

Chapter 3

DEPARTMENT OF VETERANS AFFAIRS SYSTEM OF CARE FOR THE POLYTRAUMA PATIENT

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INTRODUCTION

Since the beginning of the global war on terror (GWOT), many combat veterans have been exposed to some type of blast explosion, with the most prevalent and devastating injuries resulting from improvised explosive devices (IEDs). Service members with devastating injuries resulting from blasts often have unique clinical presentations that affect multiple organ systems and physical structures of the body, including traumatic brain injury (TBI), amputations, complex orthopaedic injuries, burns, spinal cord injuries (SCIs), and injuries to the sensory organs, as well as post-traumatic stress disorder (PTSD) and other mental health disorders. The combination of multiple injuries sustained as a result of the same traumatic event was termed “polytrauma” by the Department of Veterans Affairs (VA) for the purpose of characterizing these injuries and defining the system of rehabilitation services required for treatment.

The term polytrauma, used to describe the complexity of GWOT injuries, has helped define the unique needs of the military and veteran healthcare systems that drive optimal treatment

for these patients. Polytrauma is defined as “two or more injuries to physical regions or organ systems, one of which may be life threatening, resulting in physical, cognitive, psychological, or psychosocial impairments and functional disability.”¹ Advances in body armor, field medical care, and rapid evacuation during Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) have led to a dramatic reduction in mortality from combat injuries, resulting in common survival of injuries that were fatal in previous wars.

In response to the high number of service members returning from Iraq and Afghanistan with unique injuries, including polytrauma, the VA developed the Polytrauma System of Care (PSC). Because of the high association between polytrauma and TBI, expertise in treating TBI was critical for the system’s successful development. The PSC is an integrated system of specialized interdisciplinary services designed to meet the complex medical, psychological, rehabilitation, and prosthetic needs of veterans with polytrauma, TBI, and other injuries.

DEVELOPMENT OF THE POLYTRAUMA SYSTEM OF CARE

The PSC grew out of established expertise in specialized VA rehabilitation programs including TBI, amputation care, and blindness and low vision. These programs have been supported through congressional legislation as well as collaboration with the Department of Defense (DoD). In 1986 the VA and DoD established a Memorandum of Agreement for the referral and treatment of active duty service members with TBI, SCI, and blindness.² This agreement provided authority for the VA to provide rehabilitative services for active duty service members with these impairments. In 1992 the VA designated four TBI lead centers in coordination with the Defense and Veterans Brain Injury Center (DVBIC). These centers were located at Minneapolis, Minn; Palo Alto, Calif; Richmond, Va; and Tampa, Fla.³ Their role was to provide specialized acute rehabilitation services for active duty service members and veterans with TBI. In 1996 Congress mandated that the VA maintain capacity for specialized services for veterans with special disabilities including TBI, SCI, and blindness, which require specialized rehabilitation services.⁴ This mandate was followed by the 1997 designation of a TBI network of care to support and coordinate services for veterans and service members

with TBI across the VA system of healthcare.⁵

The VA has been a leader in amputation rehabilitation since World War II and has continued to develop this expertise through special teams and programs. Public Law 102-405, Veterans’ Medical Programs Amendments, passed in 1992, identified veterans with amputations as a special disability group.⁶ The current Preservation Amputation Care and Treatment program provides a model of care focused on the prevention of amputations through early identification of veterans at risk of limb loss. It also provides comprehensive care for those with an amputation through interdisciplinary care management.⁷ In addition, the VA currently has 62 prosthetic laboratories accredited by the Board for Orthotist/Prosthetist Certification or American Board for Certification in Orthotics and Prosthetics, and 76 outpatient amputation clinics throughout the VA system, 95% of which are headed by rehabilitation physicians. All of these programs are designed to improve the function of veterans with amputations. Amputation is often part of the polytrauma spectrum and, as a result, expertise in amputation rehabilitation in the VA has been emphasized through specialized training in state-of-the-art rehabilitation techniques

and technology for polytrauma and amputation care teams.

In 1997 the VA established an agreement with the Commission on Accreditation of Rehabilitation Facilities (CARF)⁸ demonstrating the VA's commitment to providing excellent care to veterans. All VA inpatient rehabilitation programs maintain accreditation by CARF for comprehensive interdisciplinary inpatient rehabilitation.

