The background of the cover is a dark blue gradient. It features faint, semi-transparent images of brain scans (axial and coronal views) and medical equipment, such as what appears to be a CT scanner or MRI machine, creating a clinical and scientific atmosphere.

2021

ANNUAL REPORT

Traumatic Brain Injury Center of Excellence

PRODUCED BY THE DEFENSE HEALTH AGENCY

Content

01

TBICoE Mission

02

TBICoE Leadership

03

TBICoE Significant Accomplishments

04

TBICoE as an Organization

● Research

● Clinical Affairs

● Dissemination

01 TBICoE Mission

As the TBI Pathway of Care manager within the Military Health System (MHS), the Traumatic Brain Injury Center of Excellence (TBICoE) promotes state-of-the-science care from point-of-injury to reintegration for service members, veterans, and their families to prevent and mitigate consequences of mild to severe TBI.

TBICoE is a branch of the Research Portfolio Management Division, under the Research and Engineering Directorate of the Defense Health Agency. To fulfill the mission, TBICoE is comprised of three core areas of responsibility—research, clinical affairs, and dissemination—that collaborate in developing products and engaging stakeholders.

- **Research** generates hypothesis-driven, clinically focused studies; identifying knowledge gaps in the scientific literature; responding to congressional mandates; and evaluates TBICoE produced clinical tools.
- **Clinical Affairs** develops state-of-the-science TBI clinical recommendations and tools for military health care providers, supports clinical outcomes analyses, and provides TBI surveillance support to the DHA.
- **Dissemination** translates scientific findings into products to support education on TBI-related topics, and distributes educational material to military health care providers, service members, and their families through a network of regional education coordinators (RECs).



02 TBICoE Leadership



TBICoE photo

Letter from the Branch Chief

Dear Colleagues and Collaborators:

When I assumed my duties at Traumatic Brain Injury Center of Excellence the strategic goals, mission requirements, and prioritized activities had been set and were being met by the actions of the outstanding professional personnel that represent TBICoE. Completing this work would not have been as comprehensive were it not for the collaborative network within and outside the Military Health System working to support the Defense Health Agency strategic plan.

The 2021 annual report speaks to the legacy of all the work produced by TBICoE prior to my arrival, to the dedicated leadership of Capt. Scott Pyne during his tenure as branch chief, and to the tireless efforts of our organization to achieve excellence. TBICoE's important mission of promoting evidenced-based traumatic brain injury clinical care, conducting high quality research, and disseminating superior education products—in direct support of warfighters, veterans and their families—continues to be what the center is known for and excels at.

Highlights of this report include completing the revision of the *Traumatic Brain Injury: A Guide for Caregivers of Service Members and Veterans*. This universally recognized resource has undergone significant improvements through ongoing research and partner collaborations.

About the Branch Chief

In August 2021, TBICoE welcomed aboard Capt. Scott Cota as its new branch chief. Cota graduated from the University of Southern California-Keck School of Medicine in 1994. He completed a general surgery internship at UC Davis-East Bay, U.S. Naval Hospital Oakland. Following a General Medical Officer Tour with the Navy Seabees Battalion 40 that included two overseas deployments, and an Operation Joint Endeavor deployment to Bosnia, he served as the officer in charge for Recruit Health at Marine Corps Recruit Depot San Diego. In 2000, he completed residency training in family medicine at Naval Hospital Camp Pendleton.

He has ten years of Special Operations experience including tours as the U.S. Special Operations Command surgeon general, Marine Special Operations Command

In addition, two clinical recommendations were released to aid health care providers in managing symptoms following TBI. Inputs from partner centers of excellence were instrumental and prove the importance of collaboration to optimize knowledge about the complexities of managing TBI.

The TBICoE enterprise can be proud of the work done to reach a major milestone in its contribution of collecting data for the *Longitudinal Study on Traumatic Brain Injury Incurred by Members of the Armed Forces in Operation Enduring Freedom and Operation Iraqi Freedom*. Completing the eleven-year interim report to Congress, as directed by National Defense Authorization Act (NDAA FY07 Section 721), was a heavy lift, flawlessly executed. As the study continues, metrics continue to gather and broaden our knowledge of TBI to inform future clinical care.

