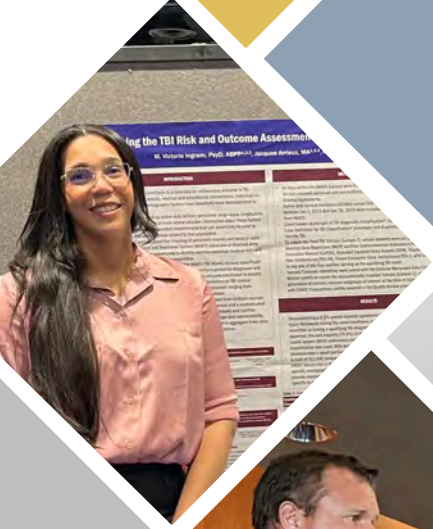
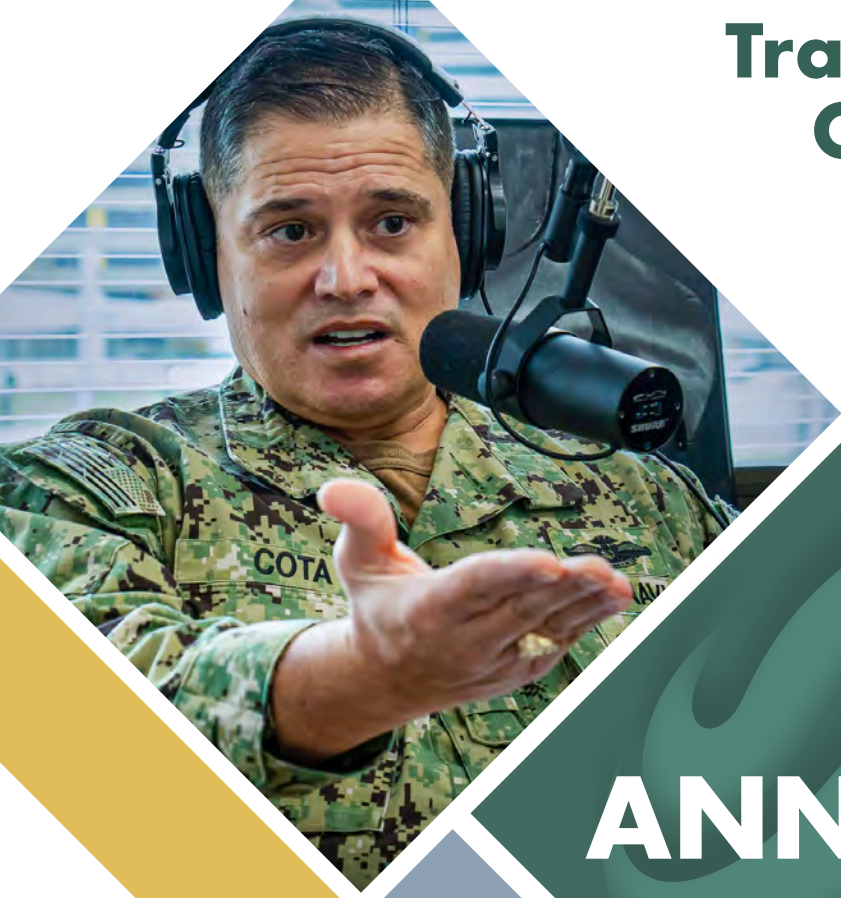


# Traumatic Brain Injury Center of Excellence

## 2023 ANNUAL REPORT



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# Letter from the Branch Chief



Capt. Scott A. Cota, MC, USN  
Branch Chief

TBICoE's work significantly impacts the Department of Defense operational and clinical communities, as well as other federal agencies and external stakeholders.



Dear Colleagues and Collaborators,  
As I look back on a pivotal year for warfighter brain health, it's hard to know where to begin. Let's start at the end: This is my last letter as branch chief of the Traumatic Brain Injury Center of Excellence. In 2024, I will retire from 33 years in the Navy Medical Corps. Leading the stellar, hard-working team at TBICoE has been more rewarding than I can say, and you'll see why in the pages that follow.

As the principal military organization to lead, translate, and advance brain health, TBICoE's work significantly impacts the Department of Defense operational and clinical communities, as well as other federal agencies and external stakeholders. We support the wider defense community through collaborations with combatant commands, military departments, and DOD research labs. Much of our work is a direct result of operational commands or military providers requesting information or guidance on specific topics. For instance, in 2023, we developed Anomalous Health Incident assessment training for the Defense Health Agency. I presented the first one at the U.S. Special Operations Command Warrior Care Program

conference in March (Brain Injury Awareness Month) and it's now a quarterly virtual event. [Low-level blast exposure](#) was another much-requested topic, and we answered the call with new fact sheets for service members, DOD providers, and VA providers, as well as a video, infographic, and web page. In addition, many of our resources are featured on the Military Health System's new [Warfighter Brain Health Hub](#).

We focus on advancing TBI research, developing evidence-based clinical tools and recommendations, training providers on best practices, and producing brain-injury resources for service members and their families and caregivers. Our researchers and educators are embedded at multiple military hospitals throughout the U.S. and Germany, including most Intrepid Spirit Centers. This creates a unique internal feedback loop. Researchers gain firsthand knowledge of specific challenges and gaps from on-site providers, which influences the direction of their research. Findings are translated into evidence-based clinical recommendations, products, and tools designed to help clinicians with the current TBI-related issues they've identified. And TBICoE educators train thousands of people a year on these resources and other current TBI topics.



I am confident that the extraordinary TBICoE team has what it takes to continue to execute the TBICoE mission at the highest level.



