

NATIONAL CENTER FOR TELEHEALTH & TECHNOLOGY
a DCoE Center

National Center for Telehealth and Technology

About T2

In 2008, the Defense Department established **National Center for Telehealth and Technology (T2)** to design, build, test and evaluate available and emerging technologies to support and enhance psychological health and traumatic brain injury (TBI) recovery in the military community. The center also works to help minimize the stigma that may keep people in the military from seeking help. As a **Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) center**, T2 works with DCoE to establish best practices and quality standards for the treatment of psychological health and TBI across the Defense Department.

Background

Service members, veterans and their families live in various locations, to include military installations overseas, which can cause challenges for receiving quality behavioral health care, particularly in the areas of psychological health and TBI. The often ambiguous presentation of these conditions makes identification and treatment challenging. Cultural stigma surrounding perceived weakness among service members sometimes prevents early intervention and treatment that can significantly improve patient outcomes. More than 10 years of combat in multiple theaters of operation have exposed many service members to events known to cause both post-traumatic stress disorder (PTSD) and TBI, making these conditions important and ongoing priorities for the military health care system.

Operations

Comprised of clinical psychologists, researchers, Web developers, interactive designers and technical specialists, T2 develops mobile applications, websites, assessments and screening and treatment tools. T2 also conducts quality research to evaluate the efficacy of its technology-based products and programs. Headquartered at Joint Base Lewis-McChord, near Tacoma, Wash., T2 also maintains an office in Washington, D.C., to coordinate with other DCoE centers, as well as other government offices and private sector organizations.

Mobile Applications

Breathe2Relax is a portable stress management tool that helps users learn about deep-breathing. Diaphragmatic breathing calms the body's "fight-or-flight" response and helps with mood stabilization, anger control and anxiety management. Touch-screen technology and state-of-the-art graphics, animations and videos deliver a sophisticated, immersive experience that encourages long-term use. Breathe2Relax is available for the iPhone and Android market.

T2 MoodTracker allows users to quickly and easily monitor moods and behaviors associated with common post-deployment behavioral health concerns. Users track their emotional states via touch-screen slider bars and can review their responses to discover situations, stressors and behaviors that affect their moods. T2 MoodTracker is available for iPhone and Android markets.

Tactical Breather provides a simple, effective, portable method for managing stress. This customizable mobile app includes an introduction to the benefits of controlled breathing, a tutorial and guided exercises. Tactical Breather is available for iPhone.

PTSD Coach complements psychological treatment and functions as a stand-alone educational resource. PTSD Coach provides a self-assessment tool; teaches coping skills; and includes resources for finding support and information about trauma, PTSD and available treatment options. De-

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veloped in collaboration with the Department of Veterans Affairs (VA) and National Center for PTSD, PTSD Coach is available for iPhone and Android markets.

Mild Traumatic Brain Injury Pocket Guide gives health care providers instant access to the Defense Department's quick-reference guide on assessing, treating and managing common symptoms of mild TBI. Designed to reflect current clinical standards of care, the app can help improve quality of care and clinical outcomes for patients and is available for iPhone and Android markets.

Mobile Telehealth Program

T2 is readying the second-generation of its Transportable Telehealth Unit (TTU). These units are self-contained multi-station telehealth buildings designed for rapid deployment anywhere in the world. Inside these 20 or 40-foot structures, T2 installs a number of highly reliable, two-way videoconferencing terminals in private, soundproof chambers where counseling sessions take place.

T2 deployed the first unit to VA in American Samoa last spring. Patients taking part in this pilot test were treated by behavioral care health providers at Tripler Army Medical Center, Hawaii. The VA in American Samoa continues to use the unit proving the telemental health test a success.

Online Programs

T2 Virtual PTSD Experience is an interactive, immersive tool that informs visitors about causes and symptoms of PTSD and offers resources for care in a unique, engaging environment. Accessed through Second Life, a 3-D virtual world, on a personal computer, Virtual PTSD Experience helps minimize perceived stigma and improves access to resources for service members, veterans and their families. Users can maintain anonymity as they visit a range of immersive educational environments.

