

Polytrauma & Blast-Related Injuries

MINNEAPOLIS, MINNESOTA

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Background

As of July 2014, 57,471 Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND) service members have been wounded or killed in action. Moreover, many others have sustained “invisible” injuries that were not immediately identified. Blasts are the most common cause of combat injury. In combat, sources of blast injury include artillery, rocket and mortar shells, mines, booby traps, aerial bombs, improvised explosive devices (IEDs), and rocket-propelled grenades. Blast injuries can involve polytrauma, meaning that they affect multiple body systems or organs.

Because of improvements in body armor, as well as battle-site and acute trauma care, service members are surviving beyond the acute phase of blast injuries. However, they are surviving with complex injuries that can include: traumatic brain injury (TBI), traumatic limb amputation, nerve damage, burns, wounds, fractures, vestibular damage, and vision and hearing loss. Pain, mental health, and adjustment problems also are common. Because TBI is particularly prevalent among individuals injured in the war, it has been referred to as the “signature injury” of OEF/OIF/OND.

Polytrauma and Blast-Related Injuries Quality Enhancement Research Initiative (QUERI)

The mission of the Polytrauma and Blast-Related Injuries (PT/BRI) QUERI is to promote the successful rehabilitation, psychological adjustment, and community reintegration of Veterans who have sustained polytrauma and blast-related injuries. The scope of PT/

BRI-QUERI includes the full range of health problems, healthcare systems, and psychosocial factors represented in this mission. PT/BRI-QUERI, therefore, is not limited to one medical problem. Instead, this QUERI Center focuses on the pattern of comorbidities and related functional problems and healthcare needs among the combat-injured.

Despite the breadth of this scope, the priority clinical focus is traumatic brain injury (TBI) within the context of polytrauma (TBI/polytrauma). That is, the clinical priority is TBI that co-occurs with injuries to other body structures and systems, including mental health. TBI is a priority area for VA, and is of increased prevalence due to the wars that have occurred post-September 11, 2001.

The Polytrauma System of Care

To meet the rehabilitation needs of Veterans with polytraumatic combat injuries, VA developed the Polytrauma System of Care, which operates under the leadership of Physical Medicine and Rehabilitation (PM&R) within Rehabilitation and Prosthetics Services and sets the standard for TBI care within VA. The Polytrauma System of Care consists of:

- *Five Polytrauma Rehabilitation Centers (PRCs)* that provide acute inpatient rehabilitation for Veterans and active duty service members with TBI and polytrauma.
 - Each PRC has designated beds for the Emerging Consciousness Program, and a Polytrauma Transitional Rehabilitation Program to provide comprehensive, post-acute cognitive retraining and

About QUERI

VA/HSR&D's Quality Enhancement Research Initiative (QUERI) currently focuses on ten areas of great importance related to healthcare for Veterans: Chronic Heart Failure, Diabetes, eHealth, HIV/Hepatitis, Ischemic Heart Disease, Mental Health, Polytrauma and Blast-Related Injuries, Spinal Cord Injury, Stroke, and Substance Use Disorder.

Working with health system partners to develop research that speeds improvements in Veterans' healthcare, QUERI utilizes a six-step process to diagnose gaps in performance and identify and implement interventions to address them.

- Identify priority conditions and opportunities for improving the health of Veterans.
- Identify effective practices for improving outcomes for priority conditions.
- Examine variations in existing practices, the sources of variation, and their relation to health outcomes.
- Identify and test interventions to improve the delivery of best practices.
- Evaluate the feasibility, adoption, and impact of coordinated improvement programs to spread best practices.
- Evaluate the effects of improvement programs on Veterans' health outcomes, including quality of life.

community re-entry rehabilitation, through outpatient and residential programming.

- 23 Polytrauma Network Sites are charged with providing and coordinating TBI-related care for Veterans within each VISN.
 - These sites act as referral centers and provide oversight and education to other medical centers within their VISNs.
- Polytrauma Support Clinic Teams provide evaluation for Veterans with positive TBI screens and follow stable TBI-related symptoms.
- Polytrauma Points of Contact are located at every VA facility that does not have a PNS or PSCT.

