

Center for the Study of Traumatic Stress

2015 Annual Report



Global health, an expanding domain for all health including mental health, is a growing focus for both USU and the DoD. CSTS has had long standing involvements in global health activities in the areas of research collaboration, training and education, and consultation with colleagues around the world.



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From the Director

Dear Center Colleagues and Friends,

The Center for the Study of Traumatic Stress (CSTS) is part of the Department of Psychiatry in the School of Medicine of the Uniformed Services



University (USU). The mission of CSTS is to advance scientific and academic knowledge, interventions, educational resources and outreach to mitigate the impact of trauma from exposure to war, disasters, terrorism, community violence and public health threats.

In accomplishing our mission, we serve an essential role for the Department of Defense and provide valuable service to our nation. We have established a strong 28-year track record of successfully fulfilling our mission and achieving our goals since the Center began in 1987.

There are three major ways in which the Center is unique. First, we successfully integrate two separate but interrelated fields — military psychiatry and disaster psychiatry. Our Center has helped define and advance the melding of these two fields. Second, we are unique in how we use scholarly and research-oriented problem-solving to address the mental and behavioral health problems of those exposed to war, disaster and other traumatic events. Third, we are dedicated to research in translational studies, neuroscience and the neurobiology of stress and trauma.

The Center identifies effective interventions for a number of health issues of special interest to the military including posttraumatic stress disorder (PTSD), mild traumatic brain injury (mTBI), suicide and suicide-related behavior. Through unity of effort, and

clarity of message, our multi-disciplinary team helps inform our nation's policies regarding the impact of traumatic exposure.

The reach of our Center's research, education, and intervention activities is broad. We work to support people and institutions locally, nationally, as well as globally. The impact of our work extends from laboratory bench, to hospital bedside, and to populations across the nation and around the world.

The accomplishments and successes of CSTS are due to our outstanding and dedicated team who provide the research, teaching, outreach, consultation, problem-solving and leadership skills that advance our work. Building, maintaining and sustaining a multi-disciplinary team of well-trained and highly-collaborative scientists, educators and clinicians has been essential to our success. Our experienced, responsive, effective, hard-working and highly-productive team functions in a well-coordinated manner and in a unified direction. That combined effort and synergy results in the rapid and efficient achievement of our goals.

2015 was a year of great productivity for CSTS. Some highlights of the Center's activities:

- The National Military Family Bereavement Study, included in our child and family research program, is one of the largest studies of grief and bereavement, and the first large, rigorous, scientific study of the impact of a U.S. Service member's death on surviving family members.
- Our Service member research program includes the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS) and the follow-on research program called the Study to Assess Risk and Resilience in Servicemembers — Longitudinal Study (STARRS-LS). Army

The mission of CSTS is to advance scientific and academic knowledge, interventions, educational resources and outreach to mitigate the impact of trauma from exposure to war, disasters, terrorism, community violence and public health threats.

STARRS was the largest study of suicide, and mental health risk and resilience, ever conducted among military personnel. The transition of the six-year Army STARRS project to the five-year continuation STARRS-LS project is a major step toward making the STARRS research the Framingham Study of military mental health.

- Another important project in our Service member research portfolio is the Reserve Component Study. This study addresses the health and mental health of the Reserve Component (RC) of the United States Armed Forces. In collaboration with Boston University, CSTS continues to conduct a longitudinal study of members of the Army, Air Force, Navy and Marine Reserves and of the Army and Air National Guards. This study, which has had four waves of data collection, is unique in that it focuses on a nationwide representative sample of these various members of the RC.
- The Leahy-Friedman National PTSD Brain Bank officially opened in 2015 as the first brain tissue repository dedicated to researching the physical impact of stress, trauma and PTSD on brain tissue. The Brain Bank will advance the scientific knowledge of PTSD and PTSD biomarkers.
- The Center continued its clinical work in neuroscience and neurobiology by conducting clinical trials to improve the treatment of stress, PTSD and TBI.
- The CSTS neuroscience laboratories investigated numerous biomarkers and are producing exciting findings that will ultimately improve the diagnosis and treatment of PTSD and TBI.
- The Center provided rapid consultation, education and knowledge support to personnel who responded to crises around the nation including the following mass shootings:
 - » The El Paso Veterans Affairs Clinic at Ft. Bliss, Texas
 - » Emanuel African Methodist Episcopal Church in Charleston, South Carolina

- » The television station WDBJ7 employees in Roanoke, Virginia
- » Umpqua Community College in Roseburg, Oregon
- » The Inland Regional Center in San Bernardino, California

- The Center developed and disseminated an “Emergency Action Plan,” a template to assist academic and other organizations in emergency and disaster planning. The Plan incorporates lessons learned regarding issues that offsite facilities may encounter when developing disaster preparation and response plans.

Throughout 2015, the Center continued to engage in the important task of furthering and sharing its unique knowledge and experience in trauma research, education, consultation and training to our local community, throughout the nation and across the world. Looking ahead, we continue to train and mentor the next generation of dedicated scientists who will continue to fulfill our mission.

In this Annual Report, we share some of the many contributions we are making to enhance psychological health, recovery and prevention of the consequences of trauma on individuals, families, communities and the nation in both military and civilian populations. We continue to work in assisting the Department of Defense and leading the nation in trauma-informed care.

On behalf of everyone at CSTS, I would like to thank our colleagues and friends who have collaborated with us, and supported our work throughout the year.

— Robert J. Ursano, MD
Professor of Psychiatry and Neuroscience
Chair, Department of Psychiatry
Director, Center for the Study of Traumatic Stress
Uniformed Services University

New Collaborations in 2015

NATO EXPLORATORY TEAM IN HUMAN FACTORS AND MEDICINE

In May of 2015, Dr. Gary Wynn was nominated to represent the U.S. as a member of an Exploratory Team within the Human Factors and Medicine Panel of the North Atlantic Treaty Organization (NATO). The team is focusing on leveraging technology within psychiatry and will evaluate the evidence for new technologies with significant potential for supplementing or replacing conventional approaches to military performance, mental health assessment, resiliency training, outreach, treatment, rehabilitation and reintegration programs. Topics covered by this effort will include neuroimaging, neurostimulation techniques, telemental health, virtual reality, electronic health record and outcome management. This Exploratory Team will report its findings by the end of 2016.

U.S. DEPARTMENT OF AGRICULTURE

In the spring/summer of 2015, an outbreak of highly pathogenic avian influenza (A-H5N1) produced significant adverse consequences in those affected including health care workers responding to the outbreak. In anticipation of the potential for subsequent outbreaks, CSTS scientists Drs. Brian Flynn and Joshua Morganstein responded to a request for a consultation to the U.S. Department of Agriculture (USDA), Region V, Emergency Management and Homeland Security Branch to provide guidance for response and preparedness. CSTS provided guidance based upon a review of the literature and CSTS senior staff experience in related events. This was significant because the USDA is not a typical source of consultation requests and this provided both evidence of the visibility and credibility of CSTS as well as opening opportunities for future relationships. The response represents an example of how CSTS expertise can assist other federal entities in challenges they face. The content of this consultation can be used in a wide variety of situations that involve agricultural disasters/emergencies, economic impact

of disaster, and stress in atypical emergency/disaster workers and responders (specifically veterinary health workers). The response adds to a very limited range of resources specifically related to behavioral health factors in avian-based agricultural emergencies and disasters. The response is also a model for future consultations where the product represents blending limited published literature, adapted publications in related areas and application of lessons learned from past real-life experience.

COLLABORATIVE HEALTH INITIATIVE RESEARCH PROGRAM

The Collaborative Health Initiative Research Program (CHIRP) is an exciting new joint effort between the National Heart, Lung, and Blood Institute, part of the National Institutes of Health (NIH), and USU. The goal of this NIH/DoD collaborative initiative is to transform patient care by harnessing genomics, supercomputers and bioinformatics. The medical outcome is to predict and pre-empt disease, mitigate and repair traumatic injury, optimize performance and resilience, and generate novel personalized therapeutic options that impact both civilian and military lives. Dr. Gary Wynn initiated a CHIRP effort to study whole genome sequences in individuals with PTSD related sleep difficulties compared to those with non-PTSD related sleep problems from individuals receiving care at Walter Reed National Military Medical Center (WRNMMC). This three year initiative seeks to understand the genetic relationships and differences between various sleep disorders and sleep problems resulting from traumatic experiences.

CENTER FOR FORENSIC BEHAVIORAL SCIENCES

In July of 2015, COL David Benedek was selected as the Director of the Center for Forensic Behavioral Sciences (CFBS) Walter Reed National Military Medical Center. The CFBS conducts the only accredited Forensic Psychology and Forensic Psychi-

atry Fellowship training programs in the DoD and conducts forensic assessments for a variety of DoD stakeholders within the national capital area and within DoD jurisdictions around the world. Under its charter, the CFBS will establish the first database related to military forensic assessments in the next

year. This database should provide an opportunity to explore risk and protective factors related to the intersection of criminal behavior and mental illness within DoD populations along with aspects of DoD assessments of criminal responsibility.

Our Mission

CSTS is dedicated to understanding the impact of trauma on individuals, families and communities. We strive to advance trauma-informed care. The Center is part of our nation's federal medical school at USU and the Center's mission is aligned with the DoD and the nation's needs.

The Center's work addresses a broad range of trauma exposure from combat, humanitarian operations, terrorism, natural and human-made disasters, and public health threats. CSTS has been involved in nearly every major disaster our nation has faced in the past 28 years. The Center has helped ensure that behavioral health is at

the table during discussions of disaster planning, public health threats, and disaster response and recovery.

The Center is well-positioned to respond to DoD mission relevant activities and to educate regional, national and global stakeholders in government, industry, healthcare, public health, and academia on mitigating the effects of disaster and trauma in military and civilian populations, to foster community and national resilience. CSTS contributes to advancing trauma-informed knowledge through research, education, training, consultation and leadership.



Research

RESEARCH ON SERVICE MEMBERS

Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS)

In 2015, the highly-successful and widely-publicized Army STARRS project ended after six years and transitioned to STARRS-LS. Army STARRS was



Army Study to Assess Risk and Resilience in Servicemembers

the largest research study of mental health risk and resil-

ience ever conducted among military personnel. It was designed and conducted under the scientific direction and leadership of the two Co-Principal Investigators, Center Director Dr. Robert Ursano, and Dr. Murray Stein at the University of California, San Diego (UCSD). Center Associate Director, Dr. Robert Gifford, was the Army STARRS Senior Project Director. Center Senior Program Manager, Paul Hurwitz, MPH, was the Army STARRS Senior Program Manager. More than twenty other CSTS scientists and staff supported Army STARRS.

Army STARRS was a collaborative effort between USU, UCSD, Harvard University, the University of Michigan, the National Institute of Mental Health (NIMH) and the U.S. Army. Army STARRS was designed to examine the mental health and resilience of active duty U.S. Army Soldiers to increase our

"The comprehensive nature of these inquiries has provided a database on behavioral health, social, biological, and potentially genetic pre-determinants of suicide unprecedented in its scope and depth of understanding..."

—LTG (Ret) Eric Schoomaker, MD, PhD, who served on the Army STARRS Scientific Advisory Board, and is a former U.S. Army Surgeon General

knowledge of the risks and protective factors that underlie vulnerability and resilience in the face of traumatic exposure for Service members who have served and will serve our nation for years to come. The seven separate but integrated epidemiologic and neurobiologic studies that comprised Army STARRS were designed to be a comprehensive approach to the research questions. The project involved large and representative samples of Army Soldiers, including Regular Army, Army National Guard and activated Army Reserve. The project included longitudinal, cross-sectional, historical, prospective and neurobiological studies. Army STARRS involved the collection, integration and analysis of very large volumes of data. The research team obtained, organized and analyzed a data file of more than a billion data points from existing Army and DoD administrative records representing more than 1.6 million active duty Soldiers from 2004 to 2009; collected data from nearly 200,000 questionnaires administered to more than 100,000 active duty Soldiers from 2011 to 2014 throughout the United States and at ten locations overseas; administered questionnaires to Soldiers in Kuwait as they transitioned into and out of combat zones for R&R; obtained data from approximately 400,000 neurocognitive tests administered to active duty Soldiers; collected approximately 77,000 tubes of blood from approximately 52,000 active duty Soldiers; used the blood samples to perform a wide-range of different types of state-of-the-art biomarker assays (genetic, metabolomic, proteomic, inflammatory, and neurodegenerative) from DNA, RNA and plasma derived from the blood; conducted multiple, highly technical and complicated neurobiological

"The breadth and scope of the Army STARRS project is unique in the history of psychiatric and military research..."

— Kerry Ressler, MD, PhD, Chair of the Army STARRS Scientific Advisory Board

analyses of the biomarker assay data; linked the above data to extensive Army and DoD administrative data records; and performed sophisticated and highly-complex data analyses using the huge volume of data.

To date, 28 Army STARRS papers have been published, five papers are in press, six papers are under review for publication, and 32 additional papers are in various stages of development.