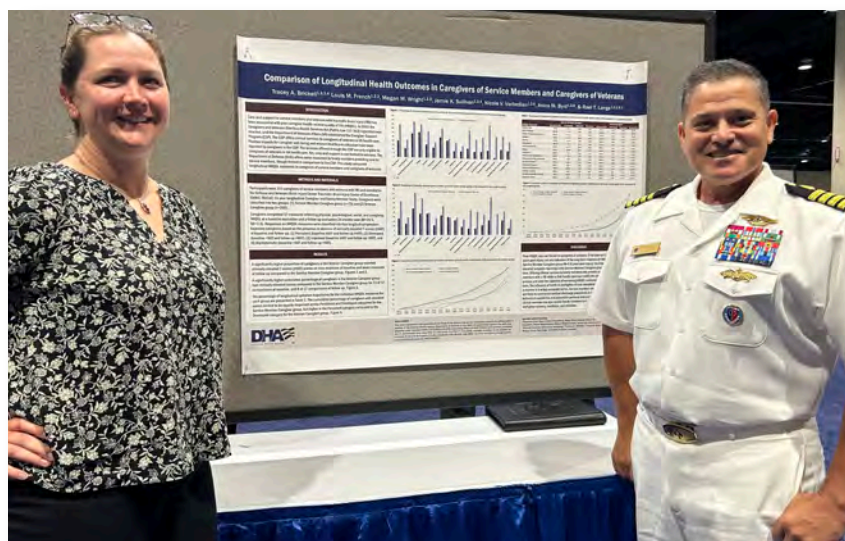
In December, we submitted a final report to Congress on the 26 blast-overpressure studies mandated by the 2018 National Defense Authorization Act. Known collectively as the Section 734 studies, they improve the DOD's understanding of the impact of blast pressure exposure from weapon systems on the service member's brain health and better inform policy for risk mitigation, unit readiness, and health care decisions. As medical program director for the studies, I can attest that the work we did set the stage for the next phase of the DOD's Warfighter Brain Health Initiative Strategy and Action Plan. The plan, released in June 2022, addresses multiple concerns such as blast exposures, repetitive head impacts, and their long-term effects. In 2023, TBICoE—one of many defense entities supporting this multi-pronged strategy—fulfilled eight tasks laid out in the plan that will directly affect TBI clinical care.

All this has set the stage for even more growth in 2024—and the incoming branch chief is the perfect leader to continue the mission. Assistant Branch Chief Dr. Katie Stout has been an integral part of TBICoE for eight years, rising through the ranks to assume leadership roles throughout the organization. She knows where we've been and where we're headed, she will do an extraordinary job as Branch Chief and will add continuity to the position during her tenure. I am confident that the extraordinary TBICoE team has what it takes to continue to execute the TBICoE mission at the highest level. Read on to see all they accomplished in 2023.

Fair winds and following seas to all who helped shape my military path.

Capt. Scott A. Cota, MC, USN  
Branch Chief

Traumatic Brain Injury Center of Excellence  
Research Portfolio Management Division  
Research and Engineering Directorate  
Defense Health Agency



Dr. Katie Stout, pictured with Capt. Cota at MHSRS 2023, will take over as TBICoE branch chief in 2024. (TBICoE photo)

# Advancing the DHA Mission

As part of the DHA's Research and Engineering directorate, TBICoE aligns priorities to the broader mission of improving health and building readiness. Our work significantly impacts clinical and operational communities as well as other agencies. We join the unrelenting pursuit of excellence by lending subject matter expertise and leadership to agency-level efforts as well as to collaborations with partners both inside and outside the DOD.

## Warfighter Brain Health

Identifying and treating TBI is a critical priority for the DOD. As the principal military organization to lead, translate, and advance brain health, TBICoE has supported, initiated, or completed several major efforts this year, including:

- **DOD Warfighter Brain Health Initiative Strategy and Action Plan:** Released in June 2022, the plan aims to synchronize, prioritize, and unify brain-health efforts across the department. Organizations from across the DHA are leading components of the plan, addressing multiple concerns such as blast exposures, repetitive head impacts, and their long-term effects. A significant part of the plan involves 36 actions requested by the Joint Requirements Oversight Council; TBICoE initiated or collaborated on 10 of them, meeting all 2023 deadlines.
- **Blast Overpressure Studies:** Section 734 of the 2018 National Defense Authorization Act mandated a longitudinal medical study on blast-pressure effects on service members. The study, which had five lines of inquiry, ended in 2023 and a final report to Congress was submitted in December. TBICoE led the Health and Performance line of inquiry, which included evaluating outcomes of blast overpressure exposure; leveraging human performance optimization programs and existing clinical and research data; and recommending interim blast exposure criteria and future areas of research.
- **Brain Injury Awareness Month:** Every year, the DOD recognizes March as Brain Injury Awareness Month. The annual DHA campaign, largely centered on the TBICoE BIAM Communications Plan, seeks to increase stakeholder understanding of the signs and symptoms of TBI. Using the theme “Be a Brain Warrior: Protect, Treat, Optimize,” we emphasized our role as DOD’s BIAM lead and TBI Pathway of Care manager with a full slate of activities and products publicizing TBI research, clinical support, and education efforts.



During Brain Injury Awareness Month, TBI subject matter experts Megan Lindberg (left) and Lisa Moy Martin presented their research on the history, impact, and future of military TBI at the National Museum of Health and Medicine. (TBICoE photo)

## DOD TBI Advisory Committee

Since 2014, TBICoE has chaired the DOD’s TBI Advisory Committee, the DOD’s coordinating body chartered to promote and address enterprise-wide coordination of the TBI Pathway of Care for the warfighter. Members of the TAC represent key components of the DOD TBI community, including the Defense Health Agency, U.S. Army, U.S. Navy, U.S. Air Force, U.S. Marine Corps, U.S. Special Operations Command, and the Defense Intrepid Network. In 2023, the TAC met 35 times to discuss developments in the field and advise the establishment, standardization, and implementation of evidence-based TBI clinical care, research activities, and training within the DOD. Below are some highlights of the committee’s work.

- Reviewed the Warfighter Brain Health Report to Congress, portions of relevant DOD instructions, new publications from TBICoE, and Individual Longitudinal Exposure Record capabilities and its integration into MHS GENESIS
- Coordinated responses to the March 2023 TBI DOD Inspector General Report
- Discussed the future of the DOD’s Cognitive Monitoring Program and changes to the Automated Neuropsychological Assessment Metrics
- Gathered data on high-risk military occupation specialties and associated weapons systems
- Provided feedback to Defense Centers for Public Health on several products concerning low-level blast exposure

## Collaborative Partnerships

In addition to the collaborative efforts of the TAC, TBICoE continued to build significant working relationships both inside and outside the DOD. We have longstanding partnerships with other DHA centers of excellence—including the Psychological Health Center of Excellence, the Vision Center of Excellence, the Hearing Center of Excellence, and the National Intrepid Center of Excellence—to jointly address TBI and its impact on mental health, hearing, and vision. Our subject matter experts are regularly invited to brief or join various TBI-related working groups, contributing knowledge to the shared goal of improving the lives of warfighters with TBI and their families and caregivers. Our research team has developed relationships with many outside organizations; in 2023, more than 60 external partners engaged in active research studies in the TBICoE portfolio.