The 2005 Consolidated Appropriations Act (Public Law 108-447)⁹ charged the VA to develop a system of specialized expertise to provide the best available medical care and integrative rehabilitation. PL 108-422 charged the VA to establish centers for research, education, and clinical activities on complex multitrauma associated with combat injuries.¹⁰ The PSC was developed to address these requirements. In February 2005, four polytrauma rehabilitation centers (PRCs) were designated at the four sites of the existing VA TBI lead centers.¹ These sites are tertiary care medical centers that also have established amputation care programs and services for veterans with visual impairment and SCI. Further development of this system of care came in December 2005 when 21 polytrauma network sites (PNSs) were designated. The polytrauma telehealth network (PTN), which established state-of-the-art connectivity among PRCs and PNSs for the purposes of telemedicine and videoconferencing, was added in July 2006.

In March 2007, the remaining PSC components were established with the designation of 76 polytrauma support clinic teams (PSCTs) and 54 polytrauma points of contact (PPOCs) across the country. When the need for an additional PRC was recognized in 2007, the Audie L. Murphy VA Medical Center in San Antonio, Texas, was selected due to its geographic location and proximity to major military facilities. Additional PSCTs are in continuous development as veterans with polytrauma and TBI enter the Veterans Health Administration for care. Also in 2007, President George W. Bush formed the Dole-Shalala Commission to examine existing processes and find ways to improve care across the DoD and VA system and optimize outcomes. The commission made several recommendations applicable to the PSC¹¹:

1. Immediately create comprehensive recovery plans for every seriously injured service member.
2. Aggressively prevent and treat PTSD and TBI.
3. Significantly strengthen support for families.
4. Rapidly transfer patient information between the DoD and VA.

These recommendations were added to the programs already in place within the VA to ensure quality of care to veterans.

COMPONENTS OF THE POLYTRAUMA SYSTEM OF CARE

In recognition of the wide range in the type and severity of injuries sustained in combat, and that veterans desire to receive care at locations close to their homes, the four components of the PSC were developed to balance access and expertise. The regional centers have the capability to provide care for the most seriously injured and require the greatest distance in travel, and local facilities, developed to provide ongoing, lifelong care, are located in closest proximity to the veteran's home. Depending on the severity of the injury, the veteran may enter the PSC via any component and move from one to another based on assessed needs. Details of each component are as follows:

1. PRCs serve as regional referral centers for acute medical and rehabilitation care, and as hubs for research and education on polytrauma and TBI. The PRC mission is to provide comprehensive inpatient rehabilitation services for individuals with complex physical, cognitive, and mental health sequelae

of severe and disabling trauma, to provide medical and surgical support for ongoing and/or new conditions, and to provide support to their families. These centers have the necessary expertise to provide the coordinated interdisciplinary care required for all patients who have sustained varied patterns of severe and disabling injuries.

PRCs provide a continuum of rehabilitation services that include comprehensive acute rehabilitation care for complex and severe polytraumatic injuries, inpatient evaluation and treatment planning, specialized emerging consciousness programs for individuals with severe disorders of consciousness, and residential transitional rehabilitation programs. The centers maintain a full staff of dedicated rehabilitation specialists and medical and surgical consultants. They are able to manage high levels of medical acuity. PRCs serve as resources for other PSC facilities and

spearhead the development of educational programs and best practice models of care. In addition to the PSC's CARF accreditation, the PRCs maintain additional accreditation for comprehensive interdisciplinary brain injury rehabilitation.

2. PNSs were established to manage the post-acute phase of polytrauma rehabilitation and coordinate rehabilitation services for patients within their service network. PNSs have a dedicated interdisciplinary team of rehabilitation professionals who provide a high level of expert care, perform a full range of clinical and ancillary services, and serve as resources for other facilities within their network. Due to many referrals for care and treatment of service members and veterans not so seriously injured as to require inpatient rehabilitation, PNSs also evaluate and treat new referrals with polytrauma and TBI. The PNS sites are geographically dispersed across the country with one in each veterans integrated service network, which organize the medical care and services to veterans within their geographic area.
3. PSCTs have been established in smaller Veterans Affairs medical centers across the country to deliver and coordinate the care of veterans with stable polytrauma or TBI sequelae. These local teams of rehabilitation professionals provide services in, or close to, the veteran's home communities. PSCTs provide the lifelong care and follow-up for veterans with moderate to severe injuries requiring regular assessment and reassessment to maintain an optimal state of functioning, take

advantage of new technology and advances in rehabilitation care, and address changes in developmental stage or goals. The teams also evaluate and provide treatment for new referrals not requiring inpatient rehabilitation services.

