DCoE in Action

Vol. 3/No. 6 | June 2010

This issue focuses on new and emerging technologies for treating psychological health and traumatic brain injury conditions. Get an inside look at how DoD and DCoE are increasing efforts to develop state-of-the art medical technology to assist wounded warriors today and in the future.

iBreathe: T2 Develops Mobile Application for Stress Reduction

The commonly referred to *fight* or *flight*, or *stress response*, occurs when the mind and body are challenged by difficult situations known as stressors. In fact, the fight or flight response is a normal reaction to a challenge or threat.

While lingering or especially intense stress can exact a physical and mental toll, research confirms that relaxation exercises like *diaphragmatic* ("belly") *breathing*, when used regularly, can manage stress, focus the mind, and improve overall health and well-being.

Subject matter experts at DCoE's National Center for Telehealth & Technology (T2), led by Dr. Gregory Gahm, are developing a mobile skill-rehearsal tool. The *iBreathe* application will guide users through a diaphragmatic breathing stress management technique.

Dr. Jennifer Alford, T2's project lead for *iBreathe*, notes that smart phone users carry their phones an average of 14 hours a day. "Mobile platforms represent an exciting opportunity for deploying training tools that are readily accessible and available on-the-go," said Alford.

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iBreathe will provide video-based instruction that explains the body's reaction to stressors and how belly breathing can reduce stress. The application includes illustrative examples, narrator-guided exercises, practice sessions, pre/post stress ratings,

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Welcome Message from the Director

Col. Robert W. Saum, DCoE Director

As I take on my new assignment as the DCoE director, I am honored to lead the charge for psychological health and traumatic brain injury for the Department of Defense. There are two principles that will guide me and the work we do at DCoE—focus of mission and the welfare of our Warfighters.

In my previous role working with the Chairman of the Joint Chiefs of Staff as the Behavioral Health Science Advisor, I had the opportunity to meet and speak with many of our troops and their families from across all services, ranks, duty stations, and career fields. Their "on the ground" insight will be invaluable as we take what we have learned over the past few years and build upon those best practices.

Each of the services has a critical role in shaping and sharing the work we do at DCoE. By drawing on our combined knowledge, we will advance our mission—"to assess, validate, oversee and facilitate prevention, resilience, identification, treatment, outreach, rehabilitation, and reintegration programs for psychological health and traumatic brain injury."

The advances we have made in the realm of traumatic brain injury are substantial. We launched the National Intrepid Center of Excellence and with the strict standards of care for our Warfighter in a deployed setting we can be confident our compass is pointed in the right direction.

In my experience as a behavioral health provider, the focus we place on supporting our families and troops will have a lasting impact on the resiliency of our fighting force. There is no margin for error, and it will take a concerted effort and constant reminder that we all wear the same uniform.

> "There are two principles that will guide me and the work we do at DCoE–focus of mission and the welfare of our Warfighters."

I look forward to the many challenges that lie in front of us all. I will rely on the experience we all share and demand accountability in everything we do. During my time in Special Forces, I learned many great life lessons. Perhaps the most memorable is that our people are our greatest asset.

DCoE would not be where it is today without the vision of Brig. Gen. Loree K. Sutton. I want to extend a heartfelt thank you to her as she transitions to her new role in the Office of the Surgeon General, U.S. Army. Brig. Gen. Sutton has been a driving force behind DCoE since its inception in 2007. The passion, dedication and insight she brought to the fight will be missed but not forgotten.

Col. Robert "Bob" Saum, Ph.D., IDHA
DCoE Director

June 21 marked the last day Brig. Gen. Loree Sutton served as director of DCoE. For more, please go to our website.