As you read about 2021's accomplishments, I believe they attest to the valuable efforts made both to advance our understanding of TBI, and supporting a **"Medically Ready Force, Ready Medical Force."**

Capt. Scott A. Cota, MC, USN
Branch Chief
Traumatic Brain Injury Center of Excellence (TBICoE)
Research Portfolio Management Division
Research and Engineering Directorate
Defense Health Agency (DHA)

(MARSOC) command surgeon, MARSOC Raider Regiment surgeon, and 1st Marine Raider Battalion surgeon. He deployed as surgeon for the Special Operations Task Force 81-Afghanistan. He was Professor of the Quarter at Joint Special Operations University, honored for his collaborative and holistic approach to the Joint Special Operations medical orientation course and operator health care subjects.

He is a graduate of both the U.S. Navy Command and Staff and U.S. Army Command and General Staff Officer College. His military decorations include Legion of Merit, Bronze Star, Defense Meritorious Service, Meritorious Service (three oak leaf cluster), Joint Service Commendation, Navy Commendation (two oak leaf cluster), Navy Achievement, and a multitude of unit and service medals.

03 TBICoE Significant Accomplishments

Progressive Return to Activity (PRA) Clinical Recommendation

TBICoE started the year by releasing the revised [Progressive Return to Activity Following Acute Concussion/Mild Traumatic Brain Injury](#) clinical recommendation in January. The PRA recommendation features a six-step approach for providers to smoothly transition service members from concussion diagnosis following an injury to managing symptoms through recovery. Each stage focuses on both gradually returning patients to full physical activity and normal brain function.

Brain Injury Awareness Month

Every year, the DOD recognizes March as Brain Injury Awareness Month (BIAM). The annual campaign seeks to increase stakeholder understanding of the signs and symptoms of TBI. TBICoE also utilized the month to emphasize its role as the manager of the TBI Pathway of Care. To spread this year's theme, Be TBI Ready, TBICoE planned activities to publicize TBI research, clinical support, and education efforts throughout the center's network. Due to the ongoing pandemic and lessons learned from 2020, TBICoE went all-virtual for BIAM events and activities. During BIAM 2021:

- Regional education coordinators hosted 315 training and outreach events attended by 6,786 stakeholders.
- The "CUBIST" and "Picking Your Brain" podcasts generated 427 plays.
- Three BIAM articles appeared on DHA's online newsroom and received 1,501 page views.
- TBICoE's Facebook page promoted BIAM activities reaching 35,225 Facebook users, and garnering 2,387 reactions, clicks, and shares.

 35.2 K

    2.4 K

TBI Caregiver Guide

In June, the center released the new [Traumatic Brain Injury: A Guide for Caregivers of Service Members and Veterans](#) to replace the 2010 version. TBI subject matter experts from TBICoE, National Intrepid Spirit Center of Excellence, Psychological Health Center of Excellence, and the Department of Veterans Affairs worked together to revise and update the guide. Findings from the ongoing [Longitudinal Study on Traumatic Brain Injury Incurred by Members of the Armed Forces in OEF/OIF](#) were incorporated into this revision as well. Caregivers of service members and veterans with TBI can download the interactive PDF to use on their smart phones, tablets, and personal computers.

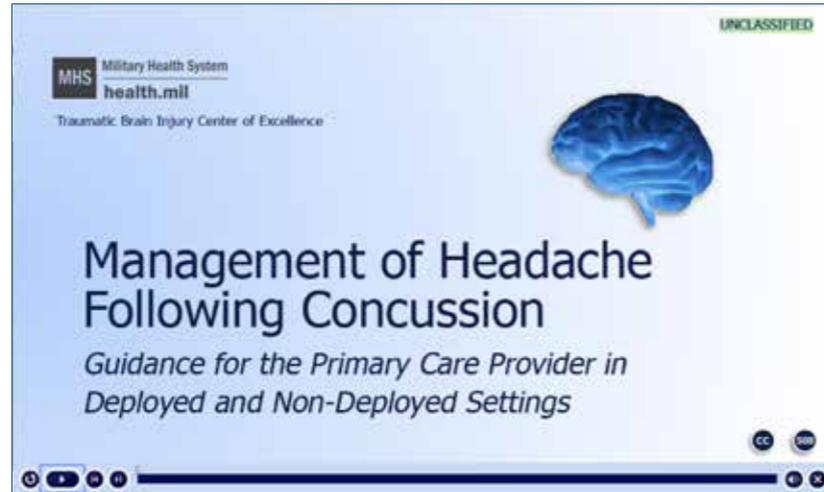


NDAA FY07 Section 721 Interim Report to Congress

In May, TBICoE completed the [Interim Eleven-Year Update: Longitudinal Study on Traumatic Brain Injury Incurred by Members of the Armed Forces in OEF/OIF](#) in response to Section 721 of the National Defense Authorization Act (NDAA) for Fiscal Year 2007.