4. PPOCs provide case management services to veterans with polytrauma and/or TBI and make referrals to programs that provide the level of rehabilitation care required. A PPOC is located at every VA medical center that is not designated as one of the above three components.

All components of the VA PSC have shared characteristics, making them a unique system of care. These characteristics include a deep commitment and respect for the military mission and those who have served their country. In addition, each facility has taken steps to maintain a military identity and connectedness for those who seek care. The facilities in the PSC have a shared system of managing medical information and communication, an integrated system of care management, including several unique innovations such as transition patient advocates who can travel with veterans to their points of care as needed, an in-depth knowledge of veteran and military benefits, and a diverse array of services to meet an individual's need across the full continuum of care. Extensive support to families is also available, and the environment of care is modified to meet the needs of young patients and their families. This comprehensive and coordinated system of care, in addition to the special programs found within the various components of the system, make the rehabilitation services provided unique to the VA.

SCOPE OF SERVICES

The Interdisciplinary Team

Each service delivery component of the PSC has at its core an interdisciplinary team (IDT). These interdisciplinary teams are characterized by a variety of disciplines working together in the assessment, planning, and implementation of each patient's care plan. The core IDT is responsible for the major therapeutic interventions of the rehabilitation program. To avoid fragmented care, continuous communication, collaboration, and coordination are critical. The IDT functions as a unit, ensuring cooperation among disciplines to achieve maximum patient and family outcomes. The membership of the team is determined by assessing the individual's rehabilitation needs, predicted outcomes,

and medical needs.

VA rehabilitation professionals have specialized skills and knowledge based upon education, clinical training, and experience. They are certified or licensed according to their specific discipline requirements and receive additional training in specific treatment areas relevant to polytrauma and TBI. These areas include, but are not limited to, neurorehabilitation, cognitive rehabilitation, visual rehabilitation, and state-of-the-art prosthetics and equipment. As well as having specialized training, new therapists receive mentoring by experienced therapists. They also attend training conferences sponsored by VA and DoD focusing on state-of-the-art practices in polytrauma rehabilitation. In addition, team members establish local, regional,

and national collaborations within the disciplines to share new and emerging best practices.

The patient and the patient's family, or other support system, are crucial members of the IDT and are included in all phases of the rehabilitation process. Their input is actively solicited by team members and is essential to the development of an individualized plan of care based on goals that are patient-centered and relevant. Goals and progress are continually reviewed with the patient and family and modified as needed to remain centered on the patient's needs. Goals addressed include the full spectrum of function from basic skills to community reentry, including return to work, return to school, sports, and other leisure and recreational activities.

Members of the IDT include, but are not limited to, a physician specializing in physical medicine and rehabilitation (physiatrist), rehabilitation nurse, neuropsychologist, rehabilitation psychologist, physical therapist, kinesiotherapist, occupational therapist, speech language pathologist, social worker, recreational therapist, and a military liaison.¹² Each member contributes to the interdisciplinary team goals individualized to the specific patient.

- The **physiatrist** is a medical doctor who serves as the IDT leader to direct and coordinate the patient's care. Physiatrists specialize in the treatment of conditions associated with impairments of function due to disease or injury.
- A **rehabilitation nurse** combines traditional patient care skills with training in care of individuals who are experiencing an illness or disability that alters normal functioning. The rehabilitation nurse works to assist the family and individuals in implementing the different treatments and therapies to complete the treatment plan. The rehabilitation nurse also educates the patient and family about the patient's condition.
- An **occupational therapist** is on staff to help service members or veterans with motor function, basic, and instrumental activities of daily living (ADLs), as well as making recommendations for environmental modifications that allow the individual to function more independently after discharge. Occupational therapists also help to address cognitive impairment and assist with compensatory strategies.
- A **case manager** is made available and is responsible for ensuring that all components of the plan of care are implemented thoroughly and efficiently and according to the desires of

the patient and family. Case managers help to answer questions and locate needed services for the service member or veteran. The social worker case manager collects background information about financial resources, education level, work history, living situation, and level of social support to help with treatment and discharge planning. A case manager is also part of the postdischarge team to ensure that follow-up plans are implemented.