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iBreathe: T2 Develops Mobile Application for Stress Reduction

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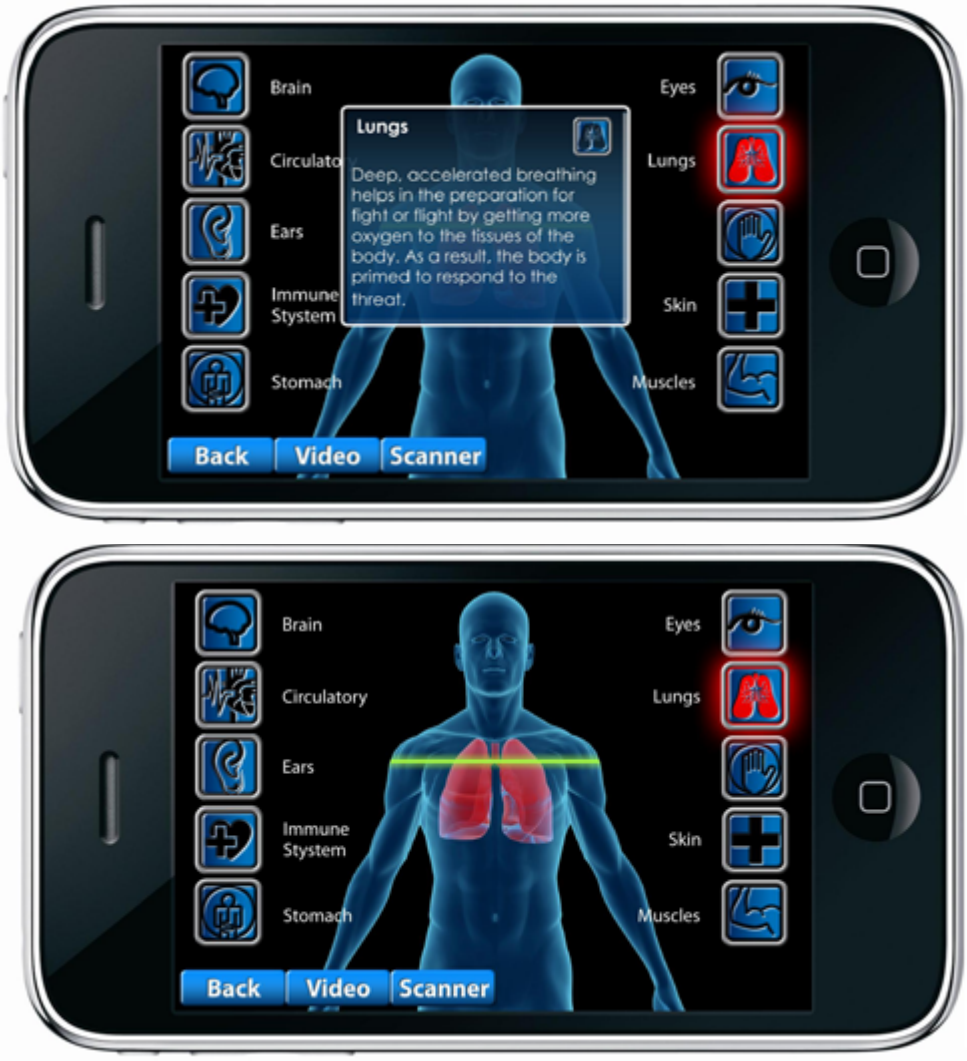
graphically-charted progress, a journal, a visual stress tracker, customization and a feature that allows users to tag data points with personal notes.

According to Alford, the application can be used as a stand alone stress management tool or as a supplementary resource during actual treatment rendered by a health care professional.

iBreathe is expected to be available as a free download from the iTunes Store after January 2011. Built for the iPhone and iPod Touch, a version of *iBreathe* will also be developed for the Android platform. A concept for an *iBreathe* application for children is also in the early stages of development.

According to Dr. Robert Ciulla, T2's Population and Prevention Programs lead, *iBreathe* is one in a series of mobile applications that T2 is developing. In the pipeline are applications that will allow users to assess their overall emotional functioning, track their moods on a regular basis, and learn techniques to deal with post-traumatic stress. Providers will not be left out; applications detailing guidelines for treating service members are in the planning stages. Ciulla underscored the importance of accommodating the military's behavioral health needs with rapidly developing 21st century technologies: "T2 recognizes the need to craft tools that are quickly accessed, self-paced and support confidential use."