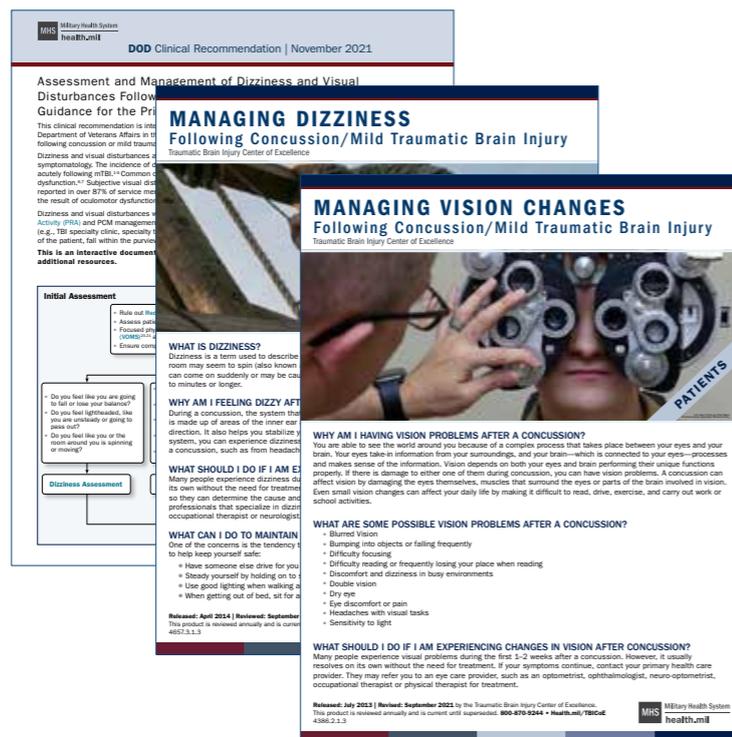
Headache After Mild TBI

In August, TBICoE posted the “[Management of Headache Following Concussion Interactive Provider Training](#)” (iPT) on Joint Knowledge Online, the Military Health System’s enterprise learning-management system. The iPT clinical content remained unchanged from its original release. However, TBICoE adapted the tool to operate on JKO’s platform.



Dizziness and Visual Disturbances Clinical Recommendation

In November, TBICoE released the [Assessment and Management of Dizziness and Visual Disturbances Following Concussion/Mild Traumatic Brain Injury: Guidance for the Primary Care Manager](#) clinical recommendation. Subject matter experts from the Traumatic Brain Injury, Hearing, and Vision Centers of Excellence worked together to revise two clinical recommendations into a single clinical tool and replace those originally released by TBICoE in 2021.



The Warfighter Brain Health Initiative

In accordance with memoranda the Deputy Secretary of Defense issued in October 2018 and the Assistant Secretary of Defense for Health Affairs issued in February 2019, as well as the NDAA of 2018, Sec. 734, TBICoE continued to support and follow this DOD enterprise-wide initiative, which promotes the following goals:

- Improve mental and physical performance
- Monitor and mitigate threats to brain health
- Prevent, recognize, and minimize the effects of TBI
- Reduce or eliminate long-term and late effects of TBI
- Advance warfighter brain health science

These goals relate directly to TBICoE’s Research, Clinical Affairs, and Dissemination missions.

Creative Arts Therapies Report to Congress

In October, TBICoE completed the *Creative Arts Therapies Report to Congress* in response to FY21 NDAA House Report 116–422, which requests the Secretary of Defense submit a report to the House and Senate Armed Services Committees presenting information on the feasibility of expanding the Creative Arts Therapies program for TBI and PTSD.