- A **speech language pathologist** addresses communication deficits and evaluates and treats cognitive deficits such as problems with attention, memory, reading comprehension, and planning and sequencing. The speech language pathologist may also help if there are deficits in swallowing.
- **Physical therapists** and **kinesiotherapists** work to aid in the restoration of function, improve mobility, relieve pain, and prevent or limit permanent physical disability. These therapists also teach service members or veterans how to use assistive devices such as gait aides, prostheses, and wheelchairs.
- A **recreational therapist** assists the individual with community reintegration by applying practical skills to real-life situations and ensuring safety in environments with various barriers such as curbs, stairs, and uneven surfaces. Recreational therapists also assess and assist with adaptations for leisure activities such as sports.
- A **rehabilitation psychologist** is a specialist with an advanced degree in psychology who works with clients in coping and adjusting to traumatic injury. The rehabilitation psychologist works with the patient and family to recognize and address specific issues that may occur after injury, in areas such as mood and emotions, stress management, body image, quality of life, and role changes.
- The **neuropsychologist** has a similar education to a rehabilitation psychologist, but specializes in the relationship between the brain and behavior. A neuropsychologist may administer cognitive or emotional assessments to identify strengths and weaknesses after injury.
- The **DoD military liaison** provides support to service members as they transition from military healthcare to the VA healthcare system in areas such as processing travel vouchers and claims. The military liaison also serves as a connection between the service member and his or her chain of command and consults with the IDT on military matters.¹²

Specialized Programs

Acute Rehabilitation

This phase typically occurs directly following initial medical and surgical stabilization and provides high-intensity rehabilitation care while optimizing the patient's medical condition. During this stage, typically occurring at the PRCs, active duty service members and veterans frequently continue to require significant medical and surgical support, unlike patients admitted to many private sector rehabilitation facilities. Thus, these medical and surgical services are available on an emergent basis at all four PRCs. Data collected at the PRCs reveal that approximately 90% of polytrauma patients in the acute rehabilitation setting have TBI as one of their impairments. Therefore, the environment of care and the expertise of the treating professionals are adapted to the specialized techniques required for neurological and particularly TBI rehabilitation, unlike many generalized rehabilitation units, which may have a very low census of TBI patients and limited experience with their rehabilitation.

Acute rehabilitation includes treatment planning, based upon medical stability, types of impairment, level of consciousness, and current cognitive and functional status. The focus may initially be on alertness and responsiveness and progress through developing basic skills such as bowel and bladder control, communication, mobility, basic hygiene, orientation, and basic ADLs, and advance to higher level ADLs such as meal preparation, managing money, community safety, and driving. Acute rehabilitation in the PSC requires the expertise of multiple healthcare professionals who work as an IDT, as well as dedicated medical and surgical consultants available around the clock, every day of the week.

Emerging Consciousness Program

This is a unique, specially developed program, based on the most up-to-date evidence, that is operational at the four PRCs. It is designed to optimize long-term functional outcomes after severe brain injury in patients who are not yet ready to participate in acute rehabilitation. It promotes return to consciousness, and facilitates progress to the next level of rehabilitation care. Individuals who benefit from this program have suffered severe polytraumatic injuries leading to ongoing impaired consciousness. The program encompasses nursing and rehabilitation medical services, an individualized therapy program, intensive case management, and psychological support services and

education for families and caregivers.

Residential Transitional Rehabilitation Program

This program is for veterans and active duty service members with polytrauma and/or TBI who have physical, cognitive, and/or behavioral impairments that delay or inhibit their effective reintegration into the community or return to duty after the acute phase of rehabilitation. It was developed based on a thorough review of research on the effective components of existing transitional rehabilitation models. Transitional rehabilitation offers a progressive return to independent living through a milieu-based, structured program focused on restoring home, community, leisure, psychosocial, and vocational skills in a controlled, therapeutic setting. Services provided typically include group therapies, individual therapies, case management and care coordination, medical care, vocational and educational rehabilitation services, discharge planning, and follow-up. Services are often provided in community settings. These programs have been implemented at the PRCs.

