *A Randomized, Controlled, Trial of Interactive Metronome (IM) Technology for Remediation of Cognitive Difficulties Following Blast-Related Traumatic Brain Injury*. This study is designed to determine whether the addition of IM training leads to improvements in attention and memory, better secondary outcomes such as post-concussion symptom status, vocational functioning, and quality of life, and normalization of electrocortical functioning at six months in comparison to rehabilitation treatment as usual. This study enrolled 38 of 50 total participants in 2011. In 2012, enrollment will continue until completion, and the research team will begin analyzing the data.

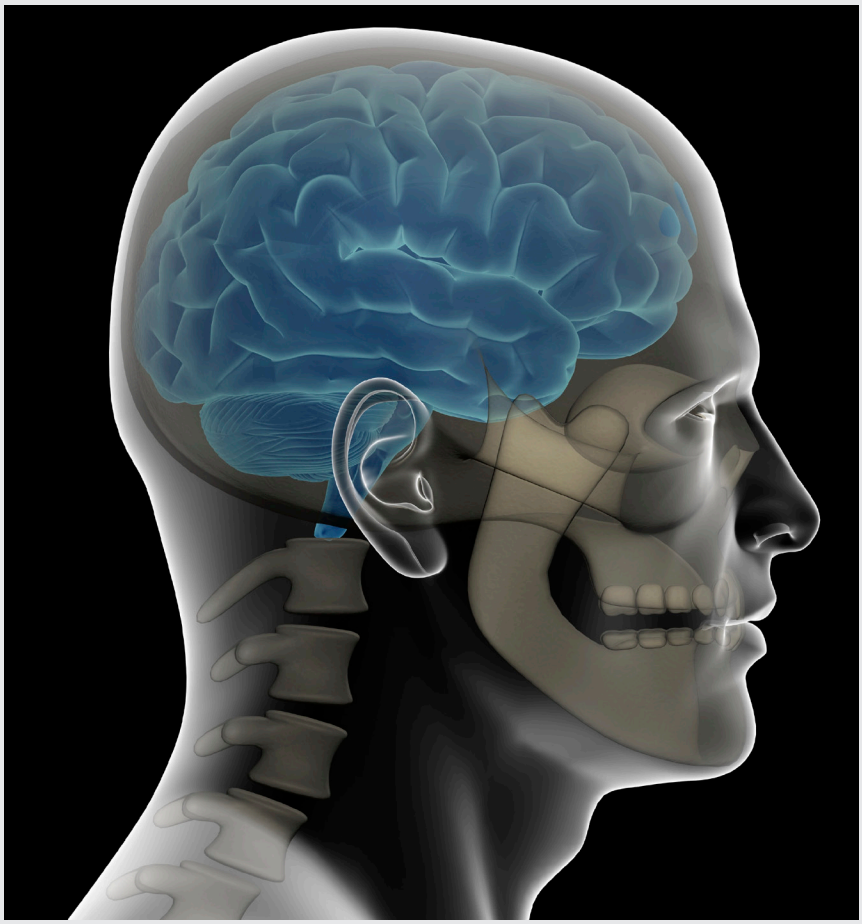


Photo courtesy of iStockphoto

Studies Crossing Multiple Categories of Research

Some of DVBIC's studies do not naturally fall into just one of the research categories listed above. These more widely scoped studies tend to be longitudinal or observational, and include many stages of the care continuum of TBI from injury to the final state of recovery, such as the previously described 15 Year Longitudinal Study.

The Prospective Brain Injury Tracking Protocol continues as a DVBIC study underway at eight sites. The ultimate goals of this study are to ensure that all military and VA patients with TBI receive TBI-specific screening, treatment and follow-up while standardized patient outcome data is being collected; to determine the effectiveness and relative cost of TBI evaluation and treatment strategies for military and VA medical systems; and to provide the military medical communities with evidence-based guidelines to optimize care for survivors of TBI. Enrollment for this study continues at multiple DVBIC sites with the goal of creating a collective database of clinical data which will be used to gather valuable information leading to future best practices.

Another study, the *Traumatic Brain Injury Model Systems*, is being conducted at DVBIC Tampa, DVBIC Richmond, and DVBIC Minneapolis, with DVBIC Palo Alto partnering with the Model Systems team at the Palo Alto VA. This study involves the creation and management of a database associated with injury severity and outcomes associated with the longitudinal recovery course associated with TBI. The primary purpose of these data will be to gauge performance of VA Polytrauma Rehabilitation Centers' inpatient rehab programs relative to the private sector TBI inpatient rehabilitation programs. Data elements will be abstracted from medical records. Data characterizing injury severity, course of hospitalization, adjustment, and

rehabilitation outcomes will be collected during acute hospitalization for participants. Rehabilitation outcomes, medical complications, psychological adjustment, and socio-economic variables will be collected at annual follow-up intervals (1, 2, 5, and 5 year intervals thereafter) for a total of 20 years. Enrollment continued in 2011 and looks to continue in 2012.

The DVBIC Richmond VA site is conducting a study entitled *Epidemiological Study of Mild Traumatic Brain Injury Sequelae Caused by Blast Exposure During Operations Iraq and Enduring Freedom*, collaborating with others from Virginia Commonwealth University, Marine Corps bases Quantico and Camp Lejeune and Army Base Fort Lee. The purposes of this study are to determine prevalence of post-concussive symptoms after blast-related mTBI; determine early predictive factors for the development of post-concussion syndrome after blast injury; characterize late objective impairments after blast-induced mTBI to aid in the development of targeted interventions and measures, and to determine trajectory of symptoms to better characterize outcomes following TBI. Enrollment continued to reach its goal of 748 subjects in 2011 and will continue to recruit well into 2012. A manuscript based on this research was under review at *The Journal of Head Trauma Rehabilitation* at the end of the year.

Looking Forward

In 2012, the DVBIC Division of Research will continue the mission of conducting research aimed at informing best practices for the care of service members and veterans who have sustained a TBI, and better understanding of the needs of caregivers and families. We will continue to progress on all of our ongoing studies, and our researchers will listen to the TBI community to help address unmet needs.

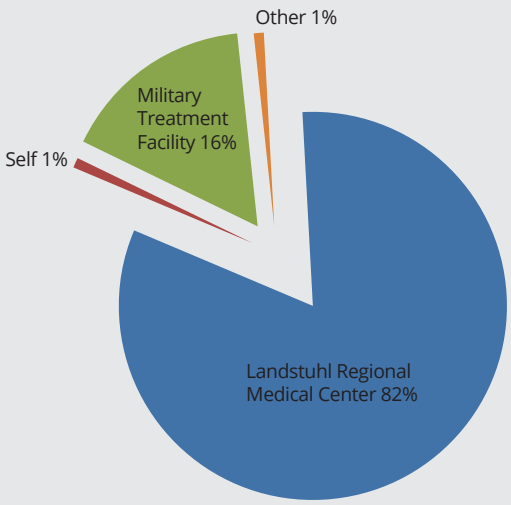
DIVISION OF CLINICAL AFFAIRS

The Division of Clinical Affairs provides services to support high quality medical care and education through facilitation of direct clinical care, care coordination, policy development, and educational programs for patients, caregivers and providers. The clinical affairs team also is active in increasing TBI awareness and prevention in both the military and civilian communities through providers and educational outreach events, multimedia, and collaborations with external partners. Staff within the division oversee neurocognitive testing for deploying service members, improve standards of care by updating clinical practice guidelines and determining effective medical practices through objective metrics, and support service members and veterans though the DoD and VA health care systems as they make the transition to civilian life. The Division of Clinical Affairs is comprised of the Office of Care Coordination, the Office of Clinical Initiatives, and the Neurocognitive Assessment Test (NCAT) Office. Each of these offices provides unique services, yet maintains close collaborations with other DVBIC divisions as well as government and civilian organizations that support service members and veterans with TBI.