The report included:

1. Current funding and investment in creative art therapies at the National Intrepid Centers
2. Projected cost to expand creative arts therapies
3. The number of locations in the MHS to which the program might be expanded

The report summarized projected funding for expansion of creative arts at the National Intrepid Center of Excellence, 10 Intrepid Spirit Centers, and 11 additional treatment facilities. The report concluded that currently, expanding creative arts therapy (CAT) programs has limited feasibility because little research evidence exists that demonstrates the effectiveness of CAT. In addition, TRICARE does not approve CAT services as separate, billable, evidence-based benefits, but includes them within institutional reimbursements. As part of an ongoing assessment, the DHA continues to incorporate data-driven decisions to integrate emerging and new therapies for the optimal treatment of TBI.

04 TBICoE as an Organization

Research

Research Gaps and Priorities, 2020–2022

The Research portfolio aligns with DOD and Department of Veterans Affairs (VA) TBI clinical research needs by periodically reviewing and analyzing TBI knowledge gaps. This leads to reprioritizing a [TBI research gaps](#) list every two years. A working group comprised of members from TBICoE's headquarters and research site network develops this data-driven actionable list and reviews with TBICoE leadership.

Congressionally Mandated Studies

Blast Research

Sections of National Defense Authorization Acts (NDAA) FY18–20 guide DOD research for mitigating risk of blast overpressure effects. TBICoE serves as the Office of Primary Responsibility for the Health & Performance Line of Inquiry, and tracks 26 research studies across the DOD that investigate the effects of overpressure from heavy weapons on U.S. armed forces members. These studies aim to understand brain health and performance effects of exposure. Collectively, these efforts will assist in determining if future illnesses or injuries are service-connected.

NDAA FY07 Section 721: 15-Year Longitudinal Studies of TBI

In addition to the report to Congress, the 15-Year Longitudinal TBI study based at Walter Reed National Military Medical Center, and the *Improved Understanding of Medical and Psychological (IMAP) Needs in Service Members and Veterans with Chronic Traumatic Brain Injury* study based at the James A. Haley Veterans Hospital have greatly contributed to the scientific literature.

In 2021, the Section 721 research studies, which are still actively collecting data, produced 17 publications and 18 presentations.

Section 721 Research Studies Produced



Research

TBICoE Research Literature Summaries

The research team publishes several summaries of key advances in TBI research that include research reviews, information papers, and the *TBI Hot Topics Bulletin*—a quarterly publication sharing brief overviews of scientific studies and technological developments in TBI. In 2021, each quarterly newsletter summarized and provided review of 6–8 articles related to military populations.



Collaborations

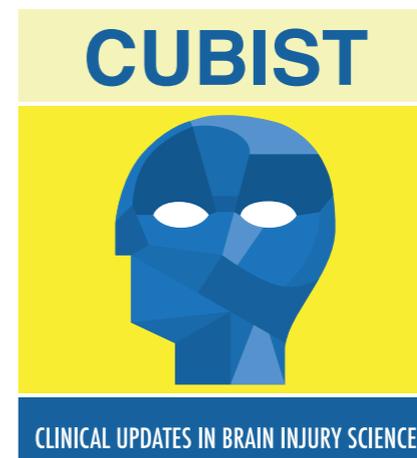
TBICoE works with internal and external collaborators in applying for grants, and for collecting, analyzing, and publishing data. In 2021, nearly 60% of its 40 active studies involved external partners.

Public Dissemination of TBI-Related Scientific Research

In 2021, TBICoE published 39 peer-reviewed articles. Articles related to TBICoE's on-going research appeared in 22 medical journals. A full list of publications is available on the TBICoE website.

TBICoE researchers presented at multiple conferences in 2021. For example, 15 TBICoE researchers contributed to the annual National Academy of Neuropsychology conference December 9–10, 2021.

The TBICoE “Clinical Updates in Brain Injury Science Today” (CUBIST) podcast targets health care providers as its audience. Each episode discusses the latest TBI research relating to patient care. The podcast hosts select episode topics based on current and trending research. In 2021, TBICoE released 10 episodes.