Subacute Rehabilitation

This program provides services for persons with polytrauma who are medically stable and need a less intensive level of rehabilitation services, over a longer period of time than provided in the acute setting. In the PSC, patients typically are admitted to a subacute rehabilitation program after a period of acute rehabilitation. Subacute rehabilitation programs are often utilized for persons who have made progress in the acute rehabilitation setting and are still progressing, but are not making rapid functional gains and wish to be closer to their home community. The programs are also utilized during the transition home, providing education to families and caregivers, identifying community resources available for transitional support, and acquiring any necessary equipment. Subacute TBI rehabilitation is typically provided at the VA PNSs, where continued interdisciplinary treatment to meet patient and family goals is provided.

Outpatient Therapy

Following acute or subacute rehabilitation, a person with a traumatic injury may continue to receive outpatient therapies to meet ongoing goals. Additionally, a person with polytrauma or a brain injury that was

not severe enough to require inpatient hospitalization may attend outpatient therapies to address their functional impairments. Outpatient therapies are typically provided at PNS and PSCT facilities. The outpatient interdisciplinary rehabilitation team addresses basic functional impairments, basic and advanced ADLs, and return to work, return to school, and community reintegration including driving and leisure skills. Therapies are geared to both restoration of function

and compensation for fixed impairments.

Day Treatment

This program provides rehabilitation therapies in a structured group setting during the day and allows the participant to return home at night. Several PNSs offer day treatment programs for veterans with polytrauma and TBI.

COORDINATION OF CARE AND CASE MANAGEMENT

Case management, an integral part of services provided throughout the PSC, plays a crucial role in ensuring lifelong coordination of services for patients with polytrauma and TBI. Several processes have been established to facilitate the transition of patients from DoD to VA care at the appropriate time, under optimal conditions of safety and convenience for the patients and their families. These processes address continuity of medical care and psychosocial support for patients and families.

Families of injured service members require particular assistance with transitioning from the acute medical setting of the military medical treatment facility (MTF) to the VA rehabilitation setting at the PRCs. Multiple levels of clinical, psychosocial, and logistical support have been put into place to ensure a smooth transition and continuity of care. At Walter Reed Army Medical Center (Washington, DC) and Bethesda (Maryland) National Naval Medical Center the process begins with the VA polytrauma rehabilitation nurse liaison, who meets the active duty members and their families while they are still in the acute treatment phase of care. The nurse liaison provides education about TBI, the rehabilitation process, and the PRC environment of care. Additionally, VA social workers at the MTFs provide logistical and psychosocial support during the transition process from DoD to the VA. At the same time, the admission case manager from the

PRC maintains personal contact with the family prior to transfer to provide additional support and further information about the expected plan of care. PRCs also schedule video teleconferences with the MTFs to discuss the referral with the transferring team, and to meet the patient and family members "face-to-face" whenever feasible.

Social worker case managers at the PRCs assess the psychosocial needs of each patient and family, and match treatment and support services to meet identified needs, coordinate services, and oversee the discharge planning process. As the veteran moves to the next level of care, the social worker case manager is responsible for a "warm hand-off" of care to the case manager at the receiving facility closer to the veteran's home. This is accomplished via personal communication through a phone call or through the PTN's state-of-the-art video conferencing capability. The case manager continues to follow the patient until transfer of care is complete, and services recommended in the discharge plan of care are fully implemented.

The PTN provides a reliable, easily accessible tool to further support care coordination and case management. The PTN was expanded during fiscal year 2007 to include all PRCs and PNSs and several DoD MTFs, ensuring that the polytrauma and TBI expertise available at the PRCs is readily accessible to locations closer to the veteran's home community.

FAMILY AND CAREGIVER SUPPORT

PSC programs are responsible for ensuring that patients and their families, or other caregivers, receive all necessary support services to enhance the rehabilitation process and minimize the inherent stress of recovery from a severe injury. The PRCs and PNSs strongly advocate involvement of families and caregivers throughout the rehabilitation process. Family members and caregivers actively engage in treatment and treatment decisions. They are invited to join therapy sessions and to participate in interdisciplinary

team meetings where treatment plans are discussed. Support groups and individual counseling for family members are available at all PRC sites.