Office of Care Coordination

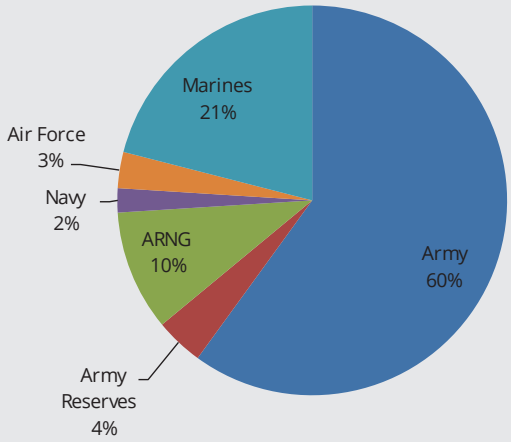
The DVBIC regional TBI care coordination system ensures that service members and veterans with TBIs have access to appropriate medical care, support, and available resources throughout the recovery process. DVBIC's network of TBI care coordinators assists active duty service members — including National Guard and reservists — and veterans with diagnosed TBIs as they navigate the systems of care. Regional Care Coordinators (RCCs) provide standardized follow-up and support as patients transition between treatment settings. Moreover, RCCs serve as points of contact to assess TBI resources in communities where individuals reside, facilitate access to those services, and ensure that individual plans of care are appropriate in the short and long term to optimize positive outcomes.

2011 Referral Source

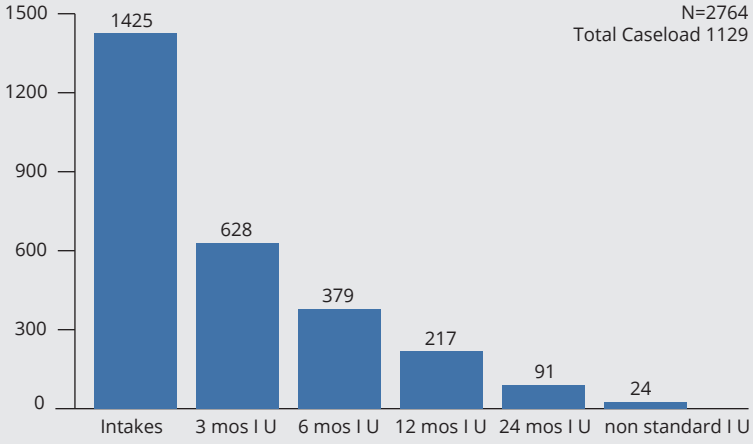


In 2011, the care coordination program followed a 1,129 service members and veterans across the continuum. Intake interviews provide the service member with an understanding of the program as well as make the connection to the TBI Care Coordinator assigned to their geographical catchment area. Subsequent interviews are conducted at standardized intervals to ensure that the service member is connected to appropriate services. In 2011 the RCCs conducted a total of 2,764 intake and follow-up interviews with service members and veterans.

2011 Referral Source Breakdown by Service Branch



2011 Completed Interviews



Office of Clinical Initiatives

The Office of Clinical Initiatives (OCI) undertakes projects to strengthen the DVBIC network, improve the quality of care across the DoD and VA health care systems, and expand TBI knowledge across the military and civilian sectors. OCI collaborates with the TBI representatives and/or program manager from each branch of service and other DoD and VA organizations to develop and update clinical practice guidelines and create clinical content for TBI trainings across a variety of platforms. Projects and programs undertaken by the Office in 2011 include:

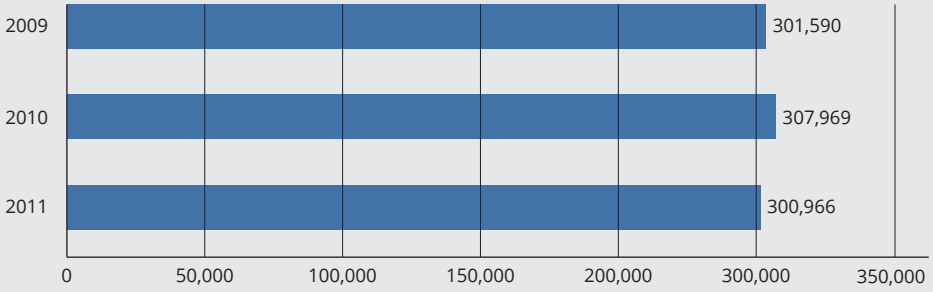
- Providing TBI Subject Matter Expertise: OCI staff act as subject matter experts (SMEs), serving on panels, workgroups and committees with the goal of establishing and updating clinical practice guidelines and policies. DVBIC SMEs work both independently and with external stakeholders to maintain the highest standards of TBI care and education across the DoD and VA. SMEs worked on the following projects:
  - Military Acute Concussion Evaluation update
  - Centers for Disease Control and Prevention Concussion Definition Workgroup
  - Development of **BrainLineMilitary.org** Civilian Provider Training Course
  - Development of Armed Forces Health Longitudinal Technology Application-Theater (AHLTA-T) Alternate Input Methods Forms, known as AHLTA-T forms
  - TBI Co-occurring Conditions Toolkit development and focus group for second edition
  - Consultation on ICD-10 Coding
- TBI Educational Training: Staff within OCI works with government and civilian organizations to provide TBI education to civilian and military providers caring for service members and veterans. In 2011, the Office provided training at five educational events for the Center for Deployment Psychology, three for the American Red Cross and four for military organizations (Walter Reed Army Institute of Research, The United States Military Academy at West Point, Operation Headed Home in Fort Knox, Ky., and a two-day webinar for the Army Wounded Warrior Program). In addition to collaborating with outside organizations to train medical providers, the OCI plays a key role in developing the educational content for the Annual Defense and Veterans Traumatic Brain Injury Summit, which trains approximately 1,000 TBI providers across the DoD and VA.
- **Info@DVBIC.org**: DVBIC provides an integral service to the TBI community through **Info@DVBIC.org**. This online service assists service members, veterans, caregivers and providers dealing with the complexities of TBI care. Staff in the Office of Clinical Initiatives and the Division of Education answer clinical inquiries and provide educational materials and other resources to patients, families and medical providers. In 2011, more than 3,000 inquiries were answered by DVBIC personnel.
- TBI Consult: This online service provides rapid response consultation to clinicians providing in-theater TBI care. More than 65 consultations were completed with the assistance of OCI staff during 2011.

- Clinical Outcomes Project: This project aims to improve individual care and provide methods for quality improvement across TBI clinics in the DVBIC network. During 2011, the Project established appropriate pilot sites and initiated the development of a clinical database that will enable clinics to track and measure the quality of care delivered to their patients.
- Interactive Cognitive Training Modules: In collaboration with the National Center for Telehealth and Technology, OCI staff created an interactive platform to engage and educate patients and their families about rehabilitation for cognitive symptoms following a TBI. These modules resemble cognitive care provided in the clinical setting and provide patients the opportunity to relate to real-life, cognitively challenging situations. Through the use of these programs, patients can implement strategies to enhance recovery and reintegration.
- Tele-TBI Clinic: OCI staff worked closely with the James A. Haley Veterans' Hospital (JAHVAH) in Tampa, Fla., to determine and implement innovative ways to reach patients diagnosed with TBI. Through technological advancements, the James A. Haley Veterans' Hospital Physical Medicine and Rehabilitation Service seeks to use clinical video telehealth (CVT) services to reach outpatient centers closer to the patient's home, allowing for improved access to care. In addition, home telehealth pilot programs are being implemented, providing video telehealth services directly into the home. Full implementation of the JAHVAH tele-TBI clinic is planned for 2012 with DVBIC's facilitation.

