

Center for the Study of Traumatic Stress

Three decades and growing strong

CSTS



2017 Annual Report

2017

1987

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From the Director

Dear Center Colleagues and Friends,

In this our thirtieth year, it is valuable to recall the structure and role of the Center for the Study of Traumatic Stress (CSTS). CSTS is a core part of the



Department of Psychiatry in the F. Edward Hébert School of Medicine (America's Medical School) of the Uniformed Services University (USU). The Center actively supports the Strategic Framework and mission of USU, as well as the Military Health System, and the broader mission of the

Department of Defense (DoD).

Through leadership, education and training, research and scholarship, service and outreach, global health engagement, and enhancing preparedness, CSTS strives to mitigate the impact of trauma from exposure to war, disasters, terrorism, community violence and public health threats. In accomplishing our mission, we sustain national readiness, enhance national security, and serve an essential role for the Department of Defense and the nation.

The Center's focus is on health issues of special interest to the military including posttraumatic stress disorder (PTSD), mild traumatic brain injury (mTBI), suicide and suicide-related behavior. CSTS helps inform our nation's policies and responses to the impacts of exposure to trauma from disasters, both human-made and natural. We are comprised of a multi-disciplinary and collaborative team of scientists, educators, clinicians and leaders who provide the research, teaching, outreach, consultation and leadership to advance our mission and our goals.

In support of the USU and DoD mission, CSTS collaborates, educates, investigates, communicates and innovates. We move science from the gene, to the cell, to the organism, to the person, to the community, and from knowledge to action. Our work

ranges from the micro level in our laboratories to the macro level in our communities, our nation and all across the globe.

CSTS is unique in many ways. Importantly, we combine and integrate military and disaster psychiatry. As described in the pages of this report, the Center uses innovative approaches to neuroscience, and conducts ground-breaking research on timely topics such as suicidal behavior in the Army, and the impact of death and loss on family members of Soldiers.

Another way we innovate is through our involvement in "big data" and precision medicine. This involves data capture, curation, management, processing and analysis of large, complex, and diverse datasets from different sources. Our big data analytic activities involve advanced analytic techniques including machine learning and predictive analytics. We use data mining and state-of-the-art statistical methods to analyze previously untapped data sources independently and jointly with other data to gain new insights resulting in better and faster decisions, and improving health.

One example is part of our STARRS-LS research in which we combine Army and DoD administrative data from a broad spectrum of military records that span a period of 12 years. The many types of records include demographic, medical, behavioral health, de-

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ployment, training, fitness, neurocognitive, casualty, death, and legal. These records involve millions of active duty Soldiers and billions of variables which we combine and analyze to produce actionable findings for the Army and DoD.

Another example is our harnessing genomics, supercomputers, and bioinformatics through our collaboration with the Collaborative Health Initiative Research Project (CHIRP). CHIRP is a precision medicine-based initiative based at USU in collaboration with the National Institutes of Health (NIH) and the DoD. We are working with the CHIRP team to perform whole genome sequencing of DNA from tens of thousands of Soldiers who participated in the STARRS research project. This has the potential to transform patient care by producing actionable personalized medicine to generate novel personalized therapeutic options that impact both civilian and military lives.

The Center continues to provide rapid consultation, education and knowledge support to personnel who respond to the health needs of Service members and their families, and for crises around the globe. In 2017, these events included the mass shooting at Fort Lauderdale-Hollywood International Airport, the Las Vegas concert mass shooting, the concert bombing in Manchester, U.K., earthquakes in Mexico, and a series of devastating hurricanes in Texas, Florida, Puerto Rico and the U.S. Virgin Islands.