Within the PSC, each service member or veteran identifies those individuals whom they consider family members, caregivers, or members of their social support network. Services described in this section would be provided to anyone identified by the patient as part of this extended network. For patients without good family or social support, the case manager tries

to identify the best support available and provide the necessary education and training to enhance these connections. The designated polytrauma case manager (social worker and/or nurse) assigned to every veteran and active duty service member receiving care in the PSC coordinates the core needs and support efforts to match the needs of each family or caregiver. At the PRCs in particular, where patients and families spend extended periods of time away from home, an entire support system has been implemented that includes, but is not limited to, dedicated social worker case managers advocating for needs and interests throughout the rehabilitation process; access to a VA social worker 24 hours a day, 7 days a week; and counseling, education, and logistical support such as transportation, housing, nutrition, and child care.

Education and training for family caregivers are provided throughout the rehabilitation process. The goal of education is to empower families to support their loved one through the recovery process, and to provide strategies that will facilitate reintegration into the home community. VA services provided directly to families of polytrauma and TBI veterans include screening, assessment, education, and treatment for marital and family related problems. Family members may also receive respite care, home health services, education about the care of the veteran, referral to community resources, limited bereavement counseling, and support group services.

Resources have also been assembled nationally and locally to meet the special needs of families who accompany the seriously injured service members to the PRCs. Several educational products for patients and families were developed at the PRCs and distributed nationally in fiscal year 2007, including a TBI family education manual, a TBI information brochure, and a TBI screening brochure. A new PSC Web site is being planned.

Generous donations from VA Voluntary Services, Operation Helping Hand, Fisher House Foundation,

other foundations and agencies, and local businesses frequently provide free housing, free or discounted meals, transportation, and entertainment for veterans' family members at or near the PRC sites. Additional donations have included laptop computers, media equipment, telephone cards, and gift cards for meals and entertainment. Voluntary Services at each PRC facility guide donations to meet the families' specific needs.

The PSC is committed to supporting the military identity of the wounded service members served at its facilities. Each of the PRCs has an Army and Marine liaison assigned full time. Their role is to help all active duty military and their families with invitational travel orders, medical boards, and access to military benefits. Additionally, several sites have a representative from the Military Severely Injured Service Center and Army Wounded Warriors available to provide information and assistance. While these professionals often work with patients independently, their interventions are integrated through collaboration with the social work case manager.

VA also supports GWOT veterans through the OEF/OIF program, a coordinated program that offers case management to all veterans transitioning into civilian life who have served in combat. Since 2003, VA has collaborated with DoD and MTFs to seamlessly transition the healthcare of injured or ill combat veterans and active duty service members from MTFs to VHA facilities. VA social worker liaisons are assigned to major MTFs to assist with transfers and to provide information to active duty patients and families about VA healthcare services. OEF/OIF case managers, both social workers and nurses, are also at the VA healthcare facilities to aid with the transition once the veteran or active duty service member presents for care. Services include helping veterans obtain the appropriate information about their healthcare benefits and eligibility.¹³ PSC case managers work closely with this program.

RESEARCH AND COLLABORATIONS

The Polytrauma and Blast-Related Injuries (PT/BRI) Quality Enhancement Research Initiative (QUERI), located at the Minneapolis VA Medical Center, is the coordinating center for collaborative research activities for the PSC. The mission of the PT/BRI QUERI is to promote the successful rehabilitation, psychological adjustment, and community reintegration of individuals who have sustained polytraumatic and blast-related injuries. Based on needs assessment studies conducted in fiscal year 2006, and input from stakeholders, PT/BRI QUERI has identified four priority areas for

research: (1) database development, (2) screening/evaluation of high-frequency comorbidities, (3) caregiver family members, and (4) care coordination. In addition, individual sites in the PSC have their own research programs funded through VA research offices, such as rehabilitation research and development and health services research and development, DoD research programs, and the DVBIC. These programs utilize the standard methodologies for applications for research grants.

The VA PSC actively collaborates with multiple

DoD and civilian sector programs and agencies. One of the most prominent and long-standing is that with the DVBIC. Collaboration with the DVBIC, even before GWOT, helped to lay the foundation for the system. DVBIC, then known as the Defense and Veterans Head Injury Program, was established in 1992 to help coordinate efforts across the VA, DoD, and the civilian sector in diagnosing and treating TBI. DVBIC is a congressionally supported program charged with developing military-relevant research to increase understanding of how TBI impacts troop readiness and improve outcomes, leading to return to active duty or productive community reintegration. Its mandate also calls for innovative rehabilitation for TBI, utilizing emerging technology, and the development of educational materials and programs for professionals, providers, and family members. Since its founding, DVBIC's role has expanded to include screening for mild TBI in the DoD, development of practice guidelines, data collection, and analysis and care coordination and case management.¹⁴ These efforts are apparent in the four PRCs.