Neurocognitive Assessment Test (NCAT) Program Office

A 2008 Office of Health Affairs Memorandum designated DVBIC as the office of responsibility for oversight of the implementation of pre-deployment Automated Neuropsychological Assessment Metrics (ANAM) baseline testing program in the DoD. The program was named the Neurocognitive Assessment Tool (NCAT) Program. In 2009 the decision was made to create a web-enabled system to facilitate access to ANAM in remote locations and to better enable access to baseline studies for comparison when a post-injury study was obtained. The system is currently undergoing field studies and will soon be ready for deployment.

As of December 31, 2011, a total of 1,069,068 ANAMs had been obtained in the DoD. These numbers represent both the pre-deployment and post-injury tests accomplished since the Army began ANAM testing in June 2007. While there were only 50,000 to 100,000 studies done during the first 2 years of the program (2007, 2008), total ANAMs obtained each year for the past three years has remained relatively constant at approximately 300,000 per year:



As mentioned, the number above represents pre-deployment baseline ANAM tests as well as post-injury tests. Some Service members have multiple ANAM tests as post-injury serial testing may be performed as part of the return to duty assessment.

Examining solely the pre-deployment ANAM tests, required by the DoD to be obtained within 12 months prior to deployment, the total number is considerably smaller (696,261). The service breakdown of pre-deployment ANAM tests provided since inception of the program in June 2007 include:

Army	Marines	Air Force	Navy	Coast Guard	Total
477,961	97,091	110,471	9,708	1,030	696,261

The average rate of pre-deployment ANAM tests completed across services in 2011 was 77 percent of service members deploying. The pending release of the web-based NCAT system will lead to an improvement in the rate of baseline testing due to the ease of use and accessibility.

The DVBIC NCAT program office continues to support tracking and trending pre-deployment baseline and post-injury ANAM testing, and investigating ways to improve post-injury ANAM testing. DVBIC also coordinates with Health Affairs Force Health Protection and Readiness and the Army Neurocognitive Assessment Branch Office to promote full implementation of web-based NCAT implementation. The NCAT program office worked closely with the Concussion Management Algorithm Workgroup that included representatives from all of the services, the VA, DVBIC's national director, and representatives from DCoE to incorporate specific recommendations and indications for the use of post-injury NCAT. This strategy is expected to increase significantly the number of post-injury NCAT studies obtained.

SURVEILLANCE

The Office of Surveillance is responsible for collecting and reporting data on the incidence and prevalence of TBI among DoD service members. In accordance with congressional mandate, the foundation of this program is the reporting of data; as such, data analysis remains a major focus of the surveillance program at DVBIC. Through collaborative initiatives with federal and non-federal entities, this office serves to coordinate and collect the data, conduct statistical analysis, and offer TBI-related information to senior leaders of the military, policymakers, clinicians and researchers. In addition to maintaining official reporting requirements, this office also publishes quarterly incidence data on the organization's website at **www.DVBIC.org**, providing the general public a unique opportunity to view TBI-related information within the Military Health System. The updated website includes graphics on annual trends by branch of service, severity and annual incidence rate.

In 2011, the surveillance office revised the protocol and procedure used for the collection of TBI data conducted at the network sites, to obtain a comprehensive account of the characteristics surrounding TBI events. The DVBIC surveillance office also participated in a multi-agency research data request between the Armed Forces Health Surveillance Center and researchers at the United States Army Aeromedical Research Laboratory and University of West Florida, offering advice on the diagnoses and occupational codes used to investigate the most affected occupational specialties by injury type and impact on return to duty. Furthermore, this office also ventured into and succeeded in collecting and reporting data on distribution of TBI medical encounters occurring in the direct and purchased care systems. The analysis projects service-specific information including TBI medical encounters in the private sector. The surveillance office continues to investigate alternative resources and collaborators to support the program mission to collect and report timely and actionable information to better serve the TBI population and those charged with their care.

EDUCATION

Multimedia Education and Materials Distribution

The DVBIC Division of Education provides TBI education, outreach and training materials to service members – active duty, Guard, Reserve, veterans, families, military and civilian clinical providers, military line leaders and policymakers. Its initiatives include multimedia educational materials, the Family Caregiver Guide, support of three authoritative TBI websites (**DVBIC.org**, **BrainLine.org**, and – new in 2011 – **BrainLineMilitary.org**) and various venues for TBI training including a key annual summit for military and VA providers.

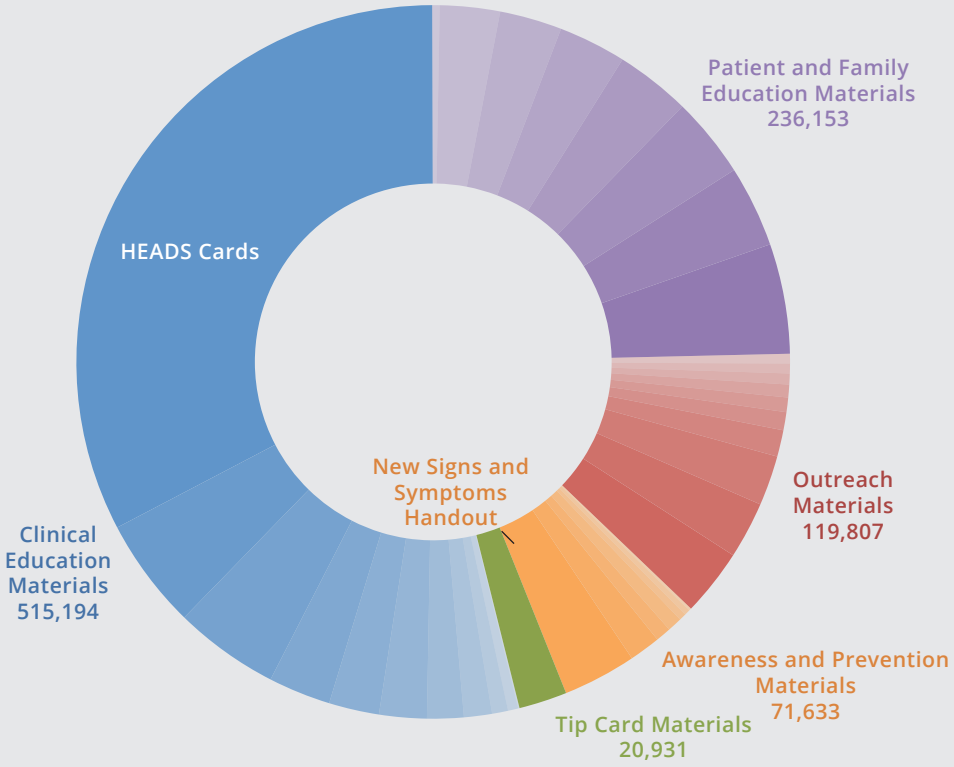
Educational resources are made available through the education division's network of regional education coordinators (RECs) stationed in military, VA and community locations around the country and overseas. Their purpose is to promote awareness and prevention of TBI and help educate providers, which leads to the improved care of TBI patients.

In 2011 the Division of Education launched a DoD-oriented TBI site—**BrainLineMilitary.org**, as well as its sister site, **BrainLine.org**, also became available as smartphone-accessible mobile sites. The sites host two new TBI public service announcements (PSAs) that debuted in 2011 on the American Forces Network (AFN). In addition, the Division of Education designed a new handout on the signs and symptoms of mild TBI/concussion. Surveys, interviews and focus groups provided valuable feedback, enhanced Education's products and ensured the right messages are delivered to the right audiences.

Print Materials

In 2011, DVBIC disseminated almost one million print materials, an increase of more than 150 percent from 2010. This included more than 300,000 pocket-sized HEADS cards to equip deploying service members with essential concussion information. In addition, more than 45,000 copies of both the Military Acute Concussion Evaluation (MACE) and the DoD's Clinical Practice Guidelines for Concussion in Deployed Settings reached health care providers. Nearly 60,000 items went to units that were deployed in-theater. Approximately 50 different products were available in 2011.