CSTS reaches beyond our nation's borders to conduct international outreach and consultation including our work with the USU Center for Global Health Engagement (CGHE) and the USU U.S. Forces Korea (USFK) task force. In 2017, the Center sent a scientist to Iraq to support the DoD on a Defense Institute for Medical Operations (DIMO) mission, and sent a scientist to Canada as a member of the NATO Human Factors and Medicine

Panel on Leveraging Technology in Military Mental Health. CSTS worked with the Syrian American Medical Society, and hosted a delegation of Iraqi mental health practitioners, educators and service providers as part of an International Visitor Leadership Program (IVLP) sponsored by the U.S. State Department. The Center also hosted scientists from Singapore, Japan, and Australia. The Center sent a scientist to Spain to present research findings, and I traveled to Latvia for a NATO-sponsored military suicide prevention meeting and Australia to provide consultation to the Australian military.

This Annual Report includes a summary of our work in both military and civilian populations to enhance psychological health, speed the recovery from, and help prevent the negative consequences of trauma on individuals, families, communities and nations. Our work helps to improve trauma-related care by preparing treatment providers to address the impact of trauma and its far-reaching implications, thereby building a more trauma-informed environment across the continuum of our military and civilian health care systems.

CSTS was established in 1987, making 2017 the 30th year we have been successfully and proudly fulfilling our mission. Also in 2017, it was my pleasure to return to the Center on a full-time basis.

On behalf of everyone at CSTS, I would like to extend our appreciation to all our colleagues and friends who have collaborated with us and supported our work throughout this past year, and throughout the three decades we have been supporting the Military Health System, the DoD and our nation.

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

CSTS



Uniformed
Services
University

Serving our nation for 30 years

Our Mission

As an integral part of USU, CSTS activities support the USU Strategic Framework and the mission of the DoD. CSTS is committed to advancing trauma-informed care. We are dedicated to furthering the nation's understanding of the impact of trauma on individuals, families and communities. The Center is part of our nation's federal medical school (America's Medical School) at USU and the Center's mission is aligned with the needs of the DoD and the nation, and is well-positioned to rapidly respond to DoD mission-relevant activities.

The Center's work includes a broad range of trauma exposures: combat, terrorism, natural and human-made disasters, public health threats, and

humanitarian operations. CSTS has been involved in nearly every major disaster our nation has experienced in the past 30 years. The Center helps to ensure that behavioral health is addressed in the face of public health threats, disaster planning and disaster recovery.

Mitigating the effects of disaster and trauma in military and civilian populations is part of the effort to foster community and national resilience. The Center informs and educates community, regional, state, national and global stakeholders in government, industry, healthcare, public health, and academia. CSTS contributes to

advancing trauma-informed care by providing leadership in research, education, training, consultation, global health, and service.



Research

CSTS research supports the Military Health System (MHS) in its efforts to provide a medically-ready force to Combatant Commands in both peacetime and wartime, and to deliver integrated, affordable, and high quality health services. Specifically, research into the causes of suicide in Service members, psychological responses to trauma and disasters, and clinical investigations of the symptomatology and treatment of PTSD will improve both readiness and quality of care. For example, Army STARRS and STARRS-LS studies, designed to elucidate potential targets for acute intervention in Soldiers at risk for suicide, have the potential to deliver meaningful interventions in the next five years. The Daily Diary Study, with its ecological momentary assessment approach, will contribute to better understanding of the time course of symptoms in PTSD patients and may identify symptoms for targeted treatment that have the greatest impact on patient's daily lives. Finally, clinical trials in medication and psychotherapy for PTSD offer the potential for improved treatments which will contribute to a more ready force and better quality care for MHS beneficiaries.

RESEARCH ON SERVICE MEMBERS

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

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

The original Army STARRS project (2009-2015) and the continuation project STARRS-LS (2014-2019) were both designed and conducted under the scientific direction and management oversight of CSTS through a collaborative effort involving USU, the University of California San Diego (UCSD), Harvard University and the University of Michigan.