PT/BRI-QUERI research has shown that Veterans diagnosed with TBI are seen in multiple care settings and that many receive services outside of TBI/Polytrauma clinics. Therefore, while working closely with PM&R to improve the Polytrauma System of Care, PT/BRI-QUERI's efforts focus on all care settings where Veterans receive services for TBI/polytrauma.

PT/BRI-QUERI Projects

To achieve its mission, PT/BRI-QUERI has three inter-related priority goals:

- Support and enhance implementation of evidence-based, integrated, patient-centered care for patients with TBI/polytrauma.
- Improve Veterans' ability to manage their persistent TBI/polytrauma-related symptoms, impairments, and functional difficulties.
- Optimize Veterans' support systems, including family, peers, VA, and community resources.

These goals were developed during a strategic planning process that involved:

the PT/BRI-QUERI Executive Committee; the Physical Medicine and Rehabilitation Program Office, as well as other VA offices and stakeholders; the PT/BRI-QUERI Family Care Advisory Group; TBI/polytrauma clinical teams, and research affiliates.

These goals build on and extend prior PT/BRI-QUERI goals and map onto the Chronic Care Model (CCM), which is the analytic framework guiding this QUERI's selection of goal areas. PT/BRI-QUERI uses the CCM as a clinical analytic framework because the effects of blasts and other battlefield injuries that persist are similar to other chronic conditions and require ongoing activities and responses from patients, family members/caregivers, and the VA healthcare system. PT/BRI-QUERI has research projects in each of these goal areas. Within the *patient-centered care* priority goal, investigators are conducting research on:

- Treatment planning,
- Telehealth applications,
- Adherence to mild TBI clinical practice guidelines, and
- Implementation of evidence-based treatments.

Within the *self-management* priority goal, investigators are conducting research on:

- Use of technology, including smartphone/mobile apps, and
- Online interventions to enhance patient self-management and engagement in treatment for TBI and related co-morbidities.

Within the support systems goal, investigators are conducting research on:

- Peer mentorship,
- Caregiver support programs, and
- Interventions to facilitate employment for Veterans with TBI.

Contact information for PT/BRI-QUERI:

Princess Osei-Bonsu, Ph.D., M.S.P.H.
Implementation Research Coordinator
Tel: (612) 467-7726
E-mail: Princess.Osei-Bonsu@va.gov

Contact for general QUERI information:

Linda Mclvor, MHS, MS
QUERI Program Manager
Tel: (202) 443-5740
E-mail: Linda.Mclvor@va.gov

The PT/BRI-QUERI Executive Committee

Each QUERI Center is led by a research expert and a clinician. The research expert and Director for PT/BRI-QUERI is **Nina Sayer, Ph.D.**, and the Clinical Co-Coordinator is **Joel Scholten, M.D.**, and **Steven Scott, D.O.** The PT/BRI QUERI Leadership team also includes **Shannon Kehle-Forbes, Ph.D.**, Associate Director, and **Princess Osei-Bonsu, Ph.D., M.S.P.H.** Implementation Research Coordinator. The Executive Committee brings together a diverse group of researchers, clinicians, and leaders from VA, committed to improving care for individuals with polytrauma and blast-related injuries. PT/BRI-QUERI Executive Committee members include: Leigh Anderson, M.D.; Adam Anicich, M.B.A.; Lucille Beck, Ph.D.; Nancy Bernardy, Ph.D.; Doug Bidelspach, M.P.T.; Lucile Burgo, M.D.; David Cifu, M.D.; Timothy Hogan, Ph.D.; Stephen Hunt, Ph.D.; Margaret Kabat, LCSW-C, CCM; Robert Kerns, Ph.D.; RyAnne Noss, Ph.D.; and Andrew Quanbeck, Ph.D.

QUERI web link:
www.hsrp.research.va.gov/queri