2011 Education Materials Distribution by Category
Each Color Gradient represents a different product



Total Educational Materials Distributed during 2011: 963,718

A new handout, Concussion Signs and Symptoms, quickly emerged as one of the top 10 most popular products following its release in 2011. It is available in nine languages (English, Spanish, Estonian, French, Georgian, German, Italian, Polish and Romanian) to meet the needs of NATO forces and those in the continental United States who prefer information in a language other than English. In focus groups with family caregivers, providers and DVBIC Regional Education Coordinators (RECs), this new product rated higher than any item. [PHOTO OF S&S FLYER]

Additional print materials provided by DVBIC include information on TBI awareness and prevention, materials for outreach, tools for clinicians and patient education, and support resources. Subject matter experts from the military and the VA lend their knowledge to the materials' development process.

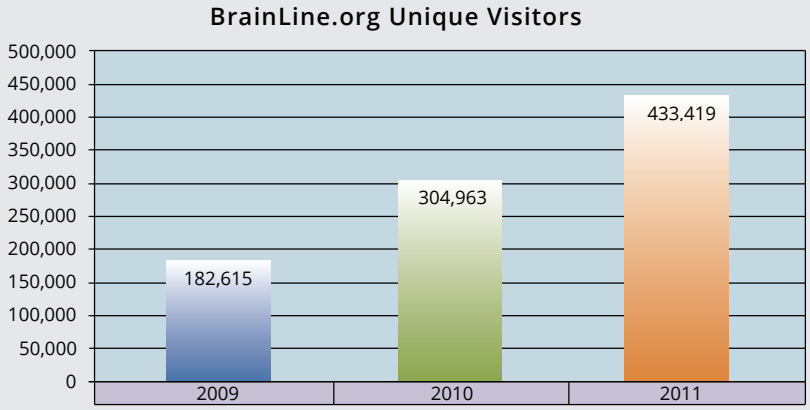
Other items added to the DVBIC product line in 2011 include the hardcover children's book, Our Daddy Is Invincible. The book was written by Shannon Maxwell, whose husband sustained a penetrating head injury in Iraq, and illustrated by Liza Biggers, whose brother died a year after a sniper's bullet penetrated his brain in Iraq.

Print materials may be requested by email via **info@DVBIC.org** at no cost. DVBIC ships materials worldwide. The DVBIC REC network also plays a key role in distributing materials.

Web-Based Resources and Support

In 2008 DVBIC began a collaboration with WETA-TV-FM, a Washington, D.C. public broadcaster, to produce **BrainLine.org**, an authoritative TBI website with multimedia resources including interviews, videos, articles and social networking. Unique visitors to the website doubled from 2009 to 2011 (see chart on page 20). **BrainLine.org** received nine awards in 2011, including two from the W3 competition which is judged by the prestigious International Academy of the Visual Arts. This brings the website's total award count to 20. The 2011 awards include:

- Association of Public Television Stations EDGE Award
- Interactive Media Award, Outstanding Achievement, Health/Nutrition
- W^3 Award, Silver, Health
- W^3 Award, Silver, Non-Profit
- Web Health Award, Bronze, Association/Non-Profit Website
- Web Health Award, Bronze, Media/Publishing Mobile Website
- Web Health Award, Merit, Association/Non-Profit Mobile Website
- Web Health Award, Silver, Other/Miscellaneous Website
- Web Marketing Association WebAward, Outstanding Achievement in Web Development



In August, 2011, the Division of Education and WETA launched a TBI site geared to the military and veteran communities — **BrainLineMilitary.org**. This new website provides comprehensive resources targeted to service members, veterans and their families. Both sites are uniquely designed to serve those in minority, underserved and rural communities with a particular focus on National Guard and Reserve members and the home communities in which they reside.

BrainLineMilitary.org drew 10,512 unique visitors and 45,375 page views in its first four months. The original site, **BrainLine.org**, drew 433,419 unique visitors and 1,254,254 page views in 2011. This is a 42 percent increase in traffic compared to 2010.

Mobile sites for both **BrainLine.org** and **BrainLineMilitary.org** also launched. Access to the **BrainLineMilitary.org** platform is free and available to all users (iPhone, Android or Blackberry). Designed to be viewed on a smartphone, the web pages are much easier to read on a handheld device than would content from a website designed for a standard computer monitor. In addition, WETA began creating a military Brain Injury Resource Directory, nicknamed mBIRD, which is similar to the Brain Injury Resource Directory on **BrainLine.org**. The mBIRD, slated to launch in January 2012 on **BrainLineMilitary.org**, will feature an interactive map that allows users to click on a state and view a list of VA medical centers and DVBIC sites. This makes it convenient for users to find local resources.

All three DVBIC-supported websites featured a new PSA with Navy doctor and TBI patient Capt. James Hancock. The PSA also aired on the AFN. In it, Capt. Hancock recounts his injury and encourages individuals who have sustained a TBI to contact DVBIC. DVBIC RECs use the video clip in outreach efforts.

Photo courtesy of DVBIC

Annual TBI Training Summit

DVBIC hosted the 5th Annual Defense and Veterans Traumatic Brain Injury Summit in August, 2011. More than 1,000 DoD and VA health care providers from deployed and stateside settings, representing more than 15 health care disciplines, met for two and a half days in National Harbor, Md., (about 10 miles south of Washington, D.C.) to explore the challenges and advances in TBI care in complex VA Polytrauma facilities, military treatment facilities, clinics, and community-based facilities. Developed with input from the services, VA leadership and TBI subject matter experts across the DVBIC network, the summit offered a unique opportunity for collaboration and sharing of best practices. Lt. Gen. Eric B. Schoomaker, M.D., Ph.D., The Surgeon General/Commander, U.S. Army Medical Command, delivered the keynote address. Harvey S. Levin, Ph.D., was awarded the prestigious Deborah L. Warden Lectureship Award in recognition of his leadership in neuroscience research that has contributed to significant advances in the care and treatment of TBI.

Despite a rare 5.8-magnitude earthquake that shook the East Coast on the second day of the summit, no one was injured at the event. The planning team was able to regroup, continue training and shift schedules to make up for the lost time. Participants took home a compendium of the latest TBI knowledge in a comprehensive Clinical Tools and Resources binder, as well as other DVBIC education materials to use in their clinical settings.

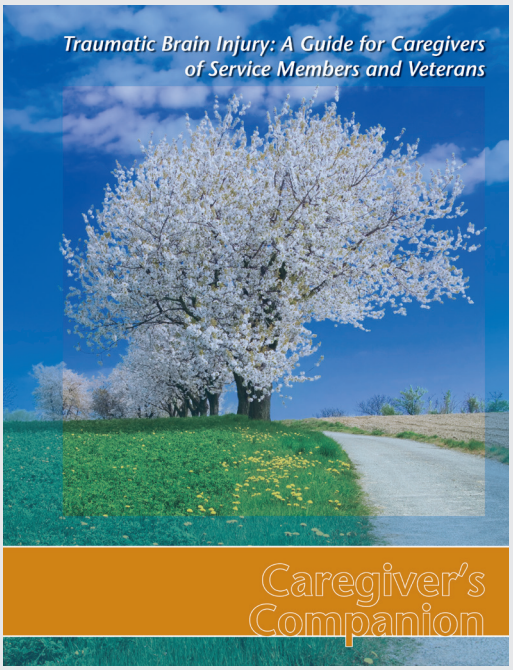
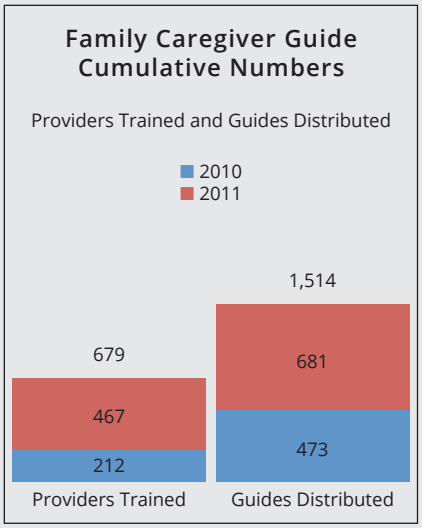