Visit T2's website at www.T2health.org for a full listing of innovative programs, including:



- **afterdeployment.org**
  Web-based resources and interactive tools targeting several topical domains (post-traumatic stress, depression, anger, sleep, relationships, substance abuse, etc.)
- **Automated Tools and Outcome Measures (ATOM)**
  An automated tool for collecting psychological health outcome data
- **Innovative Technology Applications**
  A T2 division that targets new technologies such as Virtual Reality and Virtual Worlds
- **Mobile Telehealth Units**
  Initiatives designed to deliver psychological health care through rapidly evolving telemedicine protocols

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NICoE will Offer Virtual Reality Technology for Troops

Cutting-edge virtual reality medical technology, the Computer Assisted Rehabilitation Environment (CAREN) system, will soon be available for patients at the new National Intrepid Center of Excellence (NICoE).

"CAREN allows the use of virtual reality to be incorporated into the care of wounded warriors and may assist in their return to duty and the reintegration process," said Sarah E. Kruger, a biomedical engineer and the CAREN operator for NICoE.

CAREN allows patients to work through a variety of skills after experiencing traumatic injuries, with the focus on promoting resilience and recovery. Troops returning from war are able to work through post-traumatic stress symptoms through a very carefully monitored virtual environment.

"The CAREN system contains an instrumented treadmill embedded into a six degree-of-freedom motion platform that synchronizes in real-time with a virtual environment projected onto a large, curved screen," according to Kruger.

The potential benefits to troops who experience brain injuries are significant, as post-traumatic stress disorder (PTSD) and traumatic brain injury (TBI) are very serious issues facing increasing numbers of our troops. According to the VA, more than 44 percent of Iraq and Afghanistan veterans have been diagnosed with psychological conditions, and service members who have served back-to-back deployments often show signs of PTSD and TBI.

The CAREN system was developed by Motek Medical and Polycom Telemedicine Solutions, video and voice communication solutions companies. They donated the estimated $500,000 machine to NICoE, making it one of only five machines available in the world.

NICoE, which had its ribbon cutting ceremony on June 24, 2010, was built and equipped through the philanthropic contributions of the American public and the Intrepid Fallen Heroes Fund. The center will be an advanced facility dedicated to research, diagnosis and treatment planning for military personnel and veterans experiencing TBI and psychological health conditions. It is located on the campus of the Naval Support Activity in Bethesda, Md., soon to be the Walter Reed National Military Medical Center.

NICoE will serve as a source of inspiration and hope for warriors and their loved ones who are struggling to redefine their lives, whether returning to duty or transitioning to civilian pursuits. In addition to a variety of other treatment planning activities and major diagnostic rehabilitation equipment that will be available at NICoE, the CAREN system has the potential to greatly benefit warriors and help them deal with the lingering effects of war.

For more information and updates on the opening of NICoE, visit the DCoE website at www.dcoe.health.mil.

SimCoach: Virtual Reality World Facilitates Real Life Solutions, Resources for Healing

Navy Capt. Russell Shilling, a science and technology consultant to DCoE, answers questions and gives us an inside look into SimCoach, an emerging virtual technology to help service members who experience psychological health and traumatic brain injury conditions.

Shilling is also a program manager at the Defense Advanced Research Projects Agency's (DARPA) Information Processing Techniques Office.

What is SimCoach?

SimCoach is an initiative targeted to younger service members to address the stigma associated with seeking psychological health treatment. It uses an anonymous, self-paced environment combining avatar, artificial intelligence and voice recognition technologies with user interactivity of video game technology.

SimCoach will be part of a holistic experience designed to attract, engage and empower users by allowing them to discuss psychological health and traumatic brain injury (TBI) conditions, as well as military matters with top experts.

How does this tool help service members and their families?

SimCoach's cutting-edge technology

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SimCoach: Virtual Reality World Facilitates Real Life Solutions, Resources for Healing

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aims to foster comfort and confidence in promoting a user's effort to understand their situation, explore available options and initiate the treatment process when needed.

With the aid of a customized avatar coach, the goal is to create an experience that will motivate service members, especially those who might not otherwise seek help because of stigma, lack of awareness or a general reluctance to seek assistance.

The idea is to empower users, their significant others, and extended family members to take the first step to manage health care and encourage them to continue seeking other available resources.

Users will also be directed to experts on specific topics including stress, depression, brain injury, relationship counseling, substance abuse, suicide, rehabilitation, reintegration and other relevant specialties as appropriate.