As findings became available, the researchers reported results directly to senior Army leadership at in-person briefings at the Pentagon that included the Secretary of the Army, the Army Chief of Staff, the Army Vice Chief of Staff, the Deputy Under Secretary of the Army, Office of the Surgeon General staff and other senior Army officials. In this way, the Army had the ability to apply the findings to ongoing health-promotion, risk-reduction and suicide-prevention efforts. The benefit from this extraordinary, groundbreaking, complex and successful undertaking is beginning to emerge and will increase substantially over time as Army STARRS researchers continue to analyze the large amount of data.

Study to Assess Risk and Resilience in Servicemembers – Longitudinal Study (STARRS-LS)

Due to the success of Army STARRS, the Center is continuing the research that began under Army STARRS through a DoD-funded project called



STARRS-LS. The same consortium of four universities (USU, UCSD, Harvard University, and the University of Michigan) that designed and conducted Army STARRS is continuing the collaborative effort on STARRS-LS.

STARRS-LS is being conducted under the scientific direction and leadership of the two Co-Principal Investigators, Center Director Dr. Robert Ursano and Dr. Murray Stein at UCSD. This five-year research project will continue using the Army STARRS platforms, systems and data to derive further findings and extract additional value. STARRS-LS also includes longitudinal follow-up studies with a cohort

of more than 72,000 Army STARRS participants to collect additional information and extend the time-frame for collecting further outcome information and allow continued analyses. This will provide further benefit for the Army, the DoD and the nation.

STARRS-LS is being managed by Center Associate Director Dr. Robert Gifford, who is serving as the Senior Project Director of STARRS-LS, and by Center Senior Program Manager, Paul Hurwitz, MPH. In addition, there are many other CSTS scientists and staff working on the project.

Psychological Stress and Resilience in Mortuary Affairs (MA) Soldiers: Longitudinal Study

Since 2005, CSTS has conducted research on the stresses of mortuary affairs operations during the wars in the Middle East. U.S. Army mortuary affairs (MA) Soldiers, who work with the dead of battle, are exposed to some of the highest stressors of war, combat death. In addition, MA Soldiers must deal with the stress of deployment and return home. This research has examined training and preparation, stressors specific to working with the dead, and adjustment to family and work after return from deployment. Empirical and descriptive data are collected on factors such as psychiatric disorders. For example, PTSD, depression, distress (symptoms of posttraumatic stress, e.g., somatization, anger and hostility), health risk behaviors including increases in alcohol and drug use, resilience and psychological well-being, and instrumental and emotional support. During 2015, we continued collecting surveys and began preliminary data analysis. These studies have implications for early intervention, training, education, leadership and health surveillance.

Troop Education for Army Morale (TEAM)

TEAM is a stress management and resilience building early intervention study with the goal of improving post-deployment readjustment in MA Soldiers. TEAM involves a randomized group of MA Soldiers and a comparison group immediately after return from deployment. The study is designed to help the Soldiers cope with the daily challenges of post-deployment life, including re-integration into

"I wish we could incorporate TEAM into the Army Resiliency Training because it has many useful skills for both deployed and garrison experiences."

– *Quote from a participant Soldier*

family and garrison life. TEAM is based on the five evidence informed principles of Psychological First Aid (physical and psychological safety, calming, connectedness, self-efficacy, and hope/optimism) and delivered through four group workshops, informational handouts, a dedicated website, and support through concierge phone and email services. A total of 125 MA Soldiers in 10 cohorts participated in the study. New for 2015 was further in-depth analysis and development of manuscripts for publication and presentation at professional meetings. MA Soldiers in our study have a high number of traumatic deployment exposures, and rates of probable PTSD and depression, that are similar to combat troops. While the intervention did not specifically reduce rates of actual PTSD, TEAM skills training targets were reported to be helpful. As expected, Soldiers who attended more workshops reported fewer symptoms and were more likely to rate TEAM as helpful. In 2015, we identified modifications to TEAM suggested by empirical findings and feedback from participants that target increased effectiveness for future trials in MA Soldiers and expansion of TEAM for use in other military and civilian populations, such as disaster workers.

"The communication skills I learned from TEAM can be applied to all areas of my life including military, personal and other relationships. It gave me an opportunity to talk among my peers and gave me positive insights on things."

– *Participant Soldier feedback on their experience with the TEAM intervention*

Reserve Component of the U.S. Armed Forces

The Center continues to conduct extensive research with the Reserve Component (RC) of the United States Armed Forces, a traditionally under-studied population that experiences unique stressors when the nation is at war, that are substantially different from those experienced by the Active Component (AC). In collaboration with Dr. Sandro Galea at Boston University, CSTS is conducting longitudinal research on the health and mental health of National Guard and Reserve Service members nationwide. The study addresses the epidemiology and trajectory of posttraumatic stress, deployment stress, health risk behaviors and health care utilization in the National Guard and in the Reserves of the Army, Navy, Air Force and Marine Corps. There have been four waves of data collection to date, and the team is actively analyzing this rich data set. This research is unique in that it uses a representative national cohort and specifically addresses the experiences of the Guard and Reserve.

Army STARRS and STARRS-LS provide an unprecedented opportunity to examine the health and mental health of RC members. The Army STARRS New Soldier Study included surveys of approximately 23,000 RC Soldiers during their first week of basic training. Many participants also provided blood samples for the examination of biomarkers. This collection of data at the beginning of Soldiers' military service provides an opportunity to follow them through the course of their military careers and beyond in order to identify risk factors for health outcomes, as well as factors that promote resiliency. In addition, Army STARRS included RC members in the All Army Study and in the in-theater study of Soldiers serving in Afghanistan, again yielding data that can be used in long-term studies while providing a snapshot of current health and mental health. This creates the opportunity for assessment of concentrations of risk in order to develop future interventions to promote and sustain military health. In STARRS-LS, both in-depth analysis of existing data, and collection of new data on members of the RC, are important aims.

The CSTS portfolio of research on the RC is

rounded out by studies of biomarkers conducted in National Guard units before and after deployment for combat tours in Afghanistan. Taken together, this combination of studies geared specifically to the RC, along with inclusion of RC members in other CSTS research including the Child and Family Program, gives CSTS a key role in expanding knowledge of the special needs of the Citizen Soldiers on whom our nation relies.

RESEARCH IN THE CHILD AND FAMILY PROGRAM

The Center's Child and Family Program (CFP) is a national leader in advancing scientific and clinical knowledge, and providing educational resources addressing the needs of children and families affected by trauma, especially our nation's military families and children. Dr. Stephen Cozza, CSTS Associate Director, underscores both the strength of these children and families, as well as their vulnerability resulting from the impact of these experiences. Military and veteran families can benefit from developing skills and strategies to better manage the challenges that they face. The Child and Family Program addresses these complex issues through pioneering research, by educating professional audiences including military and government stakeholders



at conferences, through scholarly publications and consultation to DoD leadership and national media outlets. CFP projects shed light on combat injured families, military family bereavement and child neglect and maltreatment in U.S. Army communities and families.

COMBAT INJURED FAMILIES

A Study of Combat Injured Families

This study examines the short- and long-term impact of severe combat injury on military families through interviews conducted at Operation Purple Healing Adventures (OPHA), an annual summer camp program for combat injured Service members and their families sponsored by the National Military Family Association (NMFA). Forty families were assessed and qualitative data were collected from focus groups to assess the issues related to combat injury and family functioning. We are currently analyzing the collected data to understand the complex effects and challenges experienced by combat injured Service members and their families.

Addressing the Needs of Children and Families of the Combat Injured

This study investigates the impact of combat injury on military families over time. All information has been collected from consenting military families at Walter Reed National Military Medical Center (WRNMMC) and San Antonio Military Medical Center (SAMMC). The data are currently being analyzed to identify the short- and long-term effects of parental combat injury on Service members and their families and children and to inform intervention strategies for this population. Data collection for this study concluded in 2015 and preliminary analyses of the data has begun.

FOCUS-CI: A Preventive Intervention with Children and Families of the Combat Injured

The Families Over Coming Under Stress — Combat Injury (FOCUS-CI) study is the first of its kind to pilot a preventive intervention with the children and families of combat injured Service members, to examine the feasibility of its use, and to study

its efficacy in this context. Using a randomized controlled trial approach, the study was designed to test the effectiveness of a new family-centered, strength-based, evidence-informed intervention for severely combat injured Service members and their families. FOCUS-CI provides instrumental support to families and teaches emotion regulation, problem solving, communication, and goal-setting skills. Data were collected from military families from Washington, DC, San Antonio, TX and Chapel Hill, NC who participated in the study. We continue to examine the effectiveness of the intervention by comparing FOCUS-CI with the existing standard of care on the effects of key aspects of family functioning. These data will help us better understand the experience of combat injury, its impact on Service members and their families, and to help inform programmatic intervention that can better address the needs of military families.

FAMILY BEREAVEMENT

The National Military Family Bereavement Study (NMFBS)

NMFBS is the first scientific study to examine the impact of a U.S. Service member death on surviving family members. It aims to describe the population of Service members who have died since 9/11 and to identify experiences of the Service member's

bereaved family members — how psychological, physical and/or behavioral outcomes of the grieving process are influenced by military-unique contributions, as well as family members' pre-existing psychological and physical health and support. An optional part of the study examines saliva samples for genetic biomarkers associated with outcomes. The year 2015 saw the end of Phase 1 data collection culminating in more than 2,200 completed adult participant questionnaires. The longitudinal portion of the study, which consists of annual interviews over three years, continues until 2017. Approximately 850 adults and 120 children are participating in the longitudinal portion of the study. Expert consultants from Columbia University, UCLA and the University of Michigan are also collaborating on study analyses.

Stepping Forward in Grief (SFG)

The National Military Family Bereavement Study (NMFBS) has found that a sizeable portion of surviving military family members are suffering from high levels of grief and distress, putting them at risk for harmful long-term changes in physical and mental health. Recognizing the need to help these families, the NMFBS formed a partnership with the Center for Complicated Grief at Columbia University to develop an intervention study for bereaved military families. Funding for the SFG study was awarded in May 2015. The SFG study involves the development and testing of a digital intervention (GriefSteps) that is designed to lower grief and decrease risk for long-term problems. The GriefSteps intervention is being adapted from Complicated Grief Therapy (CGT) that has been shown to be helpful in civilian populations. CGT helps to resolve grief complications and promote wellness. The SFG study is a randomized controlled trial, which means that participants will be assigned to one of two groups: either an intervention group to receive GriefSteps, or a control group to receive WellnessSteps that will focus on building





resilience. The study will compare how people in the GriefSteps intervention group do, compared to the WellnessSteps control group, in overall improvement in grief severity and adaptation to loss. All SFG study participants will be able to complete their programs virtually, either on an app or on the Internet. In addition, both groups will have “guides” who can help and answer questions about the study. Through the SFG study, we will learn how to best assist military family survivors with their grief and reduce the long-term problems that can result after a loss, resulting in an extremely helpful resource for current and future survivors who suffer the death of a military loved one. Military Service members may also be consoled by knowing that such services are available to families if they or a close unit member or friend should die while on active duty.

Study of Long-Term Outcomes of Terrorism Related Grief

The Child and Family Program has partnered with Voices of September 11th (VOICES), a not-for-profit organization that provides services for 9/11 families, and the Canadian Resource Centre for Victims of Crime (CRC), an organization that is engaged with, and supportive of, family members who were bereaved by the Air India Flight 182 bombing. The study partners are investigating long-term posi-

tive and negative bereavement outcomes that follow a terrorism-related death, including grief, traumatic symptoms, resilience characteristics and posttraumatic growth. More than 400 participants who are family members bereaved by the bombing of Air India Flight 182 on June 23, 1985 or by the events of September 11, 2001 completed an online questionnaire about their experiences related to the aftermath of these events and the death of their family member(s). The study will determine predictors of bereavement outcomes and use findings to develop preliminary working models for understanding risk and protective factors for bereaved family members of terrorism-related deaths. This study will build a basis for ongoing research to inform training and counsel for disaster and terrorism victims and their families.

CHILD NEGLECT AND MALTREATMENT IN U.S. ARMY COMMUNITIES AND FAMILIES

Deployment Family Stress: Child Neglect and Maltreatment in U.S. Army Families

This study describes the characteristics of substantiated child neglect cases in the Army and identifies factors that contribute to healthy family functioning as well as to child maltreatment. Data were collected from over 1,000 questionnaires and from the records of 400 substantiated child neglect cases from Army installations across the country. Much of 2015 was focused on disseminating important findings that help to better understand the types and severity of neglect occurring within military families, to promote healthy child and family functioning in military communities, and to inform the development of effective prevention approaches. For example, in 2015 we published the first reports of types, subtypes and severities of substantiated child neglect cases in the U.S. Army, as well as demographic information about child victims and offenders by type and subtype. Two other manuscripts currently in preparation focus on: (1) understanding military-specific risk contributions, including deployment-related risk, associated with different forms of child neglect; and (2) identifying parent and family risk factors associated with distinct types of neglect.