Incoming TBICoE Branch Chief Dr. Katie Stout (right) and PHCoE Branch Chief Dr. Kate McGraw spoke on operational women’s health at the Canadian Embassy in Washington, D.C., in February. (TBICoE photo)



# Military Health System Research Symposium

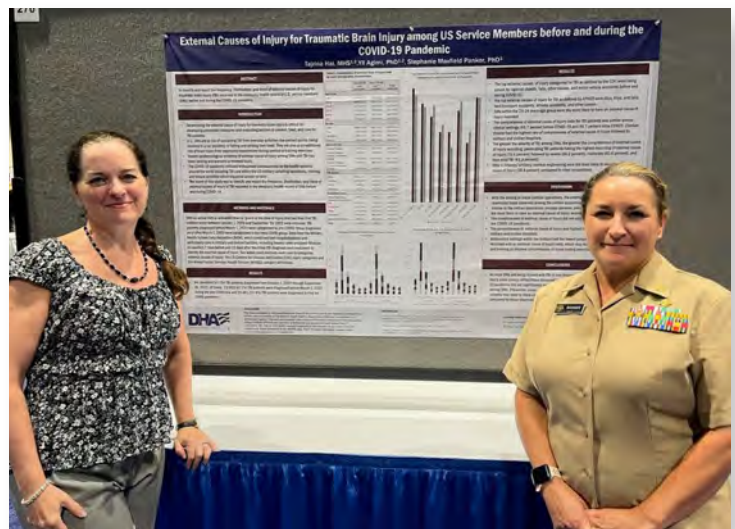
The Military Health System Research Symposium is the DOD’s premier scientific meeting, a joint event for military medical care providers, military scientists, and professionals in academia and industry. Attendees exchange information on research and health care advancements in areas such as combat casualty care, military operational medicine, and clinical and rehabilitative medicine—all of which dovetail with TBICoE efforts. When MHSRS 2023 convened in August in Kissimmee, Fla., TBICoE was there in force with a total of 14 oral presentations and 24 poster presentations.



Staff from the TBICoE headquarters and network sites meet at MHSRS. From left: Dr. Josh Gatson, Dr. Rosemay Remigio-Baker, Dr. Jamie Hershaw-Velasquez, Dr. Katie Stout, and Dr. Ida Babakhanyan. (TBICoE photo)



Dr. Mark Ettenhofer, a research psychologist at Naval Medical Center San Diego, gives one of 14 TBICoE oral presentations at MHSRS. (TBICoE photo)



Clinical Affairs Chief Dr. Stephanie Maxfield Panker (left) and Mission Support Office Chief Capt. Tricia Booker pause next to a poster presentation from the Surveillance team. (TBICoE photo)

# Clinical Affairs

The Clinical Affairs section has three main functions:

- Provide Warfighter Brain Health-related and TBI-related epidemiological and surveillance data support to military leaders and the DOD community
- Develop state-of-the-science clinical recommendations and tools for military health care providers treating those exposed to brain health threats and potentially concussive events
- Promote optimal brain health outcomes for the warfighter through superior analytics and reporting of relevant TBI programs, policies, and strategies



**Dr. Stephanie Maxfield Panker**  
Clinical Affairs Section Chief

## Surveillance

In 2023, the surveillance team contributed to the growing body of scientific literature with two new publications. In addition, the team created a CarePoint dashboard displaying common TBI comorbidities before, at the time of, and after diagnosis; gave six presentations on significant surveillance findings across the MHS to internal partners including the TBI Advisory Committee; and responded to requests for assistance and TBI-related information from multiple DOD stakeholders. This included engaging with the Section 734 workgroup as they developed a plan to monitor service members exposed to low-level blast.

In 2007, the DOD charged TBICoE with 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 reported TBI every quarter. As of the third quarter of 2023, the total number of TBIs sustained by service members since 2000 was 492,167.

The team also generates quarterly reports on TBI-related medical encounters among service members and beneficiaries.

## DOD Numbers for Traumatic Brain Injury Worldwide

2000–2023 Q3

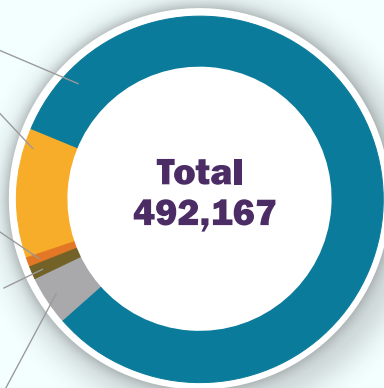
Mild: 82.2%

Moderate: 11.4%

Severe: 1.0%

Penetrating: 1.2%

Not Classifiable: 4.2%



**Total  
492,167**

Penetrating: 5,766

Severe: 4,804

Moderate: 56,333

Mild: 404,450

Not Classifiable: 20,814

Source: Defense Medical Surveillance System, Theater Medical Data Store provided by the Armed Forces Health Surveillance Division. Prepared by the Traumatic Brain Injury Center of Excellence. \*Percent may not add to 100% due to rounding. 2000–2023 Q3, as of November 9, 2023



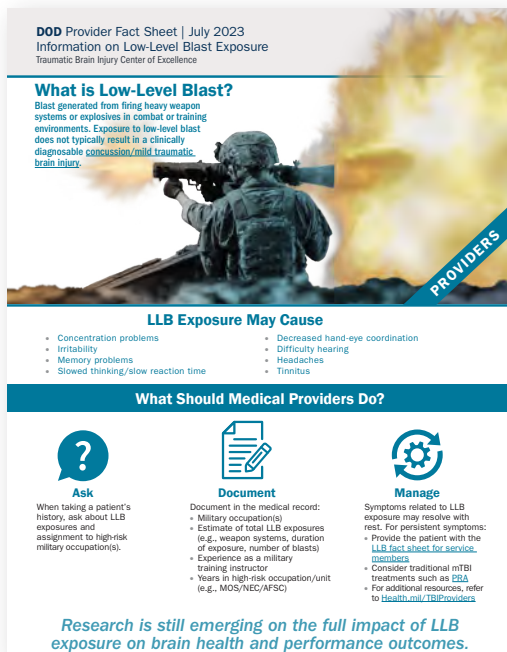


# Clinical Practice and Clinical Recommendations

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 that addresses common symptoms associated with mild TBI, such as headache, sleep disturbances, and vision problems. All resources are available to download at [health.mil/TBIProviders](https://health.mil/TBIProviders).