Photo courtesy of DVBIC

Family Caregiver Guide

Traumatic Brain Injury: A Guide for Caregivers of Service Members and Veterans was developed as a result of a congressional mandate to help families who are struggling to care for their injured loved ones. The guide is intended specifically for families caring for service members and veterans who have sustained a moderate, severe or penetrating TBI. With the guidance of a provider, the curriculum is used to provide coordinated, uniform and consistent support for family members who are struggling to cope with the challenges of caregiving and life management while navigating complex health care systems. The Center of Excellence for Medical Multimedia hosts the guide online along with on-camera interviews with caregivers at **traumaticbraininjuryatoz.org**. (Links have been featured on **BrainLine.org** and **BrainLineMilitary.org**.) Most families benefit from working through the guide with the support of trained providers.

In 2011, DVBIC trained 467 providers in the guide's use and distributed 681 copies of the curriculum. Since 2010, 679 providers have taken part in training and 1,154 guides have been distributed.



DVBIC released a new family caregiver PSA, which aired on the AFN and online at **BrainLineMilitary.org**, in 2011. In it, Shannon Maxwell shares her experience and explains how family caregivers can benefit from the curriculum. DVBIC RECs also use the video clip when they have resource tables at large conferences or outreach events, such as Yellow Ribbon events.

Moving Forward: 2012 Projected Activities

DVBIC's Division of Education has several goals for 2012:

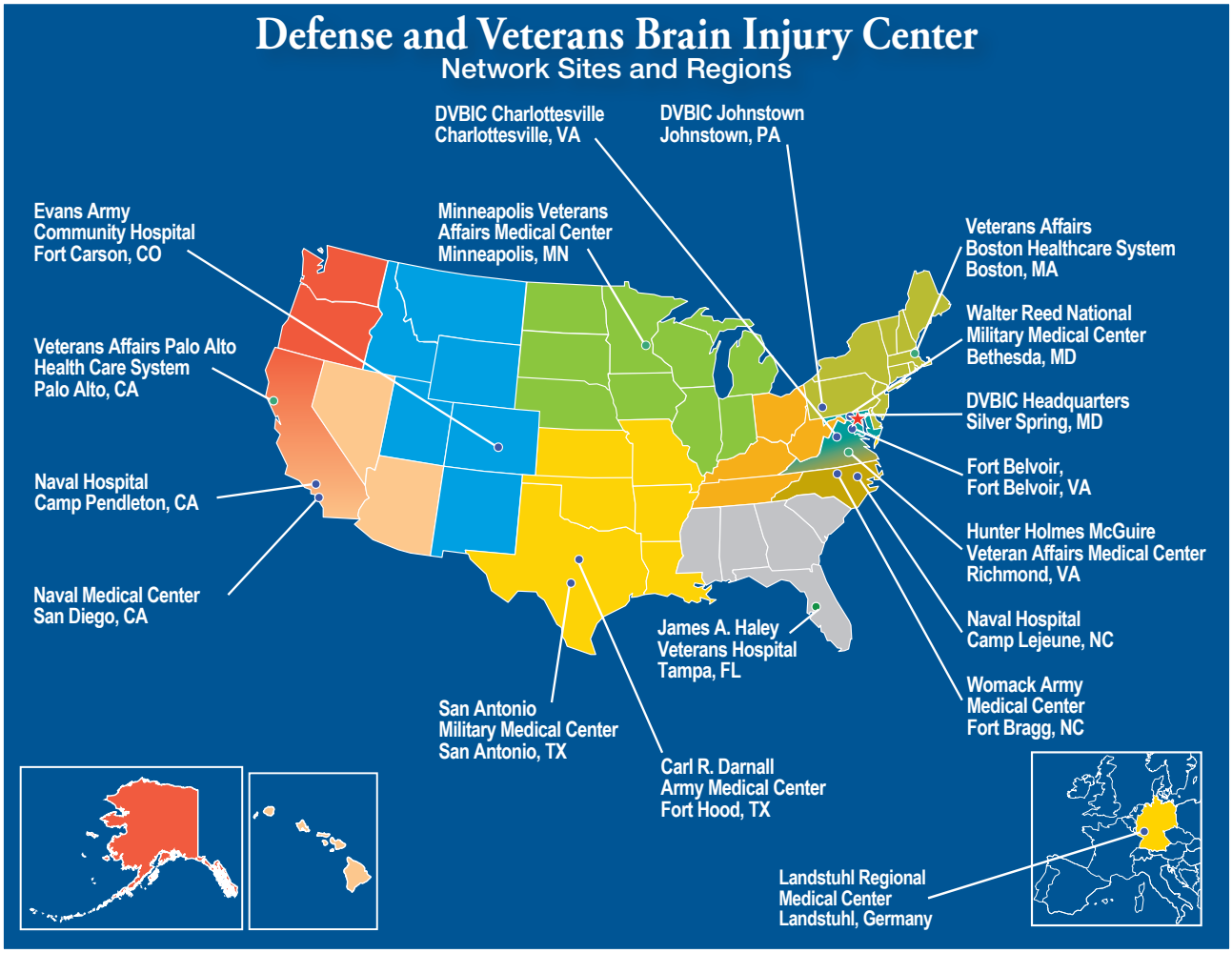
- **Equip medical personnel to evaluate and manage concussion:** DVBIC plans to finalize revisions of the Military Acute Concussion Evaluation (MACE), the Clinical Practice Guidelines for Concussion in Deployed Settings and the acute concussion patient educational brochure.
- **Empower service members returning home:** Revisions have been underway to improve existing symptom management handouts aimed at individuals recovering from concussion. A new fact sheet will address moderate to severe TBI. Two new product lines on the topics of family needs and getting back to school will cover these important reintegration issues. In addition, WETA will release another PSA to promote **BrainLineMilitary.org**.
- **Build capacity among civilian providers:** A new online course will be available on **BrainLineMilitary.org** to train civilian providers how to evaluate and treat service members and veterans with possible TBI.

- **Ensure DVBIC products reflect up-to-date clinical content:** An update for the head injury and dizziness symptom management handout will be available and will include the most current information on managing TBI-related dizziness.
- **Connect individuals to the TBI support they need:** Launch the Military Brain Injury Resource Directory (mBIRD) on **BrainLineMilitary.org** by the end of January 2012.

Far-reaching TBI Education

Education has been central to DVBIC's mission since the organization's inception in 1992. DVBIC formalized the REC program in 2007. A network of 16 RECs serve as designated regional TBI education points of contact. This team works with service members – active duty, Guard, and Reserve — veterans, families, health care providers, military line leaders and policymakers to promote awareness and prevention of TBI, and to improve the clinical management of TBI in their region. RECs accomplish this by conducting or facilitating classes and briefings for families and service members. They also set up resource tables at events and conferences to reach out to stakeholders in person.

The REC network spans four military medical centers, six military installations, four VA hospitals, and two neurorehabilitation and community reintegration centers. RECs aim to meet the TBI education needs at their site and throughout their regional catchment areas.