Suicideoutreach.org centralizes military, government and private sector suicide prevention resources and provides a wide range of information on suicide facts and misconceptions; risk factors and warning signs; steps for taking action; and dealing with grief reactions. There are links to self-assessment tools, the Veterans Crisis Line and DCoE Outreach/Chat Center. The site links to a resource library and suicide prevention materials developed by the services, reserve components and VA. The site was developed in collaboration with the Defense Department's Suicide Prevention and Risk Reduction Committee (SPARRC), the primary venue for inter-service and inter-agency collaboration on suicide prevention activities.

Afterdeployment.org is a Web-based application spanning 18 topics:

- post-traumatic stress
- depression
- anger
- drugs and alcohol
- tobacco
- physical injury
- resilience
- military sexual trauma
- health and wellness
- sleep
- families and friendships
- anxiety
- traumatic brain injury
- life stress
- stigma
- families with kids
- spirituality
- work adjustment

Designed to provide an online and anonymous self-care solution, afterdeployment.org offers multiple access points to learn, immerse and engage in behavior-change strategies. Features include topical libraries, self-assessments, video-based personal stories, interactive workshops, community forums, expert blogs and a provider training portal.

T2 assisted the U.S. Army Medical Command in developing the **Warfighter Brain Health Portal**, a website that provides resources on TBI to service members, providers, families, friends and military leadership. The site contains best practices and expertise on brain health care, resources, links to other organizations and is updated regularly. Users can also read cataloged responses to questions submitted to subject matter experts, or send them queries directly.

Surveillance Program

The **Defense Department Suicide Event Report (DoDSER)** program collects and analyzes standardized suicide surveillance information across all services to support the department's suicide prevention mission. The Web-based DoDSER application provides instructions, detailed coding guidance, a training program, and the DoDSER Web form used to collect comprehensive information about service members involved in suicide and self-harm events. The result is the most comprehensive view of suicide and self-harm behaviors in the military community and a valuable tool employed to address them more effectively.

Events

T2 produces the **National Center for Telehealth and Technology Virtual Worlds Conference**, where military, civilian and academic virtual worlds innovators come together to share their work in the field of immersive 3-D environ-

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ments. The conference explores the opportunities and challenges of virtual worlds technology to address psychological health care needs. Conference attendees have the option of attending in person, through interactive Web conferencing, or via the T2 Second Life Virtual Conference Room.

The T2 "**Introduction to Telemental Health Delivery**" workshop is a one-day examination of the complex technical, legal and regulatory challenges facing providers interested in offering telemental health or telemedicine services. Focusing on video teleconferencing as the delivery method, participants learn the technical, environmental, clinical and programmatic requirements of setting up a telemental installation, including equipment options, room design, telemental health etiquette and hands-on experience with state-of-the-art two-way, simultaneous audio/video transmission systems, which are used to connect patients with providers over great distances.

Research Programs

The T2 deployment and suicide study seeks to combine data from federal departments to fill some of the key gaps in knowledge about suicide rates (e.g., inactive reserve component members). The project was designed to address some of the key goals described in the report from the VA Blue Ribbon Work Group on suicide prevention.

T2 is testing the safety and efficacy of providing telemental health care to service members and veterans in their homes. This randomized clinical trial is being conducted in collaboration with the Portland VA Medical Center. It tests novel procedures for treating depression by delivering cognitive behavioral therapy to an individual's home via webcam technology.

The "Concussion Treatment After Combat Trauma" study is a T2 and University of Washington joint project and part of the INTRUST Consortium, a national PTSD and TBI research team. The study will evaluate the efficacy of individualized scheduled telephone counseling during 12 telephone sessions in six months. This study is the first large-scale test to determine the benefits of behavioral strategies delivered by telephone for mild TBI-related education and training in problem solving.