In 2023, the team developed and released a set of fact sheets and a video for DOD and VA providers on [low-level blast exposure](#) and

made substantial progress on major revisions to the clinical recommendation on headache management after concussion. In addition, TBICoE subject matter experts collaborated on updating the American Congress of Rehabilitation Medicine’s Diagnostic Criteria for Mild TBI and presented at multiple conferences and meetings including the Military Health System Research Symposium and the Special Operations Medical Association conference. They also worked with the Defense Health Agency’s Solution Delivery Division to develop the Warfighter Brain Health Provider Toolkit, an app for management of concussion that is expected to launch in 2024.



Senior Biostatistician Heather Mahaney gives a presentation at MHSRS. (DHA photo)

# TBI Outcomes and Assessment

The office of outcomes and assessment evaluates clinical documentation and provides feedback to the TBI clinical communities across the MHS. In 2023, the team performed analyses regarding data reporting trends, compliance of required reporting of potentially concussive events, patient health follow-up and care trajectory, and reporting and documentation of post-operational events.

They also conducted an analysis on data gaps between MHS electronic medical records, evaluated the utilization of blast ICD codes within the MHS, and presented on demographic patterns observed in TBI care delivery and follow up in the MHS.

# Mission Support

The Mission Support Office provides administrative and operational support to advance TBI mission priorities across the organization and throughout our network of 16 sites. Much of this work is done behind the scenes, including regulatory compliance, process improvements, and business operations. MSO's public-facing work streams disseminate, communicate, and educate the public about our research findings, surveillance data, products, and tools to improve the care of service members with TBI.



**Capt. Tricia Booker, USPHS**  
Mission Support Office  
Section Chief



The Mission Support team gathers at TBICoE headquarters in Silver Spring, Md. (TBICoE photo)

# Brain Injury Awareness Month

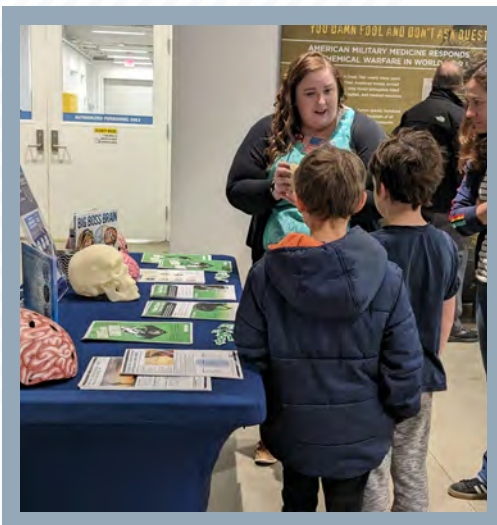
TBICoE takes the lead in shaping and amplifying the DHA’s annual Brain Injury Awareness Month campaign every March. The MSO team coordinated activities to publicize TBI research, clinical support, and education efforts throughout the center’s network of 16 sites. TBICoE continued to use virtual formats for DHA-wide BIAM events; provided in-person events across the [Defense Health Networks](#); and used various digital platforms (social media, podcasts, Health.mil, and GovDelivery) to promote the “Be A Brain Warrior: Protect. Treat. Optimize” theme.



During BIAM:

- Regional education coordinators hosted 272 training, education, and outreach events attended by 7,885 stakeholders.
- The “CUBIST” and “Picking Your Brain” podcasts generated 707 plays.
- New subscribers to TBI Providers’ Brief newsletter increased 625% from BIAM 2022.
- New subscribers to TBI Resources Update newsletter increased 577% from BIAM 2022.
- Facebook posts reached 18,207 Facebook users.
- Facebook reactions, clicks, and shares for the month increased by 200% over BIAM 2022.

TBICoE supported the National Museum of Health and Medicine with two events—the Science Café on [Military Traumatic Brain Injury: The History, Impact, and Future](#) and Brain Awareness Day, where our local regional education coordinator provided information and resources on TBI to museum visitors.



Fort Belvoir REC Heather Kopf explains helmet safety at a Brain Awareness Day event at the National Museum of Health and Medicine. (TBICoE photo)



Joint Base San Antonio REC Toni McCall speaks to attendees of the JBSA Annual BIAM Resource Fair, which she organized. (TBICoE photo)

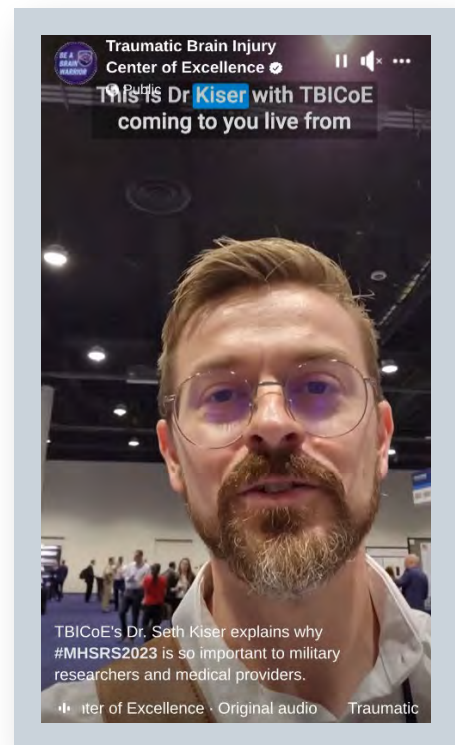


# Communications

The communications team provides expertise in strategic planning, content development, and consistent messaging in various platforms about TBICoE and its research activities; clinical recommendations and supporting provider trainings; and educational information for all stakeholders. The team coordinates with all TBICoE sections, DHA communications, DHA partners, and other DOD organizations to grow engagement of current communications channels.