Military-Related Risk for Child Neglect in DoD Families: A Population Study to Inform Future DoD Child Neglect Prevention Efforts

At the end of 2015, the Child and Family Program was awarded a grant from the Department of Defense to complete a two-year study investigating child maltreatment and neglect across all Service branches of military families. Using existing data from military families with substantiated cases of child abuse and/or neglect and matched control groups for comparisons, the project goals are to: (1) identify risk and protective factors for various types of child physical abuse, sexual abuse and neglect in military families; (2) ascertain the effectiveness of military family participation in the New Parent Support Program (NPSP) for reducing child abuse and neglect prevalence; (3) examine the interaction of abuse and neglect correlates and NPSP participation on child abuse and neglect outcomes; and (4) identify which at-risk families benefit most from NPSP and where additional preventive programming may be needed. To date, efforts have been focused on reviewing the existing empirical literature and identifying data sets and variables to include in analyses.

The Family Violence and Trauma Project (FVTP)

The FVTP was initiated in 1995 based on joint interests of the Center and the U.S. Army. This project approaches the prevention of maltreatment fatalities through a public health model that promotes strategies at individual, family, community and societal levels to address practices, policies, and public attitudes and beliefs about family violence and maltreatment. The project reports the rates of family maltreatment to the Army leadership and Army installations. Our reports for Army installations include graphs of victims, incidents and maltreatments for child and adult maltreatment by year as well as comparing Army rates of child maltreatment to the U.S. national rates. We also monitor ongoing Family Advocacy Programs (FAP) research and maintain a literature database of research applicable to the Army FAP. During 2015, Dr. James E. McCarroll expanded the

literature review on maltreatment fatalities examining risk and protective factors relevant for the Army. We publish papers in medical journals on maltreatment fatalities in order to educate social services, health care providers, and forensic and law enforcement personnel on this subject. We support the Army FAP by providing consultation, briefings, papers and research studies to answer questions involving spouse and child maltreatment. We have assisted investigators

in the field with their research related to the Army FAP. In addition, members of the program consult within the Army, and the broader federal community, to support Army and civilian investigators in family maltreatment research, and publish the highly regarded newsletter *Joining Forces Joining Families*. This year we initiated a new publication for the Army FAP, *Research Reviews*. This publication provides highlights of current FAP research in non-technical language to help FAP personnel grasp current issues in an abbreviated format. Both *Joining Forces Joining Families* and *Research Reviews* are broadly distributed within the Army, the Department of Defense and applicable civilian agencies concerned with family maltreatment.





RESEARCH IN NEUROSCIENCE AND NEUROBIOLOGY

The Center’s laboratory and clinical research in neuroscience and the neurobiology of stress is dedicated to finding effective interventions for a number of military-related health issues including posttraumatic stress disorder (PTSD), mild traumatic brain injury (mTBI) and suicide.

LABORATORY RESEARCH IN NEUROSCIENCE AND NEUROBIOLOGY

Genetics and Biomarkers

In 2015, CSTS laboratory research on genetic biomarkers included the purification of DNA from 4,000 saliva samples collected from Soldiers, and conducting genotyping for research on several target genes including p11, BDNF and FKBP5. We also measured telomere length from DNA derived from more than 1,000 blood samples collected from Soldiers pre-deployment and again post-deployment for the Army STARRS project.

This year, our laboratory work included research on the effect of differential dysregulated cytokines on stress response, onset, risk and resilience for PTSD. Using blood samples from volunteer Soldiers pre-deployment (n=450) and post-deployment (n=430) during the Iraq and Afghanistan Wars, we simultaneously measured multiple (n=40) cytokines using Luminex high-throughput biochip assays. Our results indicate that chemokines play different roles in PTSD and in stress responses, thereby contributing to the understanding of the mechanism

for PTSD and encouraging further investigation of chemokines as biomarkers for PTSD and traumatic stress response.

Other work in our laboratories this year used animal models, such as classical fear conditioning, acoustic startle reflex, pre-pulse inhibition, pain responses and intravenous drug self-administration. We investigated biological and behavioral mechanisms of substance abuse, stress-related disorders, and individual vulnerability to stress.

The importance of the research conducted in our laboratories is that it can be translated to clinical research. The findings from these laboratory studies enhance our understanding of the neuroscience of stress, substance use disorders and PTSD. Importantly, these findings contribute to improved treatment strategies for stress-related psychiatric disorders.

Drug Development for the Treatment of PTSD

The Center, in collaboration with the Walter Reed Army Institute of Research, is undertaking an exciting new avenue of research led by Dr. Gary Wynn to examine novel molecular compounds for the treatment of PTSD using an early and rapid throughput model. The rapid throughput model being used is the zebrafish, or *Danio rerio*. The goal of this CSTS supported research is better identification of candidate compounds for the treatment of PTSD. More specifically, this very early phase evaluation will allow down selection from a wide array of compounds using in vivo behavioral evaluations. This down selection process will increase the success rate of subsequent evaluations in higher order animal studies.

CLINICAL RESEARCH IN NEUROSCIENCE AND NEUROBIOLOGY

INTRuST National Capital Area Integrated Clinical Study Site

The Center continued its work in neuroscience and the neurobiology of stress through continued oversight and leadership of the INTRuST National Capital Area Integrated Clinical Study Site. Center Associate Director COL David Benedek, MD directs

this established network of clinician-researchers at WRNMMC, the D.C. Veterans Administration Hospital and the Armed Forces Retirement Home. The site is one of 10 study sites across the nation participating in the INTRuST Consortium for Psychological Health and TBI. The consortium's longitudinal study of Indices of Risk for PTSD in patients with mild to moderate TBI is the only longitudinal study within the consortium's portfolio and therefore is the last INTRuST study to complete subject enrollment. As a clinical site for the consortium's Acceptance and Commitment Therapy (ACT) study for patients with deployment-related psychiatric disorders including depression, PTSD, and TBI and the Ganaxolone (a synthetic neurosteroid) study for PTSD, the Center contributed to subject recruitment, enrollment and data analyses for these completed clinical trials with results now pending publication.

Beyond its affiliation with the INTRuST Consortium, the Center also conducts clinical intervention trials to identify modifiable risk and resilience factors of Service members and their families. COL Benedek initiated collaboration with the Syracuse VA Medical Center in a two-site clinical trial of riluzole (a glutamatergic modulator used to treat Lou Gehrig's Disease) for the treatment of PTSD. Recruitment and enrollment at both sites continued throughout 2015.

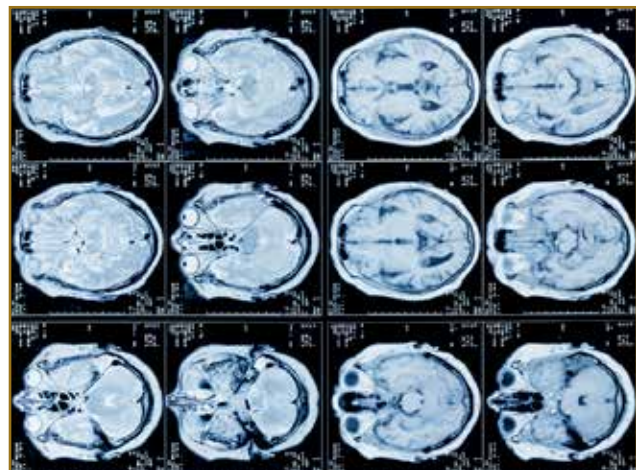
Riluzole Augmentation Treatment for Complicated Combat-Related PTSD

CSTS continues a multi-site clinical trial at WRNMMC and the Syracuse Veterans Affairs Medical Center evaluating the efficacy of the medication riluzole in veterans of recent conflicts with combat-related PTSD who have not achieved relief of their symptoms from current evidence-based treatments. Current recommended medications for combat-related PTSD increase the availability of selective serotonin reuptake inhibitors (SSRIs) or serotonin-norepinephrine reuptake inhibitors (SNRIs) in the brain, but do not adequately relieve symptoms for many patients. This study addresses an urgent need to investigate other medications and other mechanisms that may be more effective. Riluzole modifies activity of glutamate, a highly prevalent

neurotransmitter in all brain regions. Preclinical research suggests it may help reverse damage to areas of the brain such as the amygdala, anterior cingulate cortex and hippocampus where an excess of glutamate is believed to contribute to PTSD symptoms. This is a randomized, controlled, double-blind trial comparing the effect of riluzole against placebo over eight weeks of treatment. PTSD, depression and anxiety symptoms are assessed once a week. An exciting aspect of this study is the incorporation of magnetic resonance spectroscopy comparing concentrations of neurotransmitters and related chemicals in specific brain regions associated with PTSD before and after treatment. We hypothesize that treatment with riluzole will result in greater PTSD symptom improvement, greater improvement in depression and anxiety symptoms, and greater improvement in overall well-being compared to placebo. We also hypothesize that spectroscopy changes in the amygdala, anterior cingulate cortex and hippocampus will associate positively with improvement due to riluzole compared to placebo. This multiyear study is currently recruiting patients and has met 45% of total recruitment targets in its first two years.

Enhancing Fear Extinction via Angiotensin Type 1 Receptor Inhibition: A Randomized Controlled Trial in Posttraumatic Stress Disorder

CSTS investigators began work on a multicenter trial investigating the efficacy of the medication lo-



sartan for treatment of PTSD. Losartan is an angiotensin receptor blocker currently in common use as a blood pressure medication. This study adds to our portfolio of investigations potentially expanding the medication options for patients with PTSD beyond the currently recommended SSRIs and SNRIs, which in many cases do not adequately relieve patients' symptoms. CSTS is a study site for this multi-site clinical trial led by Dr. Murray Stein of UCSD. Other study sites include Massachusetts General Hospital, the Atlanta VA Medical Center, and the George Washington University. This investigation stems from earlier preclinical work suggesting improved fear extinction in animal models, and retrospective data in humans from the Grady Trauma Project suggesting lower rates of PTSD in traumatized patients treated with angiotensin receptor blockers. This randomized, controlled, double-blinded trial will compare the effect of losartan against placebo over ten weeks of treatment. PTSD and depression symptoms, as well as side effects of medication are evaluated every two weeks. In addition, this study will examine the contribution of variations in the angiotensin converting enzyme (ACE) gene to treatment response. This clinical trial will begin recruiting patients in 2016.

The Leahy-Friedman National PTSD Brain Bank

The National PTSD Brain Bank was co-founded by Dr. Matthew Friedman (Dartmouth/VA) and Dr. Robert Ursano (USU/DoD). The mission to improve the lives of veterans with PTSD has been strongly supported by Senator Patrick Leahy (D-VT), who played a major role in leading the effort to obtain Congressional funding for this project. The Leahy-Friedman National PTSD Brain Bank officially opened in the spring of 2015 when enrollment and tissue collection commenced.

While more than 50 brain banks around the nation investigate a variety of neurological disorders, this is the first brain tissue repository dedicated to researching the physical impact of stress, trauma and PTSD on brain tissue. It will advance the scientific knowledge of PTSD, particularly PTSD biomarkers through intramural studies now initiated by Brain

Bank investigators and by providing tissue for other VA investigators whose study proposals have been approved by appropriate review boards.

A great deal has been learned about how the brain functions, and about structural brain abnormalities, through brain imaging techniques and other research. However, looking at neurons at the cellular and circuit levels in tissue obtained from persons known to have had PTSD will allow a greater and more detailed understanding of disorder-related brain activity.

Thus far, the National PTSD Brain Bank has collected brain tissue from nearly 50 donors. The majority of donors were diagnosed with PTSD, however the brain bank is also collecting tissue from persons without PTSD to be used as controls for initial studies. In addition, nearly 50 living persons are in the process of enrolling in the Brain Bank's longitudinal follow-up registry as future donors.

This Brain Bank is a critical step toward identifying potential biomarkers of susceptibility and developing new treatments that target PTSD at the cellular level. The National PTSD Brain Bank will help pave the way for new approaches to the diagnosis and treatment of individuals with PTSD. In 2015, Dr. Benedek was named as the Director of the Brain Bank's Assessment Core, and Drs. Ursano and Benedek both serve as members of the Scientific Advisory Board of the Brain Bank. Dr. Benedek was interviewed by *Channel 9 News* in Oklahoma City, OK for a segment on the Brain Bank.

The Brain Indices Study

It is estimated that tens of thousands of combat veterans with TBI will develop PTSD and other adverse sequelae, including suicide. The goal of the Brain Indices Study is to develop reliable and valid predictors of negative outcomes to inform targeted treatments that can be initiated early, and thereby improve the lives of our wounded warriors and their families. The study is being conducted in the Brain Assessment Research Laboratory directed by Dr. Connie Duncan, and is funded by the DoD Congressionally Directed Medical Research Programs (CD-MRP) and the Center for Neuroscience and Regenerative Medicine (CNRM). This longitudinal study

was designed to identify measures of brain structure and function that predict PTSD and other negative outcomes in Service members with mTBI. We are examining cerebral consequences of blast versus impact TBI, as well as the progression of symptoms over time in injured Service members with mTBI. The brain measures include neuroimaging, and electrophysiological, neurocognitive and neurological assessments. Our goal is to identify associations between the cause of brain injury (i.e., blast versus impact) and the nature and severity of outcome in order to ameliorate and/or prevent the debilitating consequences of mTBI and PTSD.