Virtual Reality Exposure Therapy (VRET) helps patients activate the memory of traumatic events in a safe therapeutic setting with a behavioral health care provider. By allowing patients to revisit traumatic memories within a sensory-rich, 3-D world of computer-generated sights, sounds, vibrations and scents, this unique therapy promotes the emotional engagement necessary to be effective.

The T2 virtual reality exposure therapy study is a randomized, controlled trial designed to evaluate the effectiveness of traditional prolonged exposure therapy with virtual reality exposure therapy for combat-related PTSD. This study is being conducted in collaboration with the Departments of Psychology at Madigan Army Medical Center, Wash., and Womack Army Medical Center, N.C., and the Institute for Creative Technologies at the University of Southern California. It will provide valuable information about the effectiveness of virtual reality exposure therapy for service members with combat-related traumatic stress. Results may provide new treatment options for service members and offer another option for those who either do not respond to, or are reluctant to engage in other established therapies.

The T2 caring letters project addresses the lack of quality research available on effective suicide prevention practices. There appears to be only one suicide prevention intervention that has reduced suicide rates in randomized, controlled trials. It involved regularly providing "caring letters" and messages to high-risk individuals hospitalized for depression or suicidal behaviors. The caring letters project will test the effectiveness of a technology-based approach to send caring letters to the military and veteran population.

The personal technology study seeks to identify platforms, devices and online resources that exhibit the highest levels of acceptance, utility and anticipated longevity within the military community. This market research will help T2 and the Defense Department pursue technology efforts effectively and efficiently. Service members' use of computers, Internet, cell phones, smartphones, gaming devices and other mobile technologies, as well as broadcast, streaming, interactive and downloadable video content, are all assessed in the study.

The Future

T2 continues to investigate new ways to support psychological health care, TBI treatment and suicide prevention in the military. Here are several initiatives in development:

T2 is developing **MilitaryKidsConnect.org**, an interactive website designed to address the unique stressors and everyday challenges experienced by children and adolescents in military families before, during and after a parent's deployment. A key benefit of the site will be peer-to-peer communication, allowing kids to discuss issues with one another. Separate parent and educator sections of the website will provide tools and information adults can use to help support children in their care.

In telehealth, T2 is evaluating two-way video capability of video-enabled smartphones for hand-held mobile telehealth

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therapy. It is also developing mobile telehealth units, which are self-propelled versions of transportable telehealth units that can facilitate rapid reallocation of telehealth resources to address post-deployment spikes in the need for behavioral health care.

PE Coach is a mobile application designed to support dissemination of evidence-based treatment for PTSD. This app is being built for Android and iPhone platforms and will put resources for prolonged exposure therapy in the hands of patients. PE Coach removes the need for manual recording of patients' day-to-day homework, allowing them to quickly and accurately record this information on the go.

Mobile screener is an application in development. The screener will enable commanders to rapidly take the pulse of a unit via handheld devices following a critical incident. Such devices will contain a clinical survey and completed survey data will upload to a waiting health care professional for the purpose of interpretation and disposition planning. Long range, the mobile screener would be used in clinical settings to assist providers to track and rapidly intervene with high-risk patients.

Texting is simple to use, available to most cell phone users and can be used to deliver various written materials, health tips, crisis numbers and appointment reminders. Using a text messaging service, users would simply text a designated number to begin receiving messages.

Work is underway on a mobile application called Life Armor. This app will include the entire range of 18 topics available within **afterdeployment.org**. Each topic will provide educational resources, a dedicated self-assessment, behavior-change strategies and quick links to support systems.

Resources

T2 Website

T2 2010 Annual Report

DCoE Information Sheet: Afterdeployment.org

SuicideOutreach.org

T2 Mobile Apps

DCoE Information Sheet: T2 Virtual PTSD Experience

"We created an environment that lets people learn by doing, rather than reading text and watching videos on two-dimensional websites," said Kevin Holloway, the T2 psychologist who led the virtual world program development. "They can learn something new each time they visit."

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