What are some of the benefits of using interactive, game-based virtual technology?

When the system is launched, users will find a very simple interface and starting point, allowing them to explore specific psychological health and TBI-related conditions. Participants will find pertinent resources via a series of results from self-directed actions or can "wander around" to get comfortable with the system.

A significant benefit is that users can remain completely anonymous and navigate the site without having to create

a user account; however, if they wish to save session data, they will have the ability to create an anonymous account.

Additionally, users will have the option of printing out a summary of the computerized sessions.

How will users access SimCoach?

The initial prototype is scheduled for evaluation by October 2010. When it becomes fully implemented, users can access the web-based system with a computer and no additional software is required.

How do you envision SimCoach in the "big picture" for psychological health outreach?

Working with DCoE, DARPA has initiated the Healing Heroes program to develop an advanced social networking opportunity to help service members and families communicate with each other about psychological health conditions and the psychological health care process, and guide users to the best resources available without making them click through a bewildering variety of hyperlinks.

I hope to integrate SimCoach into the overall Healing Heroes effort along with several psychological health learning games, our highly successful outreach program with Sesame Street and other compelling technology solutions.

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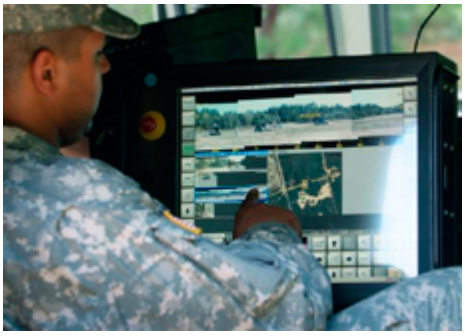
TBI Reporting to Assist in DoD Treatment and Research



Serving in the longest wars in U.S. history, our service members are increasingly exposed to the dangers of combat in Afghanistan and Iraq. Improvised explosive devices designed to cause injury and death have created the signature wound of this war among deployed service members—traumatic brain injury (TBI).

During the past five years, the Department of Defense (DoD) has made significant strides in diagnosing and treating those service members who have experienced a TBI. As part of that ongoing effort, DoD is developing a reporting system to better track TBI to ensure that service members receive the best possible care from the time of injury on the battlefield to their home duty station.

"The system will be an essential part of a new way of ensuring both early detection of TBI on the battlefield and visibility of the revised set of clinical practice guidelines for the treatment of mild traumatic brain injury in combat," said Kathy Helmick, senior executive director for TBI at DCoE.

Often caused by exposure to a roadside bomb, mild traumatic brain injuries (mTBI) can cause headaches, dizziness, sleep disturbances and eye coordination problems, along with impaired concentration, attention and problem-solving skills.

Evaluations are now mandatory for service members who have been involved in in-theater incidents that have the capacity of causing potential concussion.

"This is about keeping them [service members] in the safe zone while they are vulnerable for a second injury—making sure they get checked out and then getting them back to the mission," said Helmick.

DoD is working to develop a system that would merge operational and medical information in one report to track and identify TBIs. For example, if a mine hit a protected vehicle in the battlefield, the report would correlate information about the damaged vehicle with the medical evaluations of service members on board.

"This will help to identify personnel who could have sustained a blast injury versus those who sustained injury by hitting their head on the wall of the vehicle," said Helmick. "That information not only would prove useful in providing diagnosis and treatment of injuries, but would benefit research into TBI so that we can translate the findings from research into clinical practice and improve the care on the battlefield sooner."

Additionally, researchers are looking at blast dynamics related to the direction of explosions and the magnitude of explosions in enclosed and open locations. "This could help in determining ways to decrease the incidents of brain injury along with examining the nature of attacks," said Helmick.

By gathering more TBI information among service members, DoD can care for service members today and those who serve in the future. Additionally, the information gleaned from research can be applied to treatment of civilians who experience TBIs.

For more information and resources on TBI, visit the Defense and Veterans Brain Injury Center website at www.dvbic.org.