We have completed enrollment for the study. The past year was devoted to completing the final evaluations of the mTBI and injured control (IC) participants. The focus then shifted to recruiting and testing subjects to serve as healthy Service members (HSM) matched on demographic variables but with no history of concussion or blast exposure. These Service members underwent the same assessment battery at three time points, the last was completed in October 2015. The HSM group is important in interpreting the results, as preliminary analyses of some of the data revealed similar findings between Service members with mTBI and those with extracranial injuries who screened negative for TBI.

Our current efforts are directed to data processing and analysis. The primary objective is to evaluate the associations between baseline indices of brain structure and function, and the course of PTSD symptoms, post-concussive symptoms and overall mental and physical health status (including headache) in Service members with TBI or other injuries. Our secondary objective is to characterize brain changes and clinical outcomes in Service members with blast and impact TBI.

The most notable findings to date based on baseline evaluations (done within a few months of injury) are the following: (a) mTBI delays cognitive processing involved in working memory (an effect previously identified in severe TBI); (b) Service members injured by blast explosions who were rated negative for TBI on standard DoD screening measures show processing delays similar to those seen in Service members with mTBI. These findings, based



on measures of brain electrical activity (event-related potentials), raise the question of whether current screening measures for TBI lack sufficient sensitivity to detect blast effects on brain function in wounded warriors; (c) mTBI caused by impact and blast is associated with similar delays in cognitive processing; and (d) processing of novel stimuli appears to be impaired in Service members with impact but not in those with blast-induced TBI.

The results suggest that measures from the Brain Indices investigation could enhance diagnosis, targeted treatment and, ultimately, recovery from TBI. As noted, a study of healthy Service members (who have had no history of TBI or significant blast exposure) was initiated and completed to serve as a comparison group for the injured Service members in the Brain Indices study. Processing the data from the healthy Service member group is underway.

As with our Brain Indices Study, the SAFE-TBI (Structured Assessment For Evaluation of TBI) study - aimed at developing a more sensitive and reliable instrument to assess TBI — has come to a close. Data collection was completed in March of 2015, and efforts have shifted to data analysis. This structured interview was developed by principal investigators Thomas McAllister (Indiana University) and Nancy Temkin (University of Washington) to provide a more reliable and valid means of diagnosing TBI. Participants in the Brain Indices protocol

served as the gold standard for data collected from veterans at several sites. The structured interview (i.e., SAFE-TBI) data obtained from these participants will be compared to the clinician-administered TBI diagnosis and neuroimaging data from the Brain Indices Study. This will allow evaluation of the psychometric properties of the interview.

Another sub-study of Brain Indices completed in 2015 evaluated the effect of differential types of instruction on the performance of prospective memory tasks (i.e., recall required to perform a future action). A small but significant advantage was found associated with enhanced “implementation intentions” as opposed to rote rehearsal of instructions. These results may have implications for remembering such actions as taking medication and appearing for appointments.

Ecological Momentary Assessment of Posttraumatic Stress Symptoms in U.S. Military Service Members (Daily Diary Study)

This study uses ecological momentary assessment to collect data throughout the day on posttraumatic stress symptoms (PTSS), sleep, pain, substance use and other areas of health and functioning in U.S. military Service members. This “daily diary” methodology allows for detailed assessment of variability of symptom patterns as they occur throughout the day, providing important insights into the interaction between symptoms and environment, psycho-

social relatedness and brain processes. This cutting-edge methodology provides assessments over the course of the Service member’s daily routine, four times a day over 15 continuous days. Psychiatric disorders, including PTSD and depression, are assessed at baseline and in one and three month follow-up assessments. Recruitment by the end of 2015 totaled 80 Service members and recruitment continues on an ongoing basis. Importantly, in 2015 the scope of the study expanded to include a genetic component through the collection of biogenetic samples to identify potential genetic biomarkers and gene-environment interactions that may distinguish and/or mediate traumatic stress responses and resilience to stress-related disorders. Also new for 2015 is the use of electronic tablets for data collection using a sophisticated application developed specifically for use in this study in collaboration with the National Center for Telehealth and Technology (T2). Feedback from participants indicate that overall, Service members report that participation in the study is helpful to them by increasing awareness of thoughts, feelings and how they respond to stress, therefore helping them identify environmental behavioral triggers. This innovative study has implications for interventions and program development through awareness of posttraumatic symptom variability. This methodology informs future use of technology in psychiatric assessment, treatment, and research.

In 2015, the scope of the study expanded to include a genetic component through the collection of biogenetic samples to identify potential genetic biomarkers and gene-environment interactions.



Education and Training

A central aspect of the Center's mission is education and training. The Center has a wide range of activities with the goal of disseminating knowledge. Center scientists educate and train USU medical students committed to service in our nation's Army, Air Force, Navy and Public Health Service. The Center educates leaders and health care providers in public and private agencies. In addition, the Center sponsors conferences, seminars and symposia that

have educational and training objectives. The Center advances the field of military and disaster psychiatry through presentations, outreach and training, as well as through participation in conferences, collaborations and workshops across the U.S. and internationally. The Center has educated and expanded knowledge through public health efforts and interventions during and after disasters.

Profile: Commander Jennifer Bornemann

Commander Jennifer Bornemann joined the Center in March 2010 after being commissioned in the United States Public Health Service (USPHS). CDR Bornemann spent almost five years at CSTS, and during that time she worked on several of the Center's major projects. CDR Bornemann deployed when she was called to serve, including volunteering to respond through her DoD contacts in the immediate aftermath of the Washington Navy Yard shooting. For two weeks following the shooting, she provided group and individual supportive counseling for those directly affected. CDR Bornemann is a valued member of the Services Access Team (SAT) 3, and deployed with them for Superstorm Sandy in New Jersey. In late 2014, CDR Bornemann transitioned from CSTS to the Substance Abuse and Mental Health Services Administration (SAMHSA), and soon after was deployed to Monrovia, Liberia for two months to support the Ebola crisis. In 2015, CDR Bornemann was deployed to Roseburg, Oregon for more than two weeks to provide counseling to those directly affected by the Umpqua Community College shooting. The Center has been a critical resource to support these disaster mental



health response efforts.

CDR Bornemann described the impact of her service at the Center, "As an officer in the United States Public Health Service, I am occasionally called to deploy in support of communities affected by natural or man-made disasters or events. In the past year, I have deployed as a behavioral health officer to Liberia as a member of the Monrovia Medical Unit Team 2, as well as to Roseburg, Oregon in the aftermath of the mass shooting at Umpqua Community College. While both deployments were intense and challenging, the missions were very different in nature. I was able to use the information from CSTS research and subject matter experts to keep my teams informed of the issues including working with Ebola, deployment challenges, and helping communities cope in the immediate days and weeks after a mass shooting. CSTS is the first place I turn to prepare for any and all of my deployments with the USPHS. Working on Army STARRS, I got a look into the last moments of those who took their own lives and I use that knowledge in my current work. My experience at the Center informs the work I do at SAMHSA every day."

Disaster Response and Public Education

Since its inception, the Center has provided disaster response education and consultation. This has involved on the ground support to disaster events such as the 9/11 Pentagon response in 2001, the mass shooting at Fort Hood, TX in 2009 and the active shooter incident at the Washington Navy Yard in 2013. Center scientists provide consultation to leaders and other personnel involved in disaster response efforts. The Center emphasizes disaster preparation and response and former Center personnel are often called upon to provide expert guidance on disaster preparation and response activities as a result of the subject-matter expertise they obtained working at the Center.

Neuroscience Module for Pre-Clerkship USU Medical Students

The neuroscience module prepares pre-clerkship medical students for their clerkship period, as well as providing a foundation of knowledge that will inform their long-term education. The neuroscience module covers a breadth of information from basic neuroanatomy to clinical skills in neurology and psychiatry. The neuroscience module is co-directed by Dr. Gary Wynn, CSTS, and Dr. David Mears, USU Department of Anatomy, Physiology, and Genetics. Drs. Wynn and Mears were again given the best module director award, this time by the Class of 2018 and representing the fourth consecutive year the neuroscience module has received such an award.

CSTS Sponsored Neuroscience Fellowship

The Center has initiated a pre-doctoral fellowship for the USU neuroscience doctoral students. The goal of the fellowship is to foster the development of the next generation of scientists and investigators who will tackle problems relevant to the CSTS mission. We anticipate the first fellowship will be awarded in 2016.

Education in Combat and Operational Stress Control: Operation Bushmaster

CSTS faculty directly support combat and operational stress control (COSC) education at USU. As

part of its annual medical field training exercise, Operation Bushmaster, students are immersed in a large-scale medical simulation. CSTS faculty develop, implement, and assess student performance on a collection of realistic COSC scenarios during the four-day exercise. Important lessons are emerging on the psychological impact of these large-scale simulations on learners which CSTS faculty are publishing and using as a springboard to further investigations. These lessons learned do not just apply to medical students or military medicine, but to the field of disaster psychiatry and impact on responders.

Homeland Security

Dr. Benedek, other Center investigators, and partners from the Army's Comprehensive Soldier Fitness program implemented a training program in psychological first aid/team resilience building for the Department of Homeland Security (DHS) in 2015. The DHS and the Center collaboratively developed and pilot tested a cutting-edge resilience training program that incorporated findings from an initial assessment of existing DHS programs and included elements of Psychological First Aid, Decision Making in High Stress Environments, and individual and team resilience. The Center conducted the assessment of existent resiliency programs for DHS employees and made recommendations based on that assessment. The Center will provide ongoing consultation, specifically related to program evaluation and data collection, as DHS potentially expands its Responder Resiliency and Decision Making program.

Mortuary Affairs Officer Education

CSTS has provided officer education at the Joint Mortuary Affairs Center and School at Fort Lee, Virginia, assisting the active duty forces and the mortuary affairs school as they trained and deployed new Soldiers in response to changing missions. The education addresses resiliency, preparedness, training and education of military personnel for the stresses of deployment and working with the dead. Content experience comes directly from our research findings and intervention with Mortuary Affairs Soldiers.

Firearm Safety

There are approximately 30,000 firearm fatalities in the United States each year. The majority of these deaths are due to suicide or accidental firearm death.

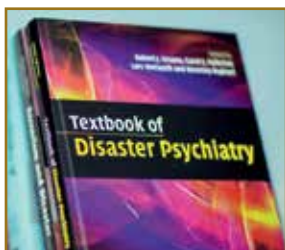


However, evidence suggests that adopting safe storage practices can reduce the likelihood of deaths due to firearms.

The Center partnered with the Yellow Ribbon Reintegration Program (YRRP) and the Defense Suicide Prevention Office (DSPO) to develop the Personal Firearm Safety Education Project. The project developed multimodal educational materials on personal firearm safety. This targeted effort strategically supports DoD suicide prevention efforts by educating Service members on the importance of personal firearm safety. This training program, implemented in conjunction with pre-and post-deployment events, promotes evidence-based gun safety practices to enhance the safety of Service members and their families. Center scientist CAPT Curt West met with the Director of Personnel Risk Reduction, Undersecretary of Defense for Personnel and Readiness, at the Pentagon to discuss ways forward with the Personal Firearm Safety Education Project.

Upcoming Textbook of Disaster Psychiatry (Second Edition)

Since the publication of the first edition of the *Textbook of Disaster Psychiatry* in 2007 (edited by Robert Ursano, Carol Fullerton, Lars Weisaeth and



Beverly Raphael), there has been a proliferation of disasters worldwide, including natural and human-made disasters, terrorist events and an escalation of the war in the Middle East. In 2012,

a total of 357 disasters were registered worldwide (Guha-Sapir D., Hoyois P., Below, R. Annual Disaster Statistical Review 2012: The Numbers and Trends. Brussels, CRED, 2013), affecting approximately 124.5 million people, costing approximately



\$157 billion. The second edition of the *Textbook of Disaster Psychiatry* advances the goals of the first edition by bringing together a distinguished group of international experts providing an updated, comprehensive review of the psychological, biological and social processes of response to, and intervention for, disaster mental health needs. The second edition represents a decade of advances in disaster psychiatry: the epidemiology of disaster response, the neurobiology of disaster exposure, socio-cultural issues, interventions, actionable research and advances in public health responses to disaster. The second edition of the textbook has a Scientific Advisory Board, Section Editors and Associate Editors comprised of distinguished scientists, scholars, practitioners and researchers who are leaders on the cutting edge of the field of disaster psychiatry. Chapters from the first edition have been edited extensively and updated, and fourteen new chapters have been added to the second edition with an expected publication date in the fall of 2016.