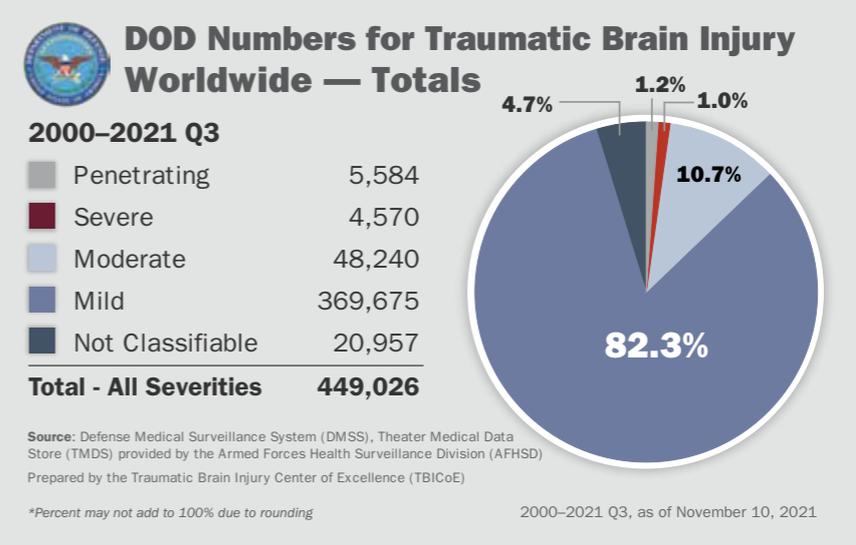
Clinical Affairs

Surveillance

In 2000, the TBICoE surveillance team became the DOD office responsible for reporting the [official tally of service members who have sustained TBIs](#). To accomplish this mission, TBICoE's surveillance office works with data from the Armed Forces Health Surveillance Division to update and publish the number of active-duty service members with a first-time TBI. In 2021, the surveillance team contributed to the growing body of scientific literature with four new publications. Additionally, the surveillance team responded to requests for assistance and TBI-related information from multiple DOD stakeholders throughout the year.

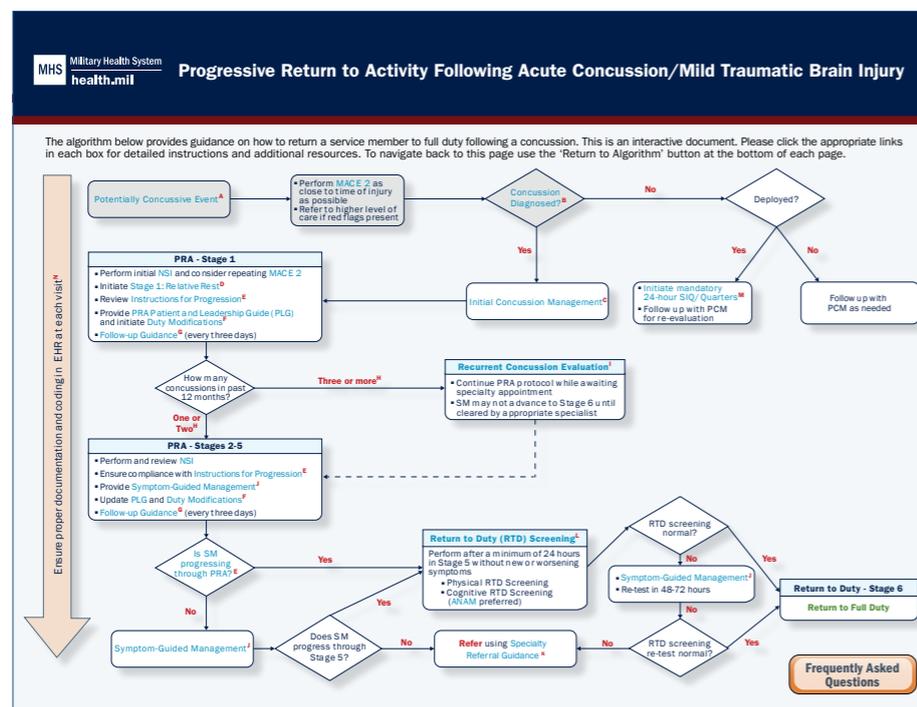
TBI Outcomes

The office of outcomes and assessment provides support to clinical leaders and clinicians by evaluating clinical documentation and providing feedback to the TBI clinical communities across the MHS. TBICoE analyzed the Tri-Service Work Flow (TSWF) mTBI Alternate Input Method (AIM) form data for documenting all outpatient face-to-face patient encounters in primary care. TBICoE recommended changes in the form to increase usability, improve outcomes data collection and analysis, reduce inaccuracies, eliminate duplication, and facilitate logical process flow. The updated TSWF mTBI AIM form launched on the Armed Forces Health Longitudinal Technology Application in June 2021.