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DCoE Engages the Military Community through Social Media

The Department of Defense (DoD) leads the way on emerging technology from the battlefield to medical treatments, but it also uses existing technologies in innovative ways. One area where this is particularly prominent is social media. Social media technology, or Web 2.0, has been around for several years, now including but not limited to blogs, Facebook, Twitter, Flickr, Delicious, Digg and YouTube. While these platforms are not new, the way that DoD uses social media is changing. For example, the way that we are able to communicate and connect with our service members and military families has changed. From the traditional forms of media that provide one-way information gathering, such as reading a newspaper or browsing a website, social networking sites allow members of the military community to share opinions, feedback and information.

The Chairman of the Joint Chiefs of Staff Adm. Michael Mullen communicates frequently through Facebook and Twitter—and shares his social media strategy with all.

Further, there are a plethora of DoD or service-oriented pages dispersed throughout social media sites from local family readiness groups to recruitment pages to the Military Health System. Social media has proved to be a valuable tool to get information out immediately and to provide a forum for two-way dialogue—something that is crucial to learning how we can better serve the military community.

Web 2.0 platforms are also good for morale, as they can provide connections to friends and family. "With over 230,000 children whose parents are deployed overseas at this point, many of them use social media to stay in touch with their families on long and frequent deployments," said Deputy Defense Secretary William J. Lynn III in a recent visit to Facebook headquarters in Silicon Valley, Calif.

DoD recently released a social media memorandum that authorizes access to Web 2.0 platforms from government computers, following certain security parameters set by local command. It is very important on any public forum to follow Operations Security (OPSEC). Users should always stay smart about the information they provide on any open web platform. In fact, DoD runs campaigns solely to teach people about sharing information online.

In late December, DCoE launched its page on Facebook, which has reached more than 1,400 fans in less than six months. This was followed by the launch of DCoE's Twitter profile. These two social media platforms have allowed DCoE to continuously provide up-to-date information, resources, news articles and multimedia pieces that relate to psychological health (PH) and traumatic brain injury (TBI) to service members, veterans, family members, clinicians and the general public.

Throughout May, DCoE launched its social media campaign, "Neck Up, Check Up" aimed at spreading awareness and reducing stigma when reaching out for help on PH conditions in support of Mental Health Month. DCoE collaborated with each of the services and partner organizations to reach hundreds of thousands of people—all of whom were provided valuable resources on PH.

The DCoE Blog provides the opportunity to share information on PH and TBI from different perspectives—whether it's through a poem, a first-hand account from a service member just home from deployment or the advice of a trained health professional. The blog provides a forum for people to engage, recount personal experiences, leave comments and much more.

Stay tuned as DCoE continues to expand its digital presence.

Get connected with DCoE:

www.facebook.com/dcoepage
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www.dcoe.health.mil/blog
www.facebook.com/realwarriors
www.twitter.com/realwarriors

facebook flickr™ twitter™ YouTube Broadcast Yourself™

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Tools You Can Use

Additional links are available at www.dcoe.health.mil under "Resources"

Resources for Service Members and Families

National Center for Telehealth and Technology (T2)

www.t2health.org

A component center of DCoE, T2 researches, develops, evaluates and deploys new and existing technologies for psychological health and traumatic brain injury across DoD. T2 serves as the principal DoD coordinator in such areas as innovative technology applications, suicide surveillance and prevention, online behavioral health tools and tele-psychological health.

Check out the recent podcast, Virtual Worlds Technology for Psychological Health featuring T2's Dr. Kevin M. Holloway as he discusses virtual worlds technology as a potential new way for service members to access psychological health care and services.

Defense and Veterans Brain Injury Center (DVBIC)

www.dvbic.org

The primary operational traumatic brain injury component of DCoE, DVBIC serves active-duty service members, their dependents and veterans with traumatic brain injury through state-of-the-art medical care, innovative clinical research initiatives and educational programs.

What is a traumatic brain injury? Find TBI Facts, here.

Sign Up for E-mail Updates to receive the latest news on DCoE and PH/TBI information!

Stay tuned for next month's issue where we'll take a close look at the new National Intrepid Center of Excellence and share information and resources geared at National Guard and Reserve members.

DCoE In Action is a publication of the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE). Please send us your comments on this newsletter and story ideas to dcoemedia@tma.osd.mil. Our mailing address is 2345 Crystal Drive, Crystal Park 4, Suite 120, Arlington, Virginia 22202. Phone: (877) 291-3263.