Upcoming Textbook On Complementary and Alternative Medicine (CAM) for PTSD

Drs. Gary Wynn and David Benedek have recently submitted the upcoming textbook *Complementary and Alternative Medicine for Posttraumatic Stress Disorder* for publication. This text, an invited project from Oxford University Press, is a first of its kind comprehensive look at a variety of complementary and alternative treatment modalities. Each chapter reviews a different CAM treatment, its evidence

base and the potential clinical utility for those suffering from PTSD. The treatments covered include acupuncture, yoga, meditation, animal assisted therapy, transcranial magnetic stimulation, virtual reality, smart phone applications, alternative pharmacology and family therapy. This project includes chapter contributions by several Center members including the chapter “Family Therapy” by Dr. Stephen Cozza. The textbook will be available in the summer of 2016.

Upcoming Textbook Chapter

Dr. Joshua Morganstein was the lead author for a chapter in an international textbook on the Fukushima nuclear disaster, titled “Psychosocial Responses to Disaster and Exposures: Distress Reactions, Health Risk Behavior, and Mental Disorders.” The chapter provides a critical overview of the unique psychological issues that impact individuals exposed to chemical, biological, radiological and nuclear material as well as those responsible for managing the consequences of these events. It will serve as an important global academic resource to assist policy makers, disaster planners, healthcare providers and first responders to better understand, plan and prepare for the adverse psychological effects of disasters that involve exposure and contamination, such as nuclear disasters.

Training Research Assistants

CSTS is a training ground for our staff, including our Research Assistants (RAs). Research Assistants at CSTS support our scientists in many research-related tasks, including literature searches, data collection and entry, and writing and summarizing project meeting minutes. In turn, the scientists and leadership at CSTS provide training and professional development opportunities for the RAs. RAs learn practical skills and gain experience in conducting research. They become familiar with the process of manuscript preparation and the presentation of research findings to the scientific community and the general public. This training and experience prepares the RAs for advanced degree programs and careers in research and other related fields.

CSTS Research Assistants have moved on to

further their education at prestigious schools, such as Yale, Notre Dame, Johns Hopkins and other esteemed institutions. Opportunities our Research Assistants have pursued following their training and experience at CSTS include:

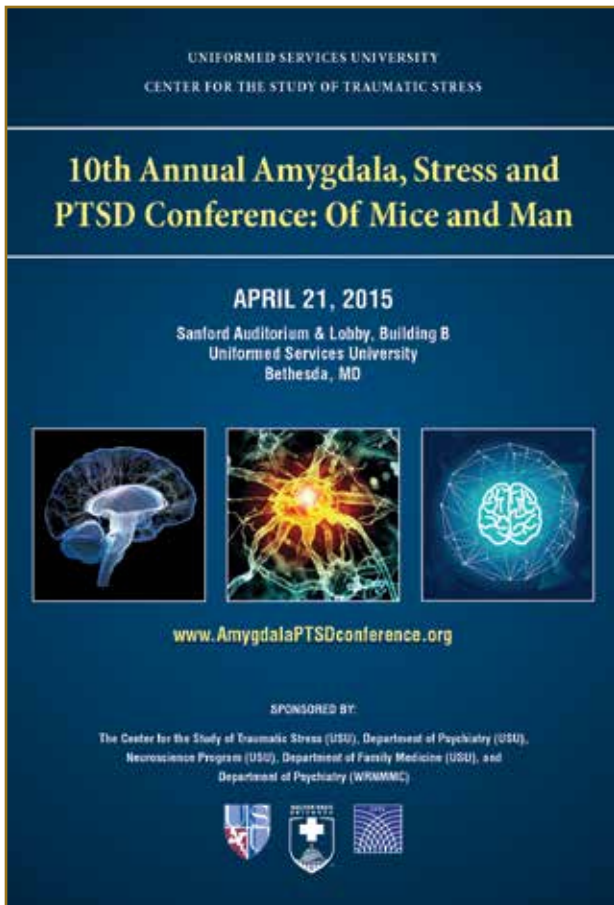
- PhD graduate programs in psychology and related fields.
- Medical school.
- Master degree programs in counseling, public health and social work.
- Careers with the FBI.

EDUCATIONAL CONFERENCES

The Center sponsored three conferences in 2015: the 10th Annual Amygdala, Stress and PTSD Conference; the Artiss Symposium; and the Forum on Health and National Security: *Financial Stress and Behavioral Health in Military Servicemembers: Risk, Resilience, Mechanisms and Targets for Intervention*.

Amygdala, Stress and PTSD Conference: Of Mice and Man

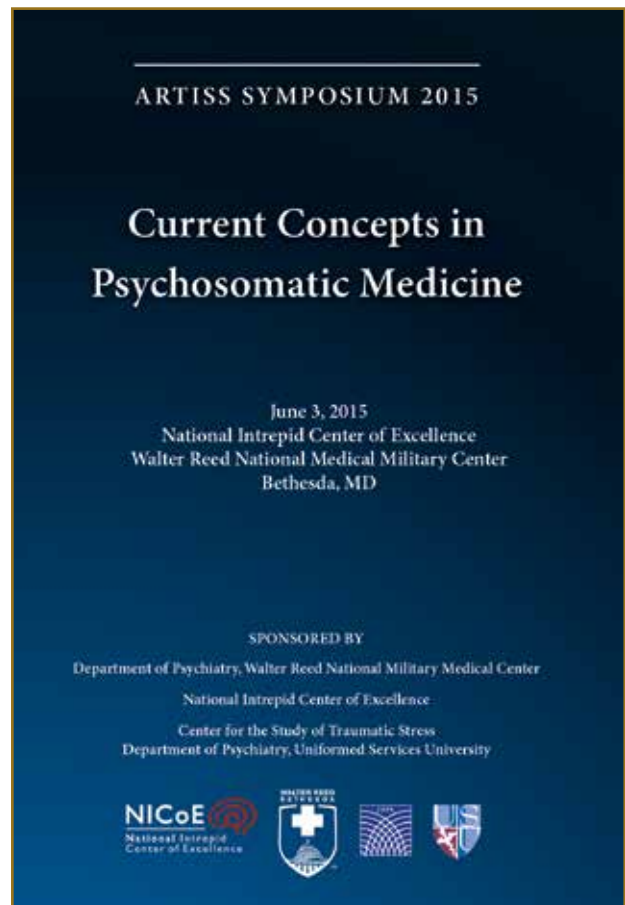
For the past decade, the Center has sponsored the Amygdala, Stress and PTSD Conference at USU every year in April. In 2015, the Center presented the “10th Annual Amygdala, Stress and PTSD Conference: Of Mice and Man.” The Center works in collaboration with the USU Department of Psychiatry, USU Neuroscience Program, USU Department of Family Medicine, and the WRNMMC Department of Psychiatry on this annual conference. In 2015, the conference included more than 400 individuals registered for a day of world class presentations aimed at bringing together scientists, clinicians and policy makers working towards solving the biological basis of stress, fear and PTSD. The conference speakers represented prestigious universities and research institutions from across the country and internationally including University of Michigan, Johns Hopkins, Georgetown University and the University of Cape Town, South Africa. The speakers presented and discussed topics such as the use of big data in neuroscience research, the biology of empathy and the experience of trauma in South Africa. In addition to the conference, this year was a first in partnering with the *Journal of Neuroscience Research* to put



together a special issue based on the conference and titled “The Amygdala: Dysfunction, Hyperfunction, and Connectivity.” The special issue is a collection of articles from a number of the presenters along with other experts in the field of the amygdala and should be in press prior to the “11th Annual Amygdala, Stress and PTSD Conference: The Effects of Stress and Loss” scheduled for April 2016.

Artiss Symposium: Current Concepts in Psychosomatic Medicine

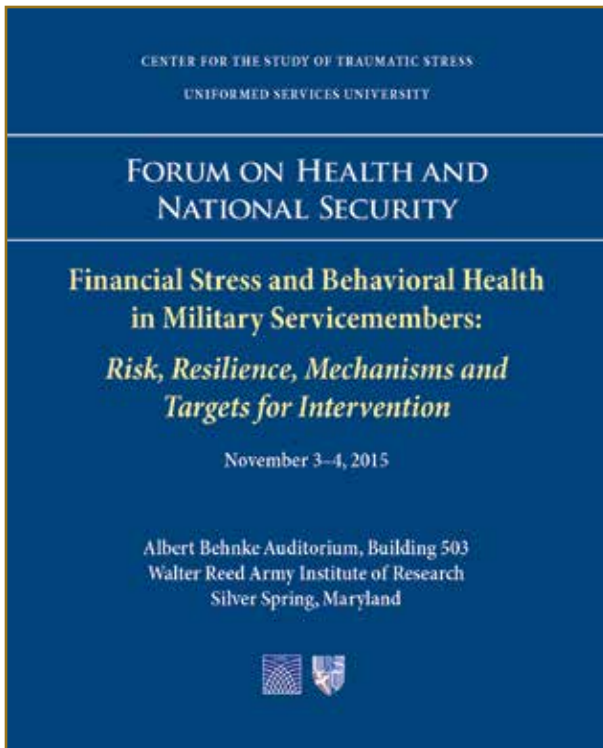
The Center is a sponsoring partner for the annual Artiss Symposium. Kenneth L. Artiss, MD (1913—2001), the namesake of the symposium, was an Army officer, a research psychiatrist and instructor at Walter Reed Army Medical Center who inspired generations of military psychiatry residents to conduct high quality research. This year’s symposium, “Current Concepts in Psychosomatic Medicine,” examined a range of topics that addressed the interplay between complex medical problems and psychological health



featuring expert speakers in clinical and research leadership positions from throughout the Military Health System.

Forum on Health and National Security: Financial Stress and Behavioral Health in Military Servicemembers: Risk, Resilience, Mechanisms and Targets for Intervention

Since the mid-1980s, the Center has held a series of conferences, the Forum on Health and National Security, bringing together people with a wide range of expertise, perspectives and vantage points to think and talk together about topics of importance to the military. By bringing together people who have thought through different parts of a problem, but who may have never talked together, our goal is to generate new knowledge, new thoughts and new ways of thinking about issues. The focus of the forums have addressed diverse topics: individual and group behavior in toxic and contained environments — psychological effects of chemical and biological



warfare; military women in combat deployment and contingency operations; stress and coping with war; Army family violence; planning for biological events — responses to terrorism and infectious disease outbreaks; workplace preparedness for terrorism; stigma and barriers to care — caring for those exposed to war, disaster and terrorism; military families in transition — stress, resilience, and well-being; and financial stress and behavioral health in Service members — risk, resilience, mechanisms and targets for intervention.

“Thank you for the opportunity to participate. The forum was excellent and thought-provoking. A lot of great dialogue, networking, and ideas for future collaboration made the two days very rewarding.”
— Barbara A. Thompson, Director, Office of Family Readiness Policy, Office of the Secretary of Defense, Military Community and Family Policy

“Great team effort, as always. Important work we have to integrate. Thanks for all you do.”
— Anthony J. Stamilio, Deputy Assistant Secretary of the Army (Civilian Personnel and Quality of Life), U.S. Department of the Army

The 2015 Forum on Health and National Security: *Financial Stress and Behavioral Health in Military Servicemembers: Risk, Resilience, Mechanisms and Targets for Intervention*, addressed financial stress in the lives of Service members to identify knowledge gaps and opportunities for gaining new knowledge that can lead to new and improved intervention programs. Financial stress directly and indirectly affects Service members’ mental and behavioral health as well as Service member and family functioning. Understanding financial stress can aid in developing effective programs to mitigate this stress and help Service members and families in need. The Forum reviewed the complexity of defining financial stress and the interplay of financial stress in the “web” of life stressors that impact Service members and their families. The Forum brought together military and civilian leaders and scientists with expertise in risk and resilience, behavioral health, economics, models of stress behavior and suicide to address the financial challenges faced by Service members and their families. Participants were challenged to develop new perspectives by synthesizing knowledge across diverse disciplines to better understand the complex issues of financial stress and associated life stressors, and risk and resilience factors moderating this stress.

“I thoroughly enjoyed participating. You assembled a great group of experts and the discussion was fruitful.”
— John A. Fedrigo, Deputy Assistant Secretary of the Air Force (Reserve Affairs and Airman Readiness), Office of the Assistant Secretary of the Air Force for Manpower and Reserve Affairs

Development and Dissemination of Educational Resources

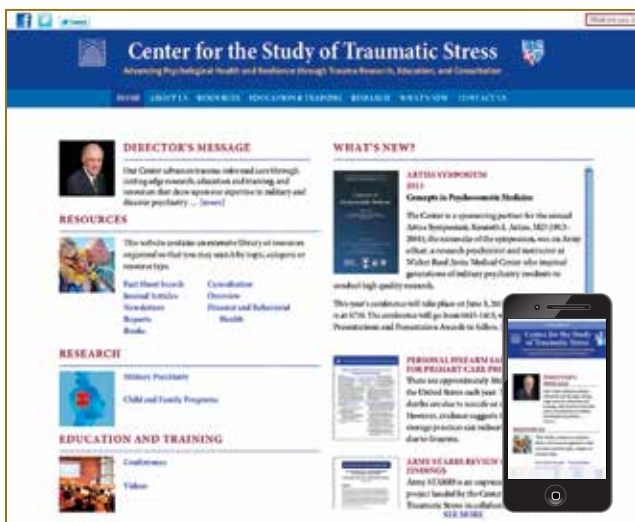
Part of the Center’s central mission is the development and dissemination of educational material to inform stakeholders including: healthcare providers, first responders, community leaders, families, teaching professionals and policy makers. For more than two decades we have created customized, easy-to-read, just-in-time educational fact sheets to assist our stakeholders to effectively manage the adverse effects of traumatic stress through enhanced preparation and response to disaster events. This year, the Center provided resources to partners throughout the Department of Defense, the National Association of State Mental Health Program Directors, the American Psychiatric Association, the U.S. Public Health Service and others in response to shootings in San Bernadino, CA, Umpqua Community College in Roseburg, OR, and news personnel in Moneta, VA. The Center provided consultation to the U.S. Department of Agriculture (USDA) to assist in the mental health response in anticipation of outbreaks of avian influenza. Drs. Flynn and Morganstein developed a customized consultation document which addressed a range of concerns raised by USDA to assist mental health providers in directly supporting the thousands of individuals whose families and livelihoods were projected to be directly and adversely impacted by this infectious disease outbreak.