The REC program had a banner year in 2011, reaching more than 90,000 stakeholders. On average, RECs nationwide staged 23 TBI education events every week. These encounters included:

- One-time events such as trainings, briefings, and presentations either delivered by an REC or in which the REC arranged for a subject matter expert to speak;
- Multi-session educational activities such as TBI classes and support groups; and
- Brief encounters with the public at conference exhibits and resource fairs.

Partnerships with the Military

RECs are able to reach thousands of people each year because of DVBIC's unique collaboration with the military services. Together, strong collaborative efforts ensure delivery of TBI education for all types and levels of military personnel.

The services recognize that TBI education is critical for the troops both pre- and post-deployment. Many DVBIC RECs present or facilitate pre- and post-deployment briefs or resource tables at sites such as Fort Carson, Camp Lejeune, Fort Hood and Fort Bragg.

Clinical trainings for military medical personnel help to ensure that key individuals have up-to-date knowledge of TBI prior to deployment. They are also an opportunity to equip providers with clinical tools to use in the field. For example, in Texas, the REC program has an active role in pre-deployment provider education at the San Antonio Military Medical Center. Courses at the Army Medical Department Center and School and the Defense Medical Readiness Training Institute routinely include lectures by TBI subject matter experts, whose participation DVBIC coordinates. Army cadre staff who will be in charge of the Warrior Transition Units receive mTBI briefs during their national training course.

2011 Regional Education Events and Participants

			Participants by Category								
			Service Members						Providers		
Type of Educational Activity	**Number of Events**	**Total Number of Participants**	Active Duty	Guard	Reserve	Military Family Members*	Veterans	Civilians	DoD	VA	Civilian
One-time events: trainings, briefings, and presentations	638	72,822	53,826	1,938	2,517	4,105	691	2,595	4,074	668	2,408
Multi-session activities: classes and support groups	366	5,075	471	6	12	888	72	1,107	792	649	1,078
Brief encounters with the public: conference exhibits and resource fairs**	188	13,258	~34%	~10%	~5%	~37%	~3%	~3%	~3%	~2%	~3%
Total	1,192	91,155	75,151	4,745	11,099	29,160	2,328	5,729	6,925	2,740	5,295

** Figures include an unknown number of service members*

*** Percentage of participants reflects the proportion of conference or resource fair attendees in that category, not all of whom visited the DVBIC booth*

TBI affects the military community off the battlefield and outside of the clinic. The legal community is another integral stakeholder. DVBIC Charlottesville, for example, has facilitated TBI training for the military leaders who attend the Judge Advocate General (JAG) Legal Center and School. Dr. Cynthia Boyd, co-senior scientific director of DVBIC-Naval Medical Center San Diego, has been invited to provide TBI and PTSD educational trainings to members of law enforcement, district attorneys, public defenders, Navy JAG and California superior court judges. RECs at San Antonio Military Medical Center, Fort Carson and DVBIC Johnstown also prepared or facilitated TBI presentations to the legal community.

Provider Education as a Force Multiplier

The REC program works closely with DVBIC's Office of Clinical Initiatives to provide TBI training to key providers in the DoD and VA health care systems. At Walter Reed National Military Medical Center, the DVBIC REC program hosts a monthly TBI Grand Rounds series. These trainings are video teleconferenced to more than 15 DoD and VA sites nationwide.

Provider training is a critical activity and a way to leverage DVBIC's education efforts. Trained providers can pass TBI knowledge on to service members and veterans, who in turn can pass the information on to family and friends. Ongoing TBI training is especially important for new providers. Furthermore, managing the care of a warrior who has sustained a TBI requires many types of clinicians. For this reason DVBIC coordinates provider training opportunities for clinical personnel of many professional backgrounds.

In 2011, a total of 7,150 DoD, VA and civilian providers participated in TBI training through the REC program.

Increasing the Visibility of TBI at Professional Conferences

The REC program brings TBI education to professional military and civilian conferences throughout the year and across the country. More than 4,500 DoD, VA and civilian providers interacted with a DVBIC REC at a professional conference last year. During those brief encounters, providers reported to the RECs that they have used DVBIC resources while they were deployed as well as in their clinics. Many contact an REC at a later date to arrange TBI training for their clinic or request more materials.

Many conference attendees who visit a DVBIC exhibit have not heard of DVBIC or are not aware of our newest products and initiatives. By speaking with an REC, they increase their awareness of available TBI resources and establish a relationship with a valuable TBI point of contact in their region.

In 2011, RECs shared DVBIC's resources with professionals attending the Armed Forces Public Health Conference, the Special Operations Medical Association Conference, the Armed Forces Operational Medical Symposium, the Association of Military Surgeons of the United States' 117th Annual Meeting, the 4th Annual Trauma Spectrum Conference, the 9th Annual U.S. Army EMS Conference, and the Association of the U.S. Army's Medical Exposition, among others.

Photo courtesy of Professional Image Photo

TBI Education for Service Members, Veterans and Families

RECs at several DVBIC sites conduct a variety of TBI classes geared to meet the needs of patients and families. Coping with the symptoms of mTBI is the focus at Camp Lejeune, Fort Bragg and Fort Carson. Classes at Walter Reed National Military Medical Center and the Tampa VA are tailored to the challenges of recovering from moderate and severe TBI and the role of the family caregiver. For example, DVBIC Camp Lejeune offers a unique TBI education and therapy group taught by a multidisciplinary team. The class meets four times for a total of 70 hours over two weeks. In 2011, more than 150 service members participated in 10 class cycles. Across the entire DVBIC network, RECs led more than 175 class sessions in 2011.

Outreach to National Guard and Reserve

In 2011, the REC program offered TBI resources to more than 27,000 National Guard and Reserve members and their loved ones. This tremendous outreach effort was made possible by the Yellow Ribbon Reintegration Program (YRRP). The YRRP is a DoD-wide effort to promote the well-being of National Guard and Reserve members and their families by connecting them with useful resources throughout the deployment cycle. This year RECs participated in more than 50 Yellow Ribbon events in more than a dozen states – 34 with U.S. Army Reserve Regional Support Commands, 17 with the Air National Guard, and eight with the Navy and Marine Reserves. In addition, DVBIC presented a leadership brief via teleconference to the Yellow Ribbon program specialists.

Brain Injury Awareness Month

Every March, the REC program rallies its efforts for Brain Injury Awareness Month. In addition to the ongoing educational activities, RECs organized numerous events this year to focus their regions' attention on TBI prevention and awareness. These included TBI/DVBIC displays in community locations such as local bookstores in Jacksonville, N.C., displays at the local DVBIC sites as well as throughout their bases. DVBIC displays were part of Open House and Awareness Day events at VA facilities. San Antonio had a TBI/DVBIC exhibit at the National Guard Association of Texas conference. RECs contributed to the annual DVBIC display at the Brain Injury Awareness Day on Capitol Hill. Richmond VA reached out to thousands of military providers through an exhibit at the annual Armed Forces Public Health Conference. DVBIC Johnstown presented at the 1st Annual Pennsylvania State Jail Diversion and Trauma Recovery Conference.

Preparing Communities to Welcome Veterans

Civilian communities ultimately will have to support veterans who sustained a TBI during their military career. The REC network reaches into local communities whenever there is an opportunity to support reintegrating veterans. In 2011, this included attending Brain Injury Association conferences in 10 states and exhibiting DVBIC resources at various civilian health care and veterans' conferences. RECs also extended TBI training opportunities to local professionals in the sectors of health care, law and education. One such example comes from California where the VA Palo Alto Health Care System and DVBIC hosted the third Community College Workshop, "Strategies for Academic Success," in collaboration with the War Related Illness and Injury Study Center. Attendees worked with active duty and veteran students who sustained TBIs and are now preparing to fully reintegrate in their communities.