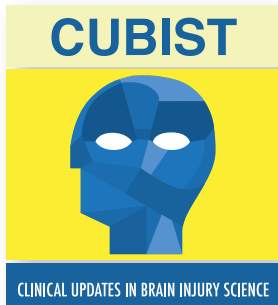
## Social Media

This year, collaboration drove TBICoE’s social media strategy. On [Facebook](#), we engaged other Military Health System and DOD organizations to raise awareness of our mission, research, clinical tools, fact sheets, and trainings. Our most successful team-up in 2023 was with DHA and our own researchers during MHSRS. TBICoE presenters supplied the communications team with photos and videos, including our first [Facebook Reel](#). On LinkedIn, DHA featured our presenters and research in several posts.



## Podcasts

TBICoE produces two [podcasts](#), “CUBIST” (Clinical Updates in Brain Injury Science Today) and “Picking Your Brain,” which are aimed at providers and general audiences respectively.



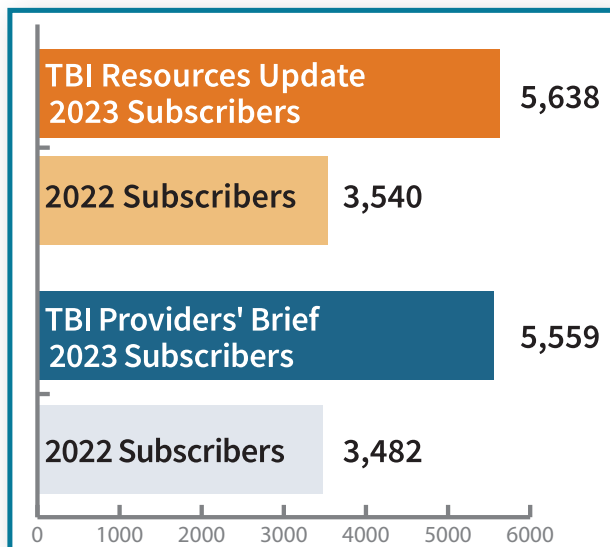
The “[CUBIST](#)” podcast, driven by the Research section and produced by the communications team, discusses the latest TBI research relating to patient care. Guests often include the principal investigators and other subject matter experts. In 2023, TBICoE released 12 “CUBIST” episodes, generating over 4,068 streams.

The “[Picking Your Brain](#)” podcast focuses on the care and recovery of service members and veterans with TBI. In 2023 PYB totaled 1,196 streams and continued to focus on interviews with senior enlisted leaders from the services with the episode “[Brain Injury Awareness with the 19th Sgt. Maj. of the Marine Corps.](#)”



## Newsletters

TBICoE’s two monthly newsletters continued attracting new subscribers throughout the year. [TBI Providers’ Brief](#) reaches MHS providers, researchers, and leaders, and the [TBI Resources Update](#) targets patients, families, and other general audiences.



# Dissemination

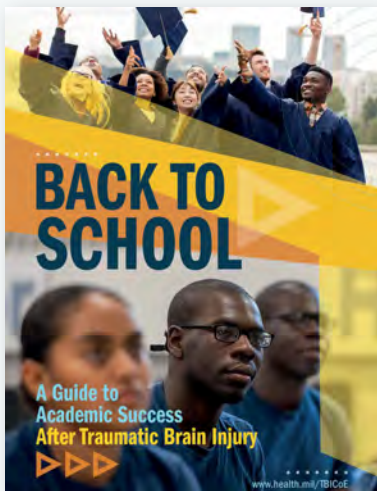
The dissemination team develops TBI educational products and training for providers, patients, and caregivers. Among these are training products for the clinical tools identified in the [DHA-PI 6490.04 Required Clinical Tools and Procedures for Assessment and Clinical Management of Mild Brain Injury \(mTBI\)/Concussion in Non-Deployed Setting](#); the [MACE 2](#) and the [PRA](#) for the assessment, management, and rehabilitation of all service members with mild TBI/concussion.

This education is key: TBICoE researchers have found that patients of health care providers with intensive training on the PRA clinical recommendation had an overall reduction in symptoms after one week, one month, and three months when compared to patients of providers without this training.

## Educational Products

Working closely with the Research and Clinical Affairs sections, the dissemination team updates existing products and creates new ones based on identified knowledge gaps. In 2023, they thoroughly revised “[Back to School: A Guide to Academic Success After TBI](#),” a resource for service members and veterans who want to continue their education, and the TBI and PTSD fact sheet, which was expanded and renamed “[PTSD and Other Stress-Related Disorders Following Concussion/Mild TBI](#).” New products include a Warfighter Brain Health for Leaders [video and fact sheet](#); a [low-level blast fact sheet](#) for service members; a video and instructional infographic on the [Acute Concussion Care Pathway](#), and two provider trainings.

TBICoE subject matter experts develop and conduct provider trainings offering continuing education units. The two new ones—the DHA’s first-ever training on [Anomalous Health Incidents](#) and an online course on the Progressive Return to Activity clinical recommendation—brings the number of TBICoE courses certified by the Continuing Education Program Office to 10 and the number of available CEUs to 25.



**WARFIGHTER BRAIN HEALTH AFTER TBI**  
GUIDANCE FOR LEADERS  
Traumatic Brain Injury Center of Excellence

Leaders play an important role in optimizing warfighter brain health after traumatic brain injury. This fact sheet provides guidance on leaders' responsibilities to ensure service member readiness after an injury event.

**HIGH-RISK ACTIVITIES**  
Concussions, also known as a mild TBI, is a head injury resulting from a hit, blast, blow, or jolt to the head. The Department of Defense identifies the following as potentially concussive events:

- Direct blow to the head or witnessed loss of consciousness
- Involvement in a vehicle blast event, explosion, or rollover
- Presence within 50 meters of a blast
- Exposure to more than one blast event

**SIGNS, SYMPTOMS, AND OPERATIONAL CONSEQUENCES OF TBI**

<p><b>Signs</b>—what may be seen at time of injury</p> <ul style="list-style-type: none"> <li>• Slow to get up</li> <li>• Confusion</li> <li>• Blank or vacant look</li> <li>• Stumbling</li> <li>• Labored movements</li> <li>• Inability to respond appropriately to questions</li> </ul>	<p><b>Symptoms</b>—what service member may report</p> <ul style="list-style-type: none"> <li>• Headache</li> <li>• Visual disturbances</li> <li>• Ringing in the ears</li> <li>• Dizziness/balance problems</li> <li>• Nausea/vomiting</li> <li>• Memory problems</li> <li>• Difficulty concentrating</li> <li>• Irritability</li> </ul>	<p><b>Operational Consequences</b></p> <ul style="list-style-type: none"> <li>• Poor marksmanship</li> <li>• Slower reaction time</li> <li>• Decreased concentration</li> <li>• Decreased situational awareness</li> <li>• Difficulty performing tasks under pressure</li> <li>• Difficulty multitasking</li> </ul>
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Revised November 2018 | Revised November 2023 | The Traumatic Brain Injury Center of Excellence  
This product is reviewed annually and is a covered work reproduction. 800-870-9244 • [health.mil/TBICoE](#)  
4082.2-3

**DDO Service Member Fact Sheet | July 2023**  
Information on Low-Level Blast Exposure  
Traumatic Brain Injury Center of Excellence

**What is Low-Level Blast?**  
Blast generated from firing heavy weapon systems or explosives in combat or training environments. LLB exposure is not the same as a concussion/mild traumatic brain injury.