Website

This year, we redesigned the Center website (www.CSTSONline.org). It remains our goal to make relevant and timely information available to a wide range of stakeholders. Disaster fact sheets, current research citations, newsletters and conference reports are easily accessible via the website. A “What’s New” section highlights recent disaster fact sheets, research initiatives, conference summaries and announcements of upcoming events. In 2015, the CSTS website had an average of 3,100 hits per month. These hits came from all 50 states, the District of Columbia, and 146 countries outside the U.S.

Social Media

During the past year, the Center increased its online presence through social media resources to assist with the distribution of content. CSTS has a growing following and uses these resources to ensure timely delivery of relevant content to our partners. We encourage people to visit and follow our postings via Twitter and Facebook to stay up-to-date on new content from the Center. In addition, “like” us on Facebook at Center for the Study of Traumatic Stress and follow us on Twitter at @CSTS_USU.



Consultation

KEY CONSULTATIVE PARTNERSHIPS

Since its inception, consultative relationships have been a cornerstone of CSTS's mission, including a wide variety of partner organizations both inside and outside government, and internationally. Such collaborations provide opportunities to contribute our resources and expertise in the service of others. Two such consultations during 2015 were with NASMHPD and SAMHSA.

National Association of State Mental Health Program Directors (NASMHPD)

NASMHPD is a membership organization representing state mental health authorities (Commissioners). The Commissioners are responsible for directing the public mental health system in their states, and address the many challenges inherent in those systems. There is significant overlap between the mission of CSTS and NASMHPD: 1) Military bases within the U.S. are under the jurisdiction of NASMHPD; 2) NASMHPD is involved in treating significant numbers of veterans and their families in response to natural and human-caused disasters and emergencies; and 3) CSTS and NASMHPD share a commitment to understanding and reducing suicide. CSTS and NASMHPD have sustained a working relationship over many years. CSTS staff meet regularly with NASMHPD leadership and are frequent participants in meetings and conference calls with their membership.

Substance Abuse and Mental Health Services Administration (SAMHSA)

SAMHSA is one of the oldest and most important federal partners for CSTS. Located within the Department of Health and Human Services (DHHS), SAMHSA is the lead federal entity responsible for supporting and improving mental health services in the nation. Our relationship with SAMHSA involves disaster mental health issues. SAMHSA administers the domestic disaster mental health program (funded by FEMA) for major disasters. SAMHSA disaster

program staff regularly consult with CSTS about the challenges of disaster services organization and delivery. CSTS provides science-based knowledge to SAMHSA on disaster and trauma response informed by current evidence. Consultation with SAMHSA is facilitated by Dr. Flynn, one of the Center's Associate Directors, who had a long and distinguished career as a USPHS Officer responsible for the disaster mental health program at SAMHSA.

GLOBAL HEALTH IMPACT

Global health, an expanding domain for all health including mental health, is a growing focus for both USU and the DoD. CSTS has had long standing involvements in global health activities in the areas of research collaboration, training and education, and consultation with colleagues around the world. Since its inception, Dr. Brian Flynn has served as an active member of the USU Global Health Working Group, and continues collaboration with the newly established USU Center on Global Health Engagement.



CSTS has a publication coming out in 2016 on the role of mental health in military global health engagement.

The Center plays an important role in the national and global response to war, disasters, terrorism and public health threats. The Center partners with national and international organizations in response to global health care needs. Some examples from 2015 follow:

International PTSD

As part of the commemorations of WWI, Dr. Ursano was invited to the residence of the Belgian Ambassador, Johan Verbeke, to participate in a panel discussion, "The Trauma Brought Back

Home - A Historical and Sociological Perspective on Post Traumatic Stress Disorder from 1914 until Today.” Other distinguished panelists were Professor Kaat Wils, Professor of Modern European Cultural History at the University of Leuven (KU Leuven), Belgium, and Sr. Captain Jeroen Van den Bossche, Head of the Centre for Crisis Psychology at the Queen Astrid Hospital in Brussels. The panel moderator was Leo Shane, Congressional Reporter at *Military Times*.

Global Suicide Prevention Month and Global Mental Health Day

Dr. Ursano attended a meeting at the White House for World Mental Health Day - Partnerships for Suicide Prevention. In commemoration of Global Suicide Prevention Month and Global Mental Health Day, the White House Offices of Science and Technology Policy and Public Engagement, in collaboration with *Joining Forces*, brought together clinicians, researchers, data scientists, tool developers, advocates and policy makers for a briefing about new opportunities for strengthening mental health treatment and suicide prevention.

PTSD and International Diplomacy

Dr. Benedek participated in a panel at the U.S. Department of State, “PTSD in the Context of Conducting U.S. Diplomacy.” The conference was attended by more than 50 State Department leaders and other distinguished guests. Other presenters included the Director of Mental Health for the Department of State and representatives from the Department’s Security Program.

The USU Center of Global Health Engagement

Dr. Flynn attended “Launch of the USU Center of Global Health Engagement (GHE) and GHE Views from the Services” held at USU. The event included presentations about global health programs in the Army, Navy, and Air Force. GHE is an important and growing priority for both DoD and USU. The Department of Psychiatry and CSTS continue to be active in this growing initiative by continuing its long-standing international activities with Dr. Flynn

serving as a member on the USU Global Health Working Group.

Sendai Framework for Disaster Risk Reduction 2015-2030

The final approved Sendai Framework for Disaster Risk Reduction 2015-2030 was issued in 2015. Following activities begun last year at the International Symposium on Disaster Medical and Public Health Management, Dr. Ursano, and Dr. Hiroaki Tomita from the International Research Institute of Disaster Science at Tohoku University in Japan, led a team of international subject-matter experts, including Drs. Flynn and Morganstein, in the development of policy recommendations. These recommendations will be disseminated globally to United Nations member countries that assist with reducing the risk of adverse psychosocial and mental health. A call to address mental health issues as part of disaster risk reduction was included for the first time in a report with such global impact. This is significant in many ways as there had been no mention of mental health in prior versions, and this document will be used globally for the next 15 years to guide disaster risk reduction.

Climate Change

Drs. Ursano and Morganstein co-authored a mental health chapter for a multi-federal agency report being written at the direction of the President of the United States, which details the current state of scientific knowledge regarding the impacts of climate change on health. This document is a follow-up to the National Climate Assessment, released in 2014, that provided our country’s leaders with a scientific overview of the current state of climate change. The report “Climate Change Impacts on Human Health in the United States: A Scientific Assessment” will be delivered to the President and Congress in early 2016.

Dr. Ursano resumed his leadership role as the Chair for the American Psychiatric Association (APA) Disaster Committee. Part of his work on the committee involves the development and dissemination of an APA position statement on the mental health impact of climate change.

Other Activities in Support of the DoD

In addition to the many scholarly activities at the Center that support the DoD, our scientists and staff participate in non-academic activities related to the DoD. The pictures below and right illustrate examples from 2015. CSTS hosted a team that ran in the Army Ten Miler, and one individual from CSTS ran in the Marine Corps Marathon. CSTS collectively donated funds and a bicycle to the U.S. Marines *Toys for Tots* program which plays an active role in the development of one of our nation's most valuable resources — our children.



Words from Two Center Scientists

Patcho N. Santiago, MD, MPH Commander, Medical Corps, U.S. Navy



Patcho Santiago, MD, MPH, Commander, Medical Corps, U.S. Navy, is a board certified psychiatrist and Associate Professor of Psychiatry at the Uniformed Services University (USU). Dr. Santiago earned his medical degree from Jefferson

Medical College under the Navy's Health Professions Scholarship Program. After completing his psychiatry residency at the Naval Medical Center San Diego,

his first duty assignment was at the Naval Hospital Camp Pendleton, CA. He subsequently completed a Disaster and Preventive Psychiatry Fellowship at USU, earning his Masters in Public Health, and ultimately joining the faculty at the university, having research interests in psychiatric epidemiology and mental health promotion. As billeted faculty at USU, Dr. Santiago served as the USU program manager for the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS) as well as the Associate Program Director for the Disaster and Preventive Psychiatry Fellowship. He is currently stationed at WRNMMC in Bethesda, MD where he serves as the Program Director of the National Capital Consortium Psychiatry Residency.

What have you learned from CSTS?

I first arrived at the Center in 2008 as a first-year fellow in the Disaster and Preventive Psychiatry Fellowship at USU. The first year of the fellowship is the Masters in Public Health (MPH) program, and the second year focuses on practicum work in federal and other institutions to see how public health principles are applied to real-world behavioral health issues and concerns. Most of my practicum time was spent at CSTS working at the forefront of the intersection of public health and behavioral health, which as a Navy psychiatrist, was more frequently the mission than not.

In 2006, I was a staff psychiatrist at Naval Hospital Camp Pendleton when I first heard of the disaster psychiatry fellowship, and the timing was fortuitous. I had recently struggled with an assignment from my commanding officer to lead a “PTSD summit” as leaders aboard the Marine Corps Base were trying to address the rising rates of posttraumatic stress disorder within their units. In addition, earlier that year, I had just returned from my first deployment, and one of my duties was as the psychiatrist on a Combat Operational Stress Team, responsible for delivering the behavioral healthcare on the smaller U.S. military installations in Kuwait. In both of these cases, it was clear to me that there was an entire field of study within mental health that was not part of the curriculum in my residency training. I quickly realized that my lack of public health knowledge limited my effectiveness in the larger role of Navy psychiatry. I had articulated to myself that my medical training made sure I knew how to “stamp out disease, one patient at a time,” but what happens when the patient is a community?

The MPH program made me just as quickly realize how much I didn’t know that I didn’t know on the subject of public health, but CSTS highlighted that the “knowing” only got someone so far; that opera-

tionalizing knowledge into a public health intervention was a much higher-order skill and, I would say, something that must be learned outside the classroom, no matter how many case studies one might examine. It was at CSTS that I saw how an idea becomes the action, as when cognitive behavioral therapy was the theoretical nidus to building a resilience intervention for Soldiers working in mortuary affairs. The intervention that CSTS created, implemented, tested and studied stood in stark contrast to my own pre-fellowship work four years earlier when I was responsible for meeting regularly with the U.S. Army morticians working at Ali Al Salem Air Base, to check on their mental health and well-being. A psychiatric technician and I would visit those morticians once a week and talk informally with them for several hours in their spaces. Had I had my experience at CSTS prior to that assignment, I would have been purposefully programmatic: I would have done a literature review, identified stakeholders, conducted a needs assessment, defined goals, developed a measure to assess progress, etc.

One of the core functions of the Center for the Study of Traumatic Stress is spreading knowledge and expertise, and in my case, because of my time at CSTS, I have the opportunity to continue that mission in graduate medical education. Today, I am the training director for the largest psychiatry residency in the Department of Defense, and I make sure that our graduates have a sensitivity, awareness and motivation to address the public mental health needs of those in our care. They understand that inasmuch as a great deal of their time is spent in clinic or on the wards taking care of patients one at a time, more likely than not, they will at some point have an assignment where their mission is “to maintain the fighting strength” of a battalion, a fleet, a division, or a community of military family members, each with their own unique challenges.

CSTS highlighted that the “knowing” only got someone so far; that operationalizing knowledge into a public health intervention was a much higher-order skill and, I would say, something that must be learned outside the classroom...

David M. Benedek, MD Colonel, Medical Corps, U.S. Army



David Benedek, MD, is Professor of Psychiatry and Neuroscience, and Associate Director/Senior Scientist at the Center. He is a past president of the Society of Uniformed Service Psychiatrists — the Military District Branch of the American Psychiatric Association, and

Immediate Past Branch Representative to the APA Assembly. He is a Distinguished Fellow of the American Psychiatric Association. Dr. Benedek served as Consultant to the U.S. Army Surgeon General for Forensic Psychiatry from 2004–2008.