Next Up in 2012

The REC program plans to add additional REC staff in 2012. The new DVBIC sites at Fort Belvoir, Va., and Joint Base Elmendorf-Richardson, Alaska, will each have an REC asset. Camp Pendleton, Calif., also will gain an REC. Collaboration with the services on pre- and post-deployment TBI education will be enhanced. With a fully staffed, robust REC team, the program plans to increase community awareness activities and expand its reach within the catchment regions to include not just service members but their families and communities.

MILITARY TREATMENT FACILITIES

Landstuhl, Germany

Landstuhl Regional Medical Center (LRMC) is the largest medical facility in the European Regional Medical Command. Highlights of LRMC's work include more than 11,000 TBI-related patient encounters and 8,000 TBI screenings. TBI research continues to be an important aspect of the Landstuhl team's work, with multiple ongoing trials, including two studies funded by the Congressionally Directed Medical Research Program.

Marine and Sailor Concussion Recovery Center, Camp Lejeune, N.C.

The DVBIC team at Camp Lejeune served 4,096 patients in 2011 providing evaluations, plans of care, occupational and speech/language therapy, vestibular rehabilitation, psychological evaluations, case management, care coordination and alternative medicine therapies. In 2011 our RECs educated 10,548 people including service members, Command officials, medical officers, providers and the surrounding community.

Camp Pendleton, Calif.

DVBIC Camp Pendleton hosted Clinical Neuropsychologist Michael McCrea, Ph.D., executive director for Pro Health Care's Neuroscience Center and co-creator of the Military Acute Concussion Evaluation, for a scientific update on mild TBI. This site also continues to provide post-deployment screening support in collaboration with 1st Marine Expeditionary Force (IMEF), and has further embedded services into the command at Naval Hospital Camp Pendleton including 2.5 DVBIC positions. For the Prospective Clinical Tracking study, Camp Pendleton collected 512 clinical tracking forms in 2011.

Fort Bragg, N.C.

In 2011, DVBIC Fort Bragg clinical personnel provided treatment and testing to 461 soldiers during 1,643 office visits and had a return to duty rate of 96.5. percent. The H2H Research Study team tested 657 participants in 2011. As part of its ongoing TBI education mission, DVBIC Fort Bragg conducted 2,758 inprocessing briefings to soldiers during the year.

Evans Army Community Hospital, Fort Carson, Colo.

The DVBIC team at Fort Carson is uniquely situated within the Warrior Recovery Center at the Evans Army Community Hospital, which is the primary clinic for the treatment of TBI at the Mountain Post. This embedded site allows a high level of soldier contact by DVBIC staff. In 2011 Fort Carson's DVBIC Research Program enrolled 32 subjects in the Interactive Metronome Study; this DVBIC Education Program provided classes and briefs to 33,666 individuals; and the care coordination program managed a caseload of 229 service members.

Carl R. Darnall Army Medical Center, Texas

Fort Hood is the largest deploying base in the continental U.S. and is home to IIICORPS, 1st Calvary Division and First Army Division West. DVBIC staff provided education and training on mild TBI/concussion awareness to more than 26,000 troops and providers.

Fort Belvoir Community Hospital, Va.

The TBI Clinic at Fort Belvoir Community Hospital opened its doors in July 2011, welcoming mild, moderate and severe TBI patients with complete evaluations, interdisciplinary treatment services and careful care coordination. The TBI team and three DVBIC staff evaluated, treated and educated more than 100 service members, dependents and retirees.

Naval Medical Center San Diego (NMCSD), Calif.

In 2011, NMCSD collected 136 protocols for the Clinical Tracking Form national study, while also increasing the understanding of TBI among over 1,000 DoD, VA and civilian providers via 38 trainings in five states. NMCSD also equipped more than 2,000 individuals with clinical tools and public awareness materials through 10 DVBIC exhibit tables.

San Antonio Military Medical Center, Texas

This year all DVBIC personnel in San Antonio moved into Brooke Army Medical Center, now known as San Antonio Military Medical Center (SAMMC). DVBIC staff reviewed post-deployment questionnaires and screened medical records of more than 1,700 service members for TBI, identifying 193 as TBI positive for the DVBIC TBI database, and enrolling 168 of those members in the DVBIC Prospective TBI Tracking Protocol. DVBIC San Antonio also updated more than 1,400 providers with the latest TBI information. DVBIC personnel are involved in eight ongoing research protocols, including a congressionally mandated cognitive rehabilitation trial for OEF/OIF service members and a complementary longitudinal neuroimaging study.

Walter Reed National Military Medical Center (WRNMMC), Md.

The Traumatic Brain Injury Department moved from the Walter Reed Army Medical Center in Washington, D.C., to WRNMMC in Bethesda, Md., at the campus of the National Naval Medical Center. DVBIC staff evaluated, treated and educated over 597 active duty personnel, 702 civilian and DoD providers and 57 family members. DVBIC personnel also are involved in several ongoing research protocols, constantly geared towards perfecting the level of care for our wounded warriors.

VETERANS AFFAIRS MEDICAL CENTERS

Boston

DVBIC Boston is actively conducting research in the areas of TBI and other combat-related mental health disorders. DVBIC works closely with the VA's TBI Center of Excellence at Boston: the Translational Research Center for Traumatic Brain Injury and Stress Disorders (TRACTS). Ongoing research protocols include behavioral and neuroimaging characterization of TBI and comorbid deployment-related mental health conditions as well as measuring the functional outcomes (i.e. driving safety) among the OEF/OIF cohort.

Minneapolis

In 2011, the Minneapolis DVBIC team in conjunction with Minneapolis VA Physical Medicine & Rehabilitation has been able to leverage existing relationships in order to collect and organize accessible data from multiple sources to create a multi-user relational database comprised of clinically relevant data. This data is being used to support the internal assessment and subsequent improvement of patient care, improve processes and procedures, collect clinical outcome measures and determine patient rehabilitation readiness. Additionally, the DVBIC team is developing new research protocols that will explore the relationships between TBI and neurodegenerative disease and TBI and cognitive control.

Palo Alto, Calif.

DVBIC Palo Alto is an integral part of the clinical, research, and education/outreach success of the Polytrauma System of Care at VA Palo Alto Health Care System. In 2011, an RCC database was designed and developed at this site as an innovative and exemplary collaboration between DVBIC Palo Alto and DVBIC's central office to facilitate effective management and documentation of the RCC caseload, streamline interaction with service members, and improve RCC efficiency and track outcomes.

Richmond, Va.

DVBIC Richmond continues to be an integral component of the Polytrauma Rehabilitation Center, Polytrauma Network Site, and the Polytrauma Transitional Rehabilitation Program. Highlights of work include active participation in eight collective research projects ranging from Prospective Traumatic Brain Injury (TBI) Tracking Protocol to Traumatic Brain Injury Model Systems (TBIMS) with a 2011 total enrollment of 342 TBI subjects. The REC and RCC combined for a total of 2,009 contacts with active duty service members and veterans for their TBI care and educational needs.

Tampa, Fla.

The 8th Annual Blast Injury Conference was held on Dec. 14, 2011, with 309 attendees. The purpose of this annual conference is to present the most current research findings and best practices relevant to blast-induced TBI. Assessment, treatment and rehabilitation are explored from the perspectives of the DoD, VA and the private sector.