**LLB Exposure May Cause**

- Concentration problems
- Irritability
- Memory problems
- Slowed thinking/slow reaction time
- Decreased hand-eye coordination
- Difficulty hearing
- Headaches
- Tinnitus (ringing in the ears)

**What Should Service Members Do?**

<p><b>Recognize</b></p> <ul style="list-style-type: none"> <li>• There are specific military occupations at high risk for exposure.</li> <li>• Certain heavy weapon systems have been identified as generating the most LLB exposure.</li> <li>• There are ammunition firing limits for the weapon systems that you use.</li> <li>• LLB exposure can vary depending upon your firing position and other environmental conditions.</li> </ul>	<p><b>Limit</b></p> <ul style="list-style-type: none"> <li>• Limit exposure to as low as reasonably achievable by: <ul style="list-style-type: none"> <li>• Keeping an appropriate distance from weapons being fired</li> <li>• Turning in unused ammunition</li> <li>• Wearing appropriate protective equipment (e.g., helmet, hearing protection)</li> <li>• Adhering to weapon system firing limits</li> </ul> </li> </ul>	<p><b>Report</b></p> <ul style="list-style-type: none"> <li>• Symptoms from LLB exposure typically resolve with time. If your symptoms persist and impact your daily function, inform your command and medical provider. Report your command provider should include: <ul style="list-style-type: none"> <li>• Duration of exposure</li> <li>• Number of blasts</li> <li>• Years in high risk occupational unit (e.g., MOS/NEC/AFSC)</li> <li>• Symptom details and duration</li> </ul> </li> <li>• Refer to <a href="#">health.mil/LLBfactbook</a> for additional resources</li> </ul>
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## Regional Training

TBICoE has regional education coordinators embedded at 12 military hospitals and clinics in the U.S. and Germany, where they offer multiple in-person and virtual training and education opportunities throughout the year. They provide education, training, outreach, and dissemination of TBI-related materials across DOD clinical and operational communities. RECs promote TBI awareness to leaders in the U.S. uniformed services and Department of Veterans Affairs, as well as to service members, their families, and caregivers. All RECs are qualified to lead provider trainings on the MACE 2 and PRA; they also develop site-specific educational events and collaborate on enterprise-wide events.

In September, a two-day REC meeting at TBICoE headquarters in Silver Spring, Md., afforded the opportunity to work closely with fellow peers; learn more about warfighter brain health and section updates from headquarter leadership; have open roundtable discussions with Research, Products, and Dissemination and Implementation staff; and begin to brainstorm about Brain Injury Awareness Month 2024. Gathering in person strengthened and built upon working relationships between the REC team and headquarters staff.



In September, TBICoE regional education coordinators gathered at the Silver Spring, Md., headquarters. (TBICoE photo)



Fort Carson REC Chris Lewandowski (TBICoE photo)



From left: Toni McCall, Mary Howell, Randi Sedigh, and manager Kenna Byrd model team T-shirts. (TBICoE photo)

Notable accomplishments in 2023 included:

- Conducted 2,366 in-person and virtual training sessions to 54,046 attendees: a 10% increase in number of people reached in 2022
- Provided six virtual MHS-wide trainings on the [MACE 2](#) and [PRA](#), clinical tools of the Acute Concussion Care Pathway
- Continued the popular TBI Quarterly Education Series with topics on:
  - TBI: Across the Lifespan
  - TBI: The Female Experience
  - TBI: Research Seminar
  - TBI: Military Branch/Job-Specific Risk
- Supported Medical Affairs through monthly submission of provider trainings (MACE 2, PRA, and clinical recommendations)
- Conducted 10 TBI Grand Rounds for the VA Polytrauma Rehabilitation Center staff, covering topics such as warfighter psychology, suicide prevention, and visual dysfunction. Total attendance for the 10 events was 474.



REC Jenise Dominguez is based at the James A. Haley Veterans Hospital in Tampa, Fla. (TBICoE photo)



Elizabeth Burleson and Mary Howell, regional education coordinators in North Carolina, attended the Special Operations Medical Association conference. (TBICoE photo)

**TBICoE Quarterly Education Series**  
**TBI Across the Lifespan**

**February 16, 2023**  
**11 a.m.-1 p.m. ET**

Brain injury is not exclusive to military service members. Please join the Traumatic Brain Injury Center of Excellence to explore clinical best practices for prevention, assessment, and treatment of mild TBI, also known as concussion, for military dependents. This event will cover pediatric treatments ages 0-12 and adolescent to adult.

**Join Us!**  
Join the training on [Microsoft Teams](#)  
or on our website at <https://health.mil/TBIEducators>

\*To access training, copy and paste above hyperlink into browser. You can access the link on the calendar. You do not need a Microsoft Teams account. Preferred browsers: Chrome, Microsoft Edge.

Questions? Contact us at [dha.ncr-19.mbx.tbicoe-education@health.mil](mailto:dha.ncr-19.mbx.tbicoe-education@health.mil) PRODUCED BY THE DEFENSE HEALTH AGENCY



# Research

The TBICoE Research section generates hypothesis-driven, clinically focused studies with near- to mid-term applicability to service members; identifies knowledge gaps in the scientific literature; responds to congressional mandates for TBI-related studies; and evaluates TBICoE-produced clinical tools.