Dr. Benedek received his MD from the Uniformed Services University School of Medicine in 1991. After Internship and Residency in Psychiatry at Walter Reed Army Medical Center, he was assigned as Division Psychiatrist, First Armor Division, Germany. He returned to Walter Reed to complete forensic psychiatry fellowship training in 1998 and then served as the Assistant Chief of Inpatient Psychiatry, Walter Reed Army Medical Center. In 1999 he became Chief, Forensic Psychiatry Service, and Director, National Capital Consortium Military Forensic Psychiatry Fellowship Program at Walter Reed, and he remained in those positions until joining the USU/CSTS faculty in 2004. In 2002 he received the U.S. Army Surgeon General’s “A” Proficiency Designator, and subsequently received the Order of Military Medical Merit.

Why did you join the Army? How did you become a physician, a psychiatrist and now a clinical researcher?

My parents often made family vacations out of my mother’s attendance at the Annual Meeting of the American Psychiatric Association. Seeing the sites and chasing my siblings around the various conference centers and hotels of Toronto, Chicago, New York City, etc. are among my fondest childhood memories. Perhaps that is what sparked my initial

interest in medicine and in psychiatry. By the time I attended college, my enjoyment of science and my personal experience with physicians who cared for me led to my plan to attend medical school.

While in college I continued to attend the APA annual meetings and along the way I was introduced to Dr. Robert Hales. Dr. Hales is a U.S. Military Academy Graduate, the longtime Editor-in-Chief of American Psychiatric Press, and now Professor and Joe P. Tupin Chair of Psychiatry and Behavioral Sciences at UC Davis. At the time I met him, he was a Colonel in the U.S. Army and a psychiatrist at Letterman Army Medical Center in San Francisco. He encouraged me to apply to the Uniformed Services University for medical school. When I interviewed at USU, I was so impressed with the faculty and students that I met, that it immediately became my first choice. Upon receiving my letter of acceptance, there was no looking back! At USU, I enjoyed many of my classes and almost all of my clinical rotations, but none as much as my inpatient psychiatry rotation at the old Walter Reed. Therefore, when it was time for me to list choices for residency that, too, was a no-brainer.

While a psychiatry resident, I was fortunate enough to count among my instructors Dr. Robert Ursano. Bob was not only a mentor, but a role model for balancing scholarly pursuits with compassion and clinical excellence in a military environment. He was an inspiration “way back then” just as he is today. Throughout my residency, and again after I returned to Walter Reed for fellowship training after an operational tour in Germany and Bosnia, Bob provided opportunities for me to teach students and helped me synthesize my experience into lessons, not only for medical students but for residents and my peers. While I served as Assistant Chief of the Inpatient Psychiatry service at Walter Reed, and then Fellowship Director for Forensic Psychiatry, the opportunities to teach, to write, to publish and to contribute to research projects within the USU Department of Psychiatry and the Center for the Study of Traumatic Stress that Dr. Ursano gave me challenged and at the same time groomed me for my eventual transition to a faculty position at USU.

What first connected you to CSTS?

Practically speaking, the missions of the USU Department of Psychiatry and CSTS overlap in many ways. My connection to the Department of Psychiatry at USU was first and foremost Bob Ursano, and it follows that he would also serve as my connection to the Center. Other now retired but formerly uniformed Center scientists, most significantly Harry Holloway, Ann Norwood, Chuck Engel and Tom Grieger, helped me develop the ability to synthesize and integrate my interests into those of the Center and to translate new skills and knowledge into military medical practice.

Has CSTS contributed to your career/growth/knowledge, and accomplishing your goals?

The CSTS mission of development and dissemination of knowledge related to the preparedness for and response to the stress of disasters, including war and terrorism, aligns perfectly with my personal interests. CSTS is full of inspiring and talented scientists, educators, mentors and willing collaborators. I cannot imagine a better place for me to work, to grow and to contribute.

What are the research activities of your new Center?

The Center for Forensic Behavioral Sciences, CFBS, at Walter Reed National Military Medical Center is the home of the only accredited Forensic Psychiatry and Forensic Psychology Fellowships in the Department of Defense. In addition to training future military forensic psychiatrists and psychologists, the CFBS provides expert assistance for prosecutors and defense counsel, and testimony in courts martial around the world. CFBS also provides consultation to law enforcement and investigative agencies, including the Department of Justice and Federal Bureau of Investigation, on the application of principles of psychological function to criminal behavior and other threats to military mission or national security. While the training and consultation

missions are relatively longstanding and ongoing, the development of a research program within the CFBS has just begun.

What tasks or interests does your new Center share with CSTS?

Both the CSTS and CFBS are invested in promoting the health security of the nation. Both are committed to developing and disseminating knowledge regarding response to trauma. The CFBS focus on understanding precipitants, predictors and consequences of violence may only represent a subset of the interest of CSTS, but both also share a desire to train and prepare mental health professionals for their roles in mitigating the consequences of disaster, war and terrorism.

What do you hope to research, understand and learn more about in the future?

The CFBS's charter calls for the establishment of a database regarding forensic assessments conducted throughout the DoD. Such a database may provide new opportunities to identify risk and protective factors associated with arrest, conviction or recidivism for violent criminal behavior. To the extent that CFBS staff are consulted to assist with investigations or assessments of perpetrators of crimes which pose threats to our national security or compromise military mission capability, further characterization of risks of insider threat or radicalization are areas of interest for the CFBS. Since CFBS also conducts psychological autopsies at the request of military medical examiners or criminal investigative agencies, there should be opportunity to help answer questions explored by research conducted at CSTS including Army STARRS and STARRS-LS. I hope to explore opportunities to collaborate with CSTS colleagues along these lines. Maybe this sounds like big plans for a little center, but you can guess where I have been looking to find my blueprint for growing research to meet the needs of the nation, and that model has certainly proven successful!

The CSTS mission of development and dissemination of knowledge related to the preparedness for and response to the stress of disasters, including war and terrorism, aligns perfectly with my personal interests.

CSTS Publications in 2015

(Names in bold text are CSTS personnel)

JOURNAL ARTICLES

- Bomyea, J., **Ramsawh, H.J.**, Ball, T.M., Taylor, C.T., Paulus, M.P., Lang, A.J., & Stein, M.B. (2015). Intolerance of uncertainty as a mediator of reductions in worry in a cognitive behavioral treatment program for generalized anxiety disorder. *Journal of Anxiety Disorders*, 33: 90-94.
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- Howe, E.G.** (2015). Reflections on engaging the potentially “difficult” patient. *Medicolegal and Bioethics*, 5: 7-16.
- Jia, M., Smerin, S.E., **Zhang, L.**, Xing, G., Li, X., **Benedek, D.M.**, **Ursano, R.J.**, & **Li, H.** (2015). Corticosterone mitigates the stress response in an animal model of PTSD. *Journal of Psychiatric Research*, 60: 29-39.
- Kessler, R.C., Stein, M.B., Bliese, P.D., Bromet, E.J., Chiu, W.T., Cox, K.L., Colpe, L.J., **Fullerton, C.S.**, Gilman, S.E., Gruber, M.J., Heeringa, S.G., Lewandoski-Romps, L., Millikan-Bell, A., **Naifeh, J.A.**, Nock, M.K., Petukhova, M.V., Rosellini, A.J., Sampson, N.A., Schoenbaum, M., Zaslavsky, A.M., & **Ursano, R.J.** (2015). Occupational differences in US Army suicide rates. *Psychological Medicine*, 45(15): 3293-3304.



- Kessler, R.C., Warner, C.H., Ivany, C., Petukhova, M.V., Rose, R., Bromet, E.J., Brown III, M., Cai, T., Colpe, L.J., Cox, K.L., **Fullerton, C.S.**, Gilman, S.E., Gruber, M.J., Heeringa, S.G., Lewandowski-Romps, L., Li, J., Millikan-Bell, A.M., **Naifeh, J.A.**, Nock, M.K., Rosellini, A.J., Sampson, N.A., Schoenbaum, M., Stein, M.B., Wessely, S., Zaslavsky, A.M., & **Ursano, R.J.** (2015). Predicting suicides after psychiatric hospitalization in US Army soldiers: The Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). *JAMA Psychiatry*, 72(1): 49-57.
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- Zhang, L.**, **Li, H.**, **Hu, X.**, **Benedek, D.M.**, **Fullerton, C.S.**, Forsten, R.D., **Naifeh, J.A.**, **Li, X.**, **Wu, H.**, **Benevides, K.N.**, **Le, T.**, Smerin, S., **Russell, D.W.**, & **Ursano, R.J.** (2015). Mitochondria-focused gene expression profile reveals common pathways and CPT1B dysregulation in both rodent stress model and human subjects with PTSD. *Translational Psychiatry*, 16(5): e580.

BOOK CHAPTERS

- Benedek, D.M.** & Grieger, T.A. (2015). Legal issues in psychiatric practice. In A. Tasman, J. Kay, J.A. Lieberman, M.B. First, & M.B. Riba (Eds.), *Psychiatry (4th edition)* (pp. 85-98). Hoboken, NJ: Wiley-Blackwell.
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- Zhang, L.**, **Hu, X.Z.**, **Li, H.**, & **Ursano, R.J.** (2015). Posttraumatic stress disorder biomarker — p11. In F. Durbano (Ed.), *A Fresh Look at Anxiety Disorders* (pp. 89-100). Rijeka, Croatia: InTech.

CSTS Presentations, Briefings, Interviews and Awards in 2015

PRESENTATIONS

(Names in bold text are CSTS personnel)

Gender Differences in Sustained Attention in Idiopathic Generalized Epilepsy. Mirsky, A.F., Levav, M., Greenberg, D.A., French, L.M., & **Duncan, C.C.** Poster presented at the 43rd Annual Meeting of the International Neuropsychological Society, Denver, CO, February 2015.

Psychological Stress of Mortuary Affairs Operations. **McCarroll, J.E.** Presented at the U.S. Army Mortuary Affairs Center and School, Fort Lee, VA, March 2015.

Psychotherapy Informed from a Trauma Perspective: Brain Environment Interaction. **Ursano, R.J.** Grand Rounds presented at Wright State University School of Medicine, Dayton, OH, March 2015.

Identifying and Distinguishing PTSD vs. mTBI. **Wynn, G.H.** Presented at the Ft. Leonard Wood TBI Symposium, Ft. Leonard Wood, MO, March 2015.

Self-Reporting of Post-Concussive Symptoms in Those with TBI vs PTSD. **Wynn, G.H.** Presented at the Ft. Leonard Wood TBI Symposium, Ft. Leonard Wood, MO, March 2015.

Prospective Memory in Mild Traumatic Injury. **Duncan, C.C.** Poster presented at the National Capital Area TBI Research Symposium, Bethesda, MD, March 2015.

Deficits in Auditory and Visual Attention after Traumatic Brain Injury. **Duncan, C.C.** Poster presented at the National Capital Area TBI Research Symposium, Bethesda, MD, March 2015.

Overview of the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). **Naifeh, J.A., Dempsey, C.L., Fullerton, C.S., Benedek, D.M.,** Heeringa, S., Kessler, R.C., Stein, M.B., Nock, M.K., Cox, K.L., Colpe, L.J., Schoenbaum, M., & **Ursano, R.J.** Poster presented at the 10th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2015.

Mediation of Deployment Preparedness on the Association between Augmentee Status and PTSD Symptoms in Reserve and National Guard Members. **Wang, J., Ursano, R.J., Fullerton, C.S., Ramsawh, H.J., Russell, D.W., Benfer, N.,** Cohen, G., Sampson, L., & Galea, S. Poster presented at the 10th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2015.

Mediation of Deployment Preparedness on the Association between Augmentee Status and PTSD Symptoms in Reserve and National Guard Members. **Wang, J., Ursano, R.J., Fullerton, C.S., Ramsawh, H.J., Russell, D.W., Benfer, N.,** Cohen, G., Sampson, L., & Galea, S. Poster presented at the Anxiety and Depression Conference, Miami, FL, April 2015.

PTSD, Suicide, TBI and DSM-5 'Other Trauma Disorders': Complex Clinical Decisions. **Ursano, R.J.** Pellegrino Lecture presented at Eastern Virginia Medical University, Norfolk VA, April 2015.

Stress in Mortuary Affairs Operations. **Flynn, B.W., McCarroll, J.E.** Presented at the National Conference of the Association for Death Education and Counseling, San Antonio, TX, April 2015.

Understanding Suicidal Behavior among U.S. Army Soldiers: Intent, Lethality, and Their Prediction. **Dempsey, C.L., Naifeh, J.A., Vegella, P.L.,** Nock, M.K., **Wryter, C.L., Fullerton, C.S., Benedek, D.M.,** Heeringa, S., Kessler, R.C., Stein, M.B., Colpe, L.J., Schoenbaum, M., & **Ursano, R.J.** Poster presented at USU Research Days Conference, Bethesda, MD, May 2015.

Understanding Risk and Resilience Factors for Suicide in the U.S. Army: Army STARRS. **Ursano, R.J.** Presented at Johns Hopkins University Military & Veterans Health Institute Symposium, Baltimore, MD, May 2015.