NEUROREHABILITATION SITES

DVBIC operates two Community Neurorehabilitation and Community Reintegration Centers — DVBIC Charlottesville and DVBIC Johnstown. These CARF-accredited centers are DoD programs where service members who have sustained a brain injury and continue to have ongoing problems as a result of their injury can receive multidisciplinary medical, psychological and rehabilitation care in a residential/community-based setting. The services are available to any service member who is active duty, including members of the Guard and Reserve while on active duty orders. The two programs provide intensive, short-term services (typically 90 to 180 days in duration) in the post-acute stages of clinical care, providing needed rehabilitation services during the transition period between the hospital setting and the return to home or duty. Embedded in the community, the programs are able to assess and treat service members in a large variety of settings where recovery and skills will be needed after discharge. The treatment options are individualized for each service member's needs in order to optimize their functioning and abilities. Programming addresses complex issues such as behavioral challenges, cognitive challenges, substance use/abuse, family issues, post-traumatic stress, and adaptation to disability. Comprehensive care includes neurocognitive rehabilitation, cognitive behavioral therapies, physical therapy, activities of daily life, primary and specialty medical care, aquatic therapy, therapeutic horseback riding, vocational trials and case management. Goals are individualized and focus upon skill acquisition as a foundation for independent living, community engagement and work reentry. Treatment occurs at the home residence, the therapy center, and in real world environments to facilitate transfer of learning and optimize life potential.

Charlottesville, Va.

DVBIC Charlottesville, located in Virginia, is one of two Community Neurorehabilitation sites in the DVBIC network. DVBIC Charlottesville is an intensive and structured DoD program for capacity of up to 10 service members at a time who have sustained a brain injury and continue to have ongoing problems for which they can receive multidisciplinary medical, psychological and rehabilitation care in a residential/community-based setting.

DVBIC Charlottesville is unique in providing post-acute vocational training and a work reintegration program. Cooperative arrangements have been made with more than 25 businesses and governmental agencies within the Charlottesville community, where service members can gain practical job skills for preparation for return to duty or successful reintegration into their home communities. One such opportunity is our integral work with The Judge Advocate General's Legal Center and School (TJAGLCS) and the U.S. Army on a number of mutually beneficial activities, such as collaborating on TBI and PTSD briefings at TJAGLCS, the availability of a Judge Advocate General (JAG) officer to work with service members in the program, and co-presenting at legal conferences on TBI, PTSD, and legal issues. In addition, working with the local crisis management team allows us to educate law enforcement officers to recognize service members with TBI and PTSD in the local community and treat them accordingly if encountered. Other collaborations include the Virginia Wounded Warrior Program, VA Department of Rehabilitation Services, and the University of Virginia Health System.

These programs augment, but do not duplicate, resources provided within the VA health care system.

2011 Specifics:

- Of the 20 service members in the program during 2011 (average daily census at 90% of capacity in 2011), dispositions of four are currently determined. Ten percent of enrolled service members have medically retired from the military, 10% have returned to duty in the military, and 80% have returned to their community or military base and are awaiting disposition from the military. Satisfaction ratings are completed independently by quality assurance officers from NeuroRestorative who are not located on the premises and remain consistently high across all service members in the program across 7-10 variables.
- All service members have been evaluated for ability to perform and are ultimately placed in one or more of over 25 volunteer vocational trial opportunities, such as working at the JAG School/NJS, local hospital, bookstore, retail stores, real estate firm, the National Ground Intelligence Center, the Society for Prevention of Cruelty to Animals, Crisis Intervention Team and local law enforcement.
- Community outings are used to evaluate/observe behavior as part of overall program to move service members toward reaching their therapy goals of appropriate social interaction and community integration. In addition, in vivo intervention occurs to address goals from each outing. Examples include working on social skills, grocery shopping and problem-solving skills, and practicing PTSD coping strategies.
- Comprehensive neuropsychological assessments as well as other specialty services assessments (speech, occupational, physical and/or vocational therapy) have been carried out on all incoming service members to document cognitive and behavioral strengths and weaknesses and aid in treatment planning and goal development. Discharge assessments have been carried out to document treatment progress and goal attainment, and assist in return to duty considerations, medical board determinations, and community and family reintegration planning. Neuropsychology TBI subject matter experts (SME) have offered education and training to service members, their families, the community, and health care professionals in the region and in national forums. Our neuropsychology TBI SMEs are the principal investigators for TBI/PTSD technology research at DVBIC Charlottesville, Hunter Holmes McGuire VA Medical Center, Fort Lee and the University of Virginia.
- In 2011 DVBIC Charlottesville undertook 37 professional activities, such as national and regional conference presentations, and authored 13 professional and scientific publications.

Johnstown

DVBIC Johnstown, located in Pennsylvania, is the other Community Neurorehabilitation site in the DVBIC network. DVBIC Johnstown is an intensive and structured residential DoD program with the capacity for 20 service members at a time who have sustained a brain injury and are not successfully integrating back into their community, social relationships or their job as an active duty service member. The program uses a transdisciplinary team approach to teach patients the skills necessary to live successfully in the community (be it military or civilian) and within their family/social groups, and to engage in purposeful activities.

2011 Specifics:

- DVBIC Johnstown served 20 residential patients in the program during 2011. The average daily census for 2011 was 65%. There were six carry-over patients from 2010 to 2011, of which 33% were active duty and 66% were veterans. There were 14 unique admissions in 2011, of which 57% were active duty and 43% were veterans. There were 14 unique discharges during 2011, of which 86% were veterans. The disposition of the 14 patients discharged is: 7% returned to duty without restrictions; 7% returned

home without need of support, under the supervision of his community-based Warrior Transition Unit (CBWTU) to await completion of the medical evaluation board/physical evaluation board process; 50% were veterans who returned to their homes without the need of support (complete independence); 14% were veterans who returned to their homes with the need of support (family or paid caregiver); 21% were veterans who were placed in community-based long-term care facilities. All were placed with the assistance of their home VA medical center and Veterans Affairs Central Office (VACO), two of them through the VA Assisted Living TBI Pilot Program.

- All patients received complete evaluations from all treating medical providers and therapy disciplines, including physiatry, psychiatry, nursing, rehabilitation psychology, physical therapy, occupational therapy, speech language pathology, vocational counseling, case management and recreation. Additionally, comprehensive neuropsychological assessments were provided for all patients who needed them. Evaluation information was used to educate patients and families, create treatment goals and measure individual patient success.
- Families are integrated into the treatment plan as often as possible, frequently staying in the DVBIC Johnstown family suite and attending therapy sessions with patients to learn communication skills, coping strategies, compensatory techniques, participate in counseling, learn how to provide care or receive TBI education.
- Discharge evaluations and recommendations were completed for all patients to document progress and to initiate follow-up care. Discharge follow-ups are completed by case management at three days, 30 days and three, six and 12 months to measure maintenance of progress and reconnect patients with care if needed.
- All patients participated in at least one vocational placement, which provides a real-world opportunity to observe and evaluate functional behavior, as well as an opportunity to practice skills and strategies learned in the program. DVBIC Johnstown has more than 20 vocational placement sites, including Meals on Wheels, the 458th Engineer Battalion, Army National Guard, Cambria County Library, Johnstown Welding and Fabrication, and the Cambria County Humane Society.
- Community integration outings and activities are utilized to observe, evaluate and provide intervention that is directed by patient treatment goals. Examples of skills learned and practiced during outings include transportation planning, navigation, problem-solving, budgeting, social pragmatics and anger management techniques.
- DVBIC Johnstown embraces the concept of continuous quality improvement and is engaged in the following program development/process improvement activities in 2011: refinement of the therapeutic riding program, development of a sleep program, implementation of gait rounds, review of the driver simulation program, development of programming geared specifically to active duty service members, implementation of and participation with the PARF database and PARF benchmarking project, implementation of a patient wellness program, development of eight new skill-building groups, completed staff trainings on reverse activities of daily living, community access, cognitive changes after TBI, medication management, transfer training and crisis intervention.
- Although DVBIC Johnstown does not accept veterans as patients, we continue to work collaboratively with VACO to ensure smooth transitions and appropriate services for those active duty patients who will transition soon after leaving the program.

PUBLICATIONS

DVBIC researchers led or collaborated on the publication of 33 peer-reviewed manuscripts or book sections/chapters in 2011.

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