Clinical Practice and Clinical Recommendations

TBICoE's clinical practice and clinical recommendations team develops practical, easy-to-use clinical tools to support health care providers in assessing and treating service members and veterans who have sustained a TBI. Providers can access clinically-relevant information and resources that address common symptoms associated with mild TBI, such as headache, sleep disturbances, and vision problems. TBICoE released major revisions of two clinical recommendations in 2021, the *Progressive Return to Activity Following Acute Concussion/Mild Traumatic Brain Injury* and the *Assessment and Management of Dizziness and Visual Disturbances Following Concussion/Mild Traumatic Brain Injury: Guidance for the Primary Care Manager*. [All TBICoE clinical recommendations and supporting resources are posted online for download](#). In 2021, the page received more than 9,000 page views, resulting in more than 5,600 web clicks on available provider resources.



Dissemination

The dissemination team developed 12 world-class instructional products, and supported over 2,700 provider trainings, education, and outreach events, which culminated in Brain Injury Awareness Month, reaching 57,933 participants worldwide.

Education Products Created or Revised

- [Military Acute Concussion Evaluation 2 \(MACE 2\) Provider Training Materials](#)
 - Comprehensive Training (revised)
 - Abridged Refresher Training
 - Training Instructor Guide (revised)
 - Training Student Workbook (revised)
- Dizziness and Vision Clinical Recommendation Provider and Patient Education
 - Dizziness and Vision Provider Training
 - [Managing Vision Changes After Concussion](#) Patient Fact Sheet
 - [Managing Dizziness Following Concussion](#) Patient Fact Sheet
- [Progressive Return to Activity \(PRA\) Provider Training Video Series](#) (8)
- [Management of Headache Following Concussion JKO Training](#) (1 CE Credit)
- [Traumatic Brain Injury: A Guide for Caregivers of Service Members and Veterans](#) (revised)
- Resources for Caregiver Training
- [What You Should Know About Concussion](#) Patient Fact Sheet (revised)

The DHA Continuing Education Program Office approved continuing education credits upon successful completion of the PRA as well as the abridged MACE 2 training.

Regional Education and Outreach Network

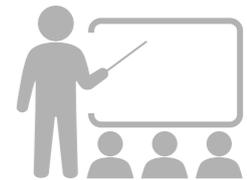
The TBICoE regional education coordinators (RECs) disseminate educational materials and products and facilitate TBI training of health care providers in the MHS and DOD operational forces. They promote TBI awareness to U.S. Armed Forces leadership, active duty service members, their families and caregivers, VA, and the local civilian community. The RECs are located at 12 military hospitals and clinics around the world and are able to provide on-site and remote training support to any TBI training request within the DOD. Notable REC program accomplishments in 2021 included:

- Conducted 2,700 in-person and virtual training sessions serving 57,933 participants
- Initiated a quarterly education series, which provides enterprise-wide TBI training, using technology to reach anyone, anytime, anywhere
- Supported the Deputy Assistant Director of Medical Affairs by providing monthly metrics related to provider-focused TBI trainings
- Conducted an event tailored to the Special Operational Forces on the latest TBI science



12 world-class instructional products

Supported over **2,700** provider trainings



Reached **57,933** participants worldwide

Traumatic Brain Injury Center of Excellence Network Sites

**Joint Base
Elmendorf-Richardson, AK*****



**Landstuhl RMC,
Germany*****

Camp Pendleton, CA**

**Joint Base Lewis-
McChord, WA****

Fort Carson, CO

Fort Drum, NY***

Walter Reed NMMC, MD**

**TBICoE Headquarters
Silver Spring, MD***

Fort Belvoir, VA***

Richmond, VA***

Camp Lejeune, NC***

Fort Bragg, NC

NMC San Diego, CA

Fort Campbell, KY***

Fort Hood, TX***

Joint Base San Antonio, TX

Tampa VA, FL

- National HQ*
- Research Only**
- Education Only***
- Research & Education

To find a point of contact in your region,
please email dha.TBICoEinfo@mail.mil.

This map reflects TBICoE support services across the MHS as of Jan. 27, 2022

“We can feel proud of all the work we did to sustain our mission of supporting service members, veterans, and their families affected by TBI.”

- Branch Chief Capt. Scott A. Cota

For more information, please visit us at health.mil/TBICoE.

We value your opinion. Contact us at dha.TBICoEinfo@mail.mil.