The PSC has also established collaborative relationships with other rehabilitation organizations. VA works closely with CARF to help identify and promote quality rehabilitation programs within the VA, utilizing CARF's directory of rehabilitation pro-

viders to ensure that care provided outside the VA system meets an established benchmark for quality rehabilitation. Leadership in VA rehabilitation also works closely with other national professional rehabilitation organizations such as the American Medical Rehabilitation Providers Association and the American Academy of Physical Medicine and Rehabilitation for the common goal of improved rehabilitation services to the nation's service members and veterans. A new collaboration has recently been established with the TBI Model Systems Program, a long-standing research consortium of private sector TBI treatment facilities that have established a common database and support joint research initiatives, to share in data collection for outcomes and joint research ventures. PSC facilities are also encouraged to form local collaborations with providers in their communities to ensure the best care without gaps as close to home as possible.

Many of the programs in the PSC have affiliations and collaborative relationships with academic medical centers. VA rehabilitation providers are often part of the academic medical rehabilitation community for training and affiliations, and share VA and affiliated positions in medical rehabilitation. VA clinicians are also frequently invited lecturers on polytrauma and TBI rehabilitation.

OUTCOME MEASURES

Rehabilitation programs in the VA utilize a standardized outcomes measurement system, the Functional Status Outcomes Database. This system allows tracking of functional outcomes in motor, self care, and cognitive domains across the continuum of care. Standardized reports are provided on a quarterly basis to inpatient rehabilitation units by the US Department of Health and Human Services' Uniform Data System program, which tracks information on the operation and performance of health centers. In addition, facilities can create their own customized reports based on their individualized data. Data can be utilized to measure change in function, length of the rehabilitation stay, discharge destination, and various demographic variables. With the establishment of the PSC, the Functional Status Outcomes Database was modified to include new variables relevant to polytrauma and the military experience. Reports of outcomes are presented in educational meetings as well as used to inform the development of the system.

The PSC also collaborates with the DVBIC in collection of outcome data. The DVBIC has primarily focused on ensuring the best practices for service members and veterans with TBI. Although data on the long-term consequences of TBI are not yet available,

DVBIC has established a national database of individuals who have received care within the program. The database includes such descriptive information as mechanism of injury (blast or other type of injury), severity of injury, and measurements of neurologic function. These descriptive points are collected to make comparisons of outcomes based upon mechanism of injury, severity, and other injury types (closed or penetrating). This database is currently being used to allow longer follow-up of individuals receiving services to examine and address issues related to long-term outcomes (up to 10 years). The DVBIC also funds specific research endeavors at the PRCs. One important activity often associated with long-term outcomes is an individual's ability to return to independent driving. PRCs and military treatment facilities have utilized driving simulators to assist in retraining individuals to drive. These driving simulators are not only used for skills training, but also provide valid predictive measures of long-term performance in the community for individuals with TBI.¹⁵

VA medical care in general has achieved significant recognition for quality of care; in 2005, VA achieved a satisfaction score of 83 out of 100 for inpatient care and 80 out of 100 for outpatient care as rated by the Ameri-

can Customer Satisfaction Index. These scores were recognized as higher than the private sector, which scored 73 and 75, respectively.¹⁶ VA also continually tracks its service quality using Clinical Practice Guidelines and the Prevention Index II. Clinical Practice Guidelines help to ensure that all healthcare professionals follow

a nationally recognized standard of care, and Prevention Index II tracks compliance with the Guidelines for preventative care, which is associated with better health and well-being. In 2006 the mean scores of these measures were reported at 87% for the Clinical Practice Guidelines and 90% for the Prevention Index II.¹⁶

SUMMARY

The VA PSC was created to provide comprehensive care to severely injured service members, especially those presenting with unique injury patterns and complex rehabilitation needs associated with blast exposure. This network of care is committed to providing veterans access to the highest quality of care and helping them regain the functional skills to success-

fully return to active duty military service or reenter the community. In pursuing these goals, the PSC has achieved an unprecedented level of integration and coordination among the many DoD, VA, civilian, national, regional, and local facilities and systems involved in rehabilitation services for veterans. The standard of care in the PSC meets or exceeds that of the private sector.

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