Trauma and Stressor-Related Disorders: Care of Military Service Members. **Ursano, R.J.** Presented at a Workshop at the 168th Annual American Psychiatric Association Meeting, Toronto, Canada, May 2015.

Introduction to a Master Course on the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). **Regier, D.A.** Chaired a presentation at the 168th Annual American Psychiatric Association Meeting, Toronto, Canada, May 2015.

First Responders: Mental Health and Resilience.

Ursano, R.J. Presented at the Institute of Medicine Standing Committee on Health Threats and Workforce Resilience, Washington, DC, May 2015.

DSM-5 History, Structural Changes, and Transition to ICD-10-CM, Part I. **Regier, D.A.** Presented at the Kansas Psychiatric Society Annual Meeting, Wichita, KS, July 2015.

DSM-5 Clinical Assessment and Health Policy Changes, Part II. **Regier, D.A.** Presented at the Kansas Psychiatric Society Annual Meeting, Wichita, KS, July 2015.

Army STARRS. **Ursano, R.J.** Presented at the Military Health Systems Research Symposium, Ft. Lauderdale, FL, August 2015.

Riluzole for PTSD: Efficacy of a Glutamatergic Modulator as Augmentation Treatment for Posttraumatic Stress Disorder. **Spangler, P.T., West, J.C.,**

Andrews-Shigaki, B., Possemato, K., McKenzie, S., Paxton, M., & Benedek, D.M. Poster presented at the Military Health Systems Research Symposium, Ft. Lauderdale, FL, August 2015.

An Overview of Army STARRS. **Ursano, R.J.** Presented to DoD attorneys at a course entitled “Federal/Military Health Law” at the Defense Health Headquarters, Falls Church, VA, September 2015.

Integrating Public Health and Behavioral Health in Emergencies: Why and How. **Flynn, B.W.** Keynote Address presented to the State Health and Mental Health Authorities, Trenton, NJ, October 2015.

Personal Firearm Safety: What Every Healthcare Provider Should Know. **West, J.C.** Grand Rounds presented at Walter Reed National Military Medical Center, Bethesda, MD, November 2015.

Riluzole for PTSD: Efficacy of a Glutamatergic Modulator as Augmentation Treatment for Posttraumatic Stress Disorder. **Spangler, P.T., West, J.C., Andrews-Shigaki, B., Possemato, K., McKenzie, S., Paxton, M., Tu, T., Engle, K., & Benedek, D.M.** Poster presented at the 31st Annual International Society for Traumatic Stress Studies Meeting, New Orleans, LA, November 2015.

Suicidal Behavior in the U.S. Army: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). **Naifeh, J.A., Kessler, R.C., Heeringa, S.G., Stein, M.B., Gilman, S.E., Nock, M.K., Schoenbaum, M., Colpe, L.J., Fullerton, C.S., & Ursano, R.J.** Poster presented at the 31st Annual International Society for Traumatic Stress Studies Meeting, New Orleans, LA, November 2015.

Army STARRS: Review of Recent Findings and the Analysis of Big Data to Predict Suicide Post-Hospitalization. **Ursano, R.J.** Grand Rounds presented at Walter Reed National Military Medical Center, Bethesda, MD, December 2015.

Army STARRS and STARRS-LS. **Ursano, R.J.** Presented at the Institute of Medicine Board of Advisers Meeting, Washington, DC, December 2015.

Conceptualizing Exposure to Trauma and Trauma Related Disorders and Symptoms. **Ursano, R.J.** Presented at the Institute of Medicine National Academies Workshop, Washington, DC, December 2015.



Dr. Ursano speaks at the Amygdala Conference.

BRIEFINGS AND INTERVIEWS

- As part of the commemorations of WWI, Dr. Robert Ursano was invited to the residence of the Belgian Ambassador, Johan Verbeke, to participate in a panel discussion on “The Trauma Brought Back Home — A Historical and Sociological Perspective on Posttraumatic Stress Disorder from 1914 Until Today.” Other panelists were Professor Kaat Wils, Professor of Modern European Cultural History at the University of Leuven (KU Leuven), Belgium, and Sr. Captain Jeroen Van den Bossche, Head of the Centre for Crisis Psychology at the Queen Astrid Hospital in Brussels. The panel moderator was Leo Shane, Congressional Reporter at *Military Times*. There was also a performance by Belgian award winning artist Jessa Wildemeersch from a new play, *Days Without Dates*, about the impact of war and post-war trauma from 1914 until today.
- Dr. Robert Ursano and other Army STARRS investigators conducted an in-person briefing of Army STARRS findings to Senior Army leadership at the Pentagon on March 30, 2015. The audience included the Secretary of the Army, the Army Chief of Staff, the Vice Chief of Staff, the Deputy Under Secretary of the Army, Office of the Surgeon General staff, and other Senior Army officials.
- Dr. David Benedek and Dr. Robert Ursano attended the Steering Committee meeting of the VA-DoD National PTSD Brain Bank at the Jamaica Plains VA Medical Center in Boston, MA.
- A magazine article was published in *Soldiers* (the official U.S. Army Magazine) titled, “The Mental State of Military Children” that included an interview with Dr. Stephen Cozza. The article included a link to a special issue of the journal *The Future of Children* about military children and families that began with an introductory article authored by Dr. Cozza.
- Dr. Robert Ursano presented an update and briefing of recent Army STARRS findings at the Military Operational Medicine Research Program (MOMRP) Suicide Prevention Interim Progress Report (IPR) in Fort Detrick, MD.
- Dr. Curt West met with Mr. Len Litton, Director of Personnel Risk Reduction, Undersecretary of Defense for Personnel and Readiness, at the Pentagon to discuss ways forward with the Personal Firearm Safety Education Project; including the possibility of obtaining a no-cost extension to continue using funds for the project, and looking for different outlets to share the training materials.
- Dr. Robert Ursano attended the Army STARRS Scientific Advisory Board (SAB) meeting held at UCSD in La Jolla, CA, and presented recent Army STARRS findings to the SAB. Paul Hurwitz and Susan Moss also attended the meeting.
- Persons from the following media contacted and interviewed Dr. Robert Ursano and ran stories about the Army STARRS article published online in *JAMA Psychiatry* on July 8: AP, Reuters, CBS News, Mother Earth News (San Francisco), Military Times, KUOW (Seattle Public Radio), Health Day, Healthline and Medical Daily.
- Dr. David Benedek, Dr. Dale Russell, and Alex Liu, along with Julie Broad from the Army’s Resiliency Program, delivered a one-and-a-half day “Train the Trainer” curriculum on psychological first aid, team-based resiliency and decision making under stress to Peer Support Program Managers from multiple agencies within the Department of Homeland Security (DHS) as part of an ongoing collaborative agreement.
- Dr. Robert Ursano and the USU Army STARRS team presented their *JAMA* article “Suicide Attempts in the U.S. Army during the Wars in Afghanistan and Iraq, 2004 to 2009” to the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) Monthly Journal Club.
- Dr. Robert Ursano consulted with the Texas Senate Committee on Veteran Affairs and Military Installations on suicide prevention for Service members and veterans.
- Dr. David Benedek (on behalf of Dr. Robert Ursano) along with Dr. Murray Stein (UCSD), Dr. Ron Kessler (Harvard), Dr. Steven Heeringa (University of Michigan), and Dr. Kenneth Cox (U.S. Army Public Health Command) presented

the latest Army STARRS findings and recommendations at the final Army STARRS Interim Progress Report (IPR) to Senior Army Leadership at the Pentagon. The audience included the Secretary of the Army, Army Chief of Staff, Army Vice Chief of Staff, Army Surgeon General, Deputy Under Secretary, G-1, Director of Army National Guard, Deputy Chief of Army Reserve, Chief of Chaplains and others.

- Dr. Robert Ursano attended a meeting at the White House for World Mental Health Day — Partnerships for Suicide Prevention. In commemoration of Global Suicide Prevention Month and Global Mental Health Day, the White House Offices of Science and Technology Policy and Public Engagement, in collaboration with *Joining Forces*, brought together clinicians, researchers, data scientists, tool developers, advocates and policy makers for a briefing about identifying new opportunities for strengthening mental health treatment and suicide prevention.
- Dr. David Benedek participated as a panelist at the U.S. Department of State on “PTSD in the Context of Conducting U.S. Diplomacy.” Other presenters included the Director of Mental Health for the Department of State and representatives from the Department’s Security Program.
- Dr. Brian Flynn was invited to participate in a process to review and make update recommendations on the 2014 National Health Security Preparedness Index (NHSPI). Dr. Flynn evaluated existing health care delivery items and made suggestions for additional items in future

versions. He was asked as a subject matter expert following his involvement with updating the NHSPI prior to the 2014 version. The NHSPI is a federally sponsored initiative to provide information on relative state preparedness to respond to established federal preparedness priority scenarios. It is hoped that the reports stemming from this process will provide incentive for states to prepare and to help target federal initiatives.

- CSTS was listed in the *Observer*, an online newspaper from La Grande, Oregon, as an organization for resources to assist in the aftermath of the Umpqua Community College shootings.
- Dr. David Benedek was interviewed by *Channel 9 News* in Oklahoma City, OK for a segment on the VA PTSD Brain Bank. The interview was broadcast on December 9th 2015 at 10 p.m. and posted online at www.news9.com.

AWARDS

- COL David Benedek, MD was elected to the Academy of Medicine of Washington, DC in recognition of his contributions to medicine in research, education, care and policy.
- LTC Gary Wynn, MD received the Best Module Director award for his efforts in leading the Neuroscience Module for pre-clerkship students in the USU School of Medicine.
- Edmund Howe, MD, JD, Professor of Psychiatry and Director of Programs in Ethics, School of Medicine, USU, and Senior Scientist at CSTS, was nominated to represent USU on the Health Affairs Medical Ethics Integrated Product Team (MEIPT).



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CSTS Funded Grants in 2015

| GRANT | FUNDING INSTITUTION |
|--|------------------------|
| Resilience Building for Homeland Security: A Specialized Training and Collaborative Consultation | DHS |
| Development of an Education Curriculum for Personally Owned Firearms Safety Enhancements Initiative | DSP0 |
| Brain Indices of Risk for Posttraumatic Stress Disorder after Mild Traumatic Brain Injury | UCSD |
| Riluzole Augmentation Treatment for Complicated Posttraumatic Stress Disorder | USAMRMC |
| PTSD/TBI Clinical Consortium Coordinating Center and Clinical Sites Award (INTRuST) | UCSD |
| Reliability and Initial Validation of the INTRuST Structured Assessment for Evaluation of TBI (SAFE-TBI) | UCSD |
| Traumatic Stress and Biomarkers in a Military Population | USAMRMC |
| Education of the Safety and Pharmacokinetics of the FAAH Inhibitor URB597 | USAMRMC |
| Brain Bank Project: Consortium for the Translational Neuroscience and Treatment of Stress and PTSD (VA Biorepository Brain Bank: PTSD Brain Bank Protocol) | VA |
| Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS) | NIMH |
| Study to Assess Risk and Resilience in Servicemembers - Longitudinal Study (STARRS-LS) | DHP |
| Behavioral-based Predictors of Workplace Violence in the Army STARRS | Harvard |
| Family Violence and Trauma Project | IMCOM |
| The Impact of Service Member Death on Military Families: A National Study of Bereavement | CDMRP |
| GREAT-SF (Grief-Focused Resilience Activities and Training for Surviving Families): An Online Selective Intervention for Bereaved Military Families | CDMRP |
| Bereavement due to Terrorism: Families of those who died on Air India Flight 182 or on September 11th | Voices of September 11 |
| Center for the Study of Traumatic Stress (CSTS) Program | DHP |

CSTS Partnerships

The Center for the Study of Traumatic Stress would like to acknowledge and thank our partners and collaborators. The Center has worked with organizations in the public and private sector through research partnerships, project collaborations, consultations and trainings.

Alfred P. Sloan Foundation
American Academy of Child and Adolescent Psychiatry
American Gold Star Mothers
American Psychiatric Association
American Psychological Association
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The Carter Center
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Inter-university Consortium for Political and Social Research
Italian Embassy, Washington, DC
Joint Base Lewis-McChord
Joint Mortuary Affairs Center and School, Fort Lee, Virginia
Las Vegas Psychiatric Association
Massachusetts General Hospital
Medical Research Command at Ft. Detrick
Military Child Education Coalition
Miller School of Medicine of the University of Miami
National Association for PTSD
National Association of State Mental Health Program Directors
National Center for PTSD of the Department of Veterans Affairs
National Child Traumatic Stress Network
National Committee for Employer Support of the Guard and Reserve
National Fallen Firefighters Foundation
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National Institute of Mental Health
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National Military Family Association
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U.S. Department of State
U.S. Department of Veterans Affairs
U.S. Postal Service
VA Connecticut Healthcare System
Veterans Administration Medical Center of DC
Virginia Commonwealth University
Voices of September 11th
Walter Reed Army Institute of Research
Walter Reed National Military Medical Center
Wright State University
Yale University
Yellow Ribbon Reintegration Program
Zero to Three



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