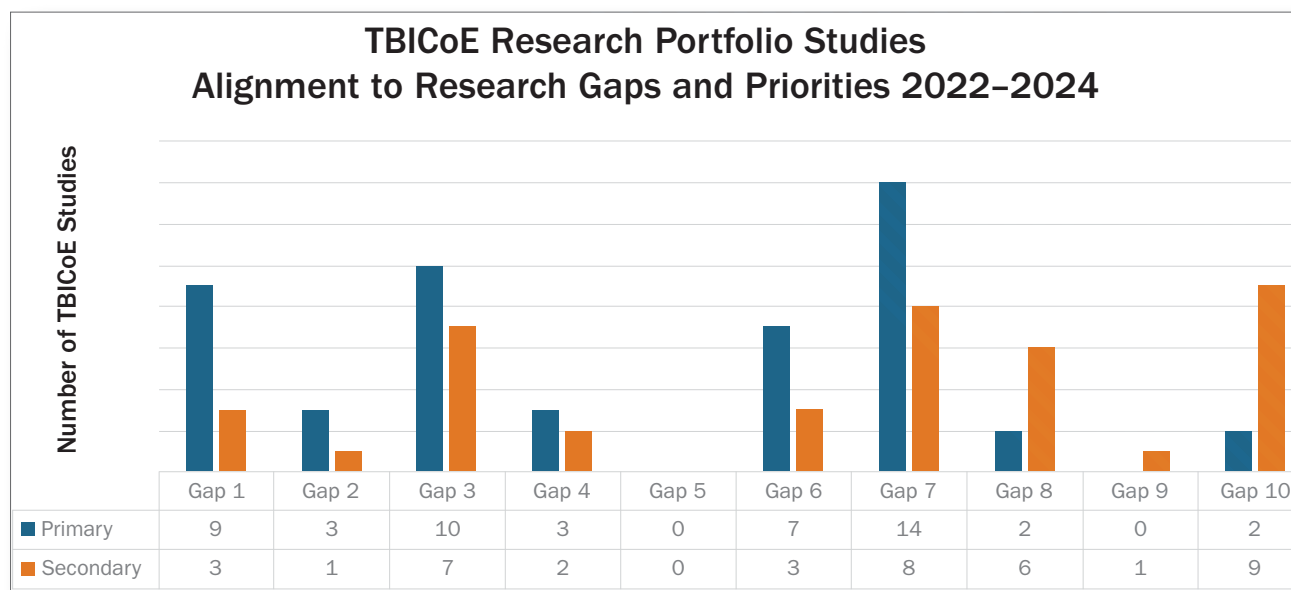


**Dr. Katharine Stout**  
Research Section Chief (Acting)

## Research Gaps and Priorities

The Research portfolio meets DOD TBI clinical and operational research needs by aligning to TBI knowledge gaps. Every two years, a working group with members from TBICoE’s headquarters and research site network reviews, analyzes, and updates a data-driven, actionable list of [research gaps and priorities](#).

A study can contribute to multiple gaps depending on the scope of the aims. Primary alignment of a study to a gap occurs when most of the findings address that specific gap, while secondary alignment occurs when a smaller portion of the findings address the gap.



*This figure reflects the active studies in the TBICoE research portfolio at the end of the 2023 calendar year. Four studies have more than one primary gap identified. Six studies have more than one secondary gap identified. Five studies have no secondary gap identified.*



## Congressionally Mandated Studies

A significant priority for TBICoE researchers is conducting congressionally mandated research. In 2023, two major efforts explored the effects of TBI and blast overpressure exposure on service members and the long-term effects of TBI on service members and families resulting from Operation Enduring Freedom and Operation Iraqi Freedom.

### NDAA FY18 Section 734: Blast Overpressure Research

Sections of National Defense Authorization Acts FY18–20 guide DOD research for mitigating risk of blast overpressure effects. As the office of primary responsibility for the health and performance line of inquiry, TBICoE tracked 26 research studies across the DOD that investigated the effects of overpressure from heavy weapons on service members. These studies aimed to understand effects of this exposure on brain health and performance, which will assist in determining if future illnesses or injuries may be service connected. Findings from several studies indicated that blast pressures as low as four pounds per square inch could affect the mental functioning of service members, resulting in symptoms such as headache. In November 2022, the DOD issued interim guidance with several steps to manage risk of exposures above that threshold during training. The final report on efforts performed under the National Defense Authorization Acts FY18-20 has been submitted to Congress.

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

The Longitudinal Study on Traumatic Brain Injury Incurred by Members of the Armed Forces in OIF/OEF, based at Walter Reed National Military Medical Center, and the Improved Understanding of Medical and Psychological 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. Findings from these studies are relevant to long-term patient outcomes following TBI, long-term rehabilitation needs and rehabilitation services across the MHS and VA, and the impact on family members, all with implications for optimized standard of care. A final 15-Year Study report to Congress will be issued in 2025.

- 13 manuscripts completed and under coauthor or public affairs review
- 16 manuscripts submitted and under peer review with journal
- 16 published manuscripts (including in press)

## TBICoE Research by the Numbers

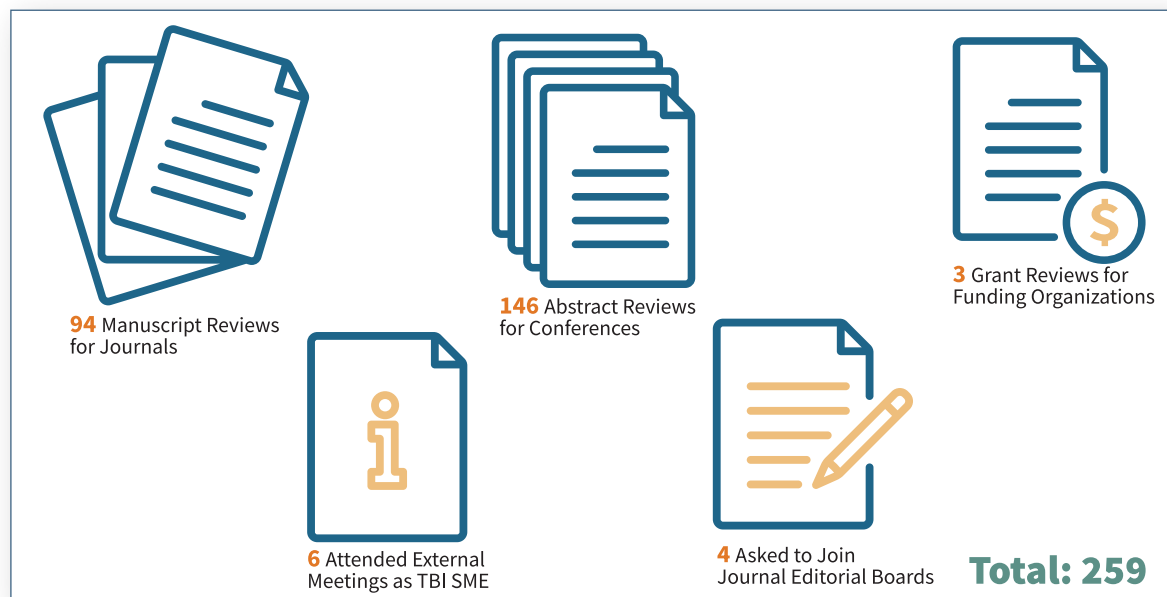
### Collaborations and Partnerships

TBICoE works with internal and external collaborators in applying for grants and for collecting, analyzing, publishing, and disseminating data. A full list of publications is available on TBICoE’s web pages on [health.mil](http://health.mil).

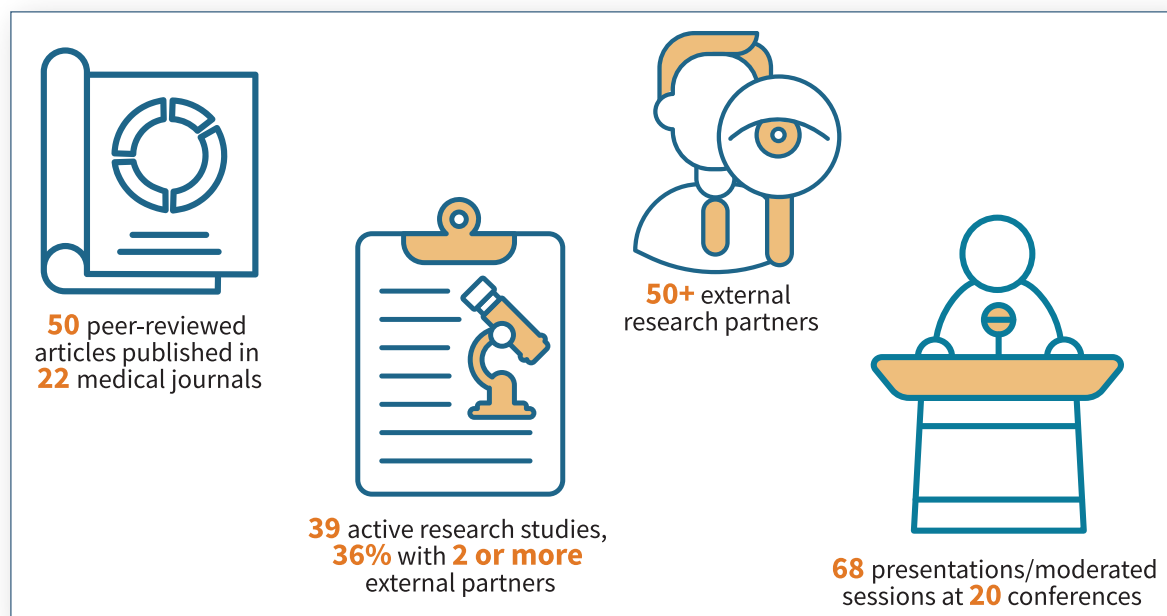


## Technical Consultation Requests

External stakeholders and organizations seek the expertise and professional judgement of our TBI subject matter experts. Types of external consultation requests are detailed below.



## Published TBI Research



## Clinical Translation Office

The clinical translation office is responsible for creating knowledge translation products from data-driven TBI research studies. These products provide synthesis of findings from emerging TBI research and best practices for researchers, medical providers, and others in clinical and operational setting.

- Research Reviews: 3
- Clinical Pearls: 1
- Infographics: 1
- Fact Sheets: 1
- Information Papers: 14

# Research

## External Awards

Every year, TBICoE researchers are recognized for excellence in scientific contributions. Jacques Arrieux, a TBICoE research scientist at Fort Liberty, N.C., received the Science Spectrum Trailblazer Award at the 2023 Black Engineer of the Year Award STEM Conference in Washington, D.C. Marc Silva, who is affiliated with our researchers at the James A. Haley Veterans' Hospital in Tampa, Fla., received the 2023 Dr. Joshua B. Cantor Scholar Award at the American Congress of Rehabilitation Medicine Conference in Atlanta, Ga. The annual award is presented by ACRM's Brain Injury Interdisciplinary Special Interest Group.



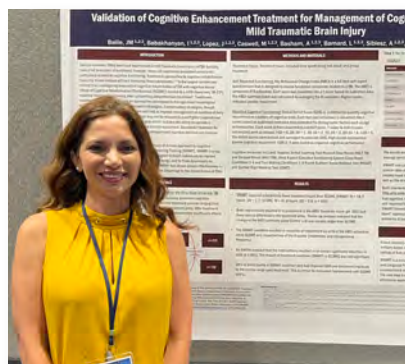
Award-winning research scientist Jacques Arrieux  
(Photo courtesy of Jacques Arrieux)

## Conferences

At home and abroad, our researchers attended 33 national and international conferences and presented at 20. At the Military Health System Research Symposium alone, they gave 10 oral presentations and 9 poster presentations. Among these contributions, TBICoE and PHCoE collaborated on an MHSRS breakout session on blast and psychological health titled “Impact and Assessment of Blast Exposure on Psychiatric Symptoms.”



Dr. Vicki Ingram (right), Fort Liberty senior clinical research director, talks with attendees at the Special Operations Medical Association conference vendor area. (TBICoE photo)



Dr. Ida Babakhanyan, a research neuropsychologist at Camp Pendleton, stands in front of a poster of her research at MHSRS. (TBICoE photo)



Dr. Rosemay Remigio-Baker, an epidemiologist, presents recent findings at the SOMA conference, held in May in Raleigh, N.C. (TBICoE photo)



# TBICoE 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\*\*\***

**Camp Lejeune, NC\*\*\***

**NMC San Diego, CA**

**Fort Campbell, KY\*\*\***

**Fort Cavazos, TX\*\*\***

**Joint Base San Antonio, TX**

**Tampa VA, FL**

**Fort Liberty, NC**

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

This map reflects current TBICoE support services across the MHS.