Army STARRS included several separate but integrated studies designed to comprehensively examine the mental health and resilience of Soldiers including Regular Army, Army National Guard



and activated Army Reserve. It involved large and representative samples of Soldiers, making it the largest research study of mental health risk and resilience ever conducted among military personnel. One of the studies was an historical cohort study of the more than 1.6 million Soldiers on active duty from 2004 to 2009. Army STARRS also included cross-sectional studies, a longitudinal study, and case-control studies that involved collecting data directly from more than 100,000 active duty Soldiers throughout the U.S. and overseas. The research included questionnaires, neurocognitive tests, blood collection, state-of-the-art genetic and other biomarker assays, and linking these data to extensive, existing Army/DoD administrative records. These efforts produced large and rich datasets to serve the goals of Army STARRS, but can also be used to serve broader goals involving many other outcomes besides mental health.

The Center is furthering the Army STARRS research through a five-year DoD-funded project called STARRS-LS. The major research activities of STARRS-LS are: 1) continue using the STARRS platforms, systems and data to conduct further analyses, derive further findings, and extract additional value from Army STARRS; and 2) extend, expand and enhance the STARRS data by obtaining additional Army/DoD administrative data for 2010 to 2015, and designing and conducting a longitudinal follow-up study of a subset of more than 50,000 Army STARRS participants.

Throughout 2017, the research team continued to obtain and process additional existing Army/DoD administrative records. Once this database is complete, it will allow analyses of an historical cohort of millions of active duty Soldiers over a twelve-year period from 2004 to 2015. The research team also continued the first wave of follow-up data collection

for the STARRS-LS cohort and planned the second wave of data collection. This follow-up study is extending the time-frame of Army STARRS to collect and analyze further outcome information throughout the Soldiers' Army careers, and to follow those Soldiers who transition out of the Army through their adjustment to civilian life.

STARRS continues to be a large, long-term, multi-faceted and innovative research project. A major innovation in 2017 was the initiation of a partnership with the Collaborative Health Initiative Research Project (CHIRP) to perform whole genome sequencing on DNA from tens of thousands of STARRS participants. CHIRP is a precision medicine-based initiative based at USU in collaboration with the National Institutes of Health (NIH) and the DoD.

In 2017, the research team conducted many briefings of the research progress and findings. These included three in-person briefings to the STARRS Government Steering Committee, one meeting with the STARRS Scientific Advisory Board, and an in-person briefing at the Pentagon to senior



Army leadership including the newly-appointed Secretary of the Army, Army Surgeon General, Deputy Under Secretary of the Army, G-1 and many other senior Army leaders.

Throughout 2017, the research team continued to be highly-productive at analyzing data and writing papers at a rate of generating one paper per week on average. At the end of 2017, the research team had published 63 STARRS papers in peer-reviewed scientific journals, had one paper accepted for publication

A Message from the new Chair of the USU Department of Psychiatry

David M. Benedek, MD

For thirty years, CSTS has served as the primary research arm of the Uniformed Services University's Department of Psychiatry. Until June of last year, Dr. Robert Ursano served as both the Department Chair and the Director of CSTS. Under his leadership, the Center and the Department of Psychiatry grew in breadth of activities and national reputation.

As the new Chair, I feel extremely fortunate to continue to be able to count on Dr. Ursano as a mentor and role model. While he has stepped down as Department Chair to focus his energy on CSTS, I am certain that the connection between the Department and Center will remain as strong as ever.



In the years ahead, CSTS will continue to lead the Department of Psychiatry's efforts to generate and disseminate knowledge related to understanding and mitigating the effects of traumatic stress at the neuro-molecular, the individual, and the population levels.

As the Center continues to grow, I look forward not only to continued cutting edge research, high quality scientific conferences, and consultation to community and national leaders, but also to expanded opportunities for our medical students to participate in Center activities and our Center Scientists to enhance medical student education across the university.

but not yet published (in press), had submitted eight papers that were awaiting a decision for publication by journals, and had many additional papers in various stages of progress. This extraordinary, groundbreaking and complex research project has continued to produce benefits for the Army, the DoD, and the nation as a whole.

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

U.S. Army mortuary affairs (MA) Soldiers work with the remains of the dead and are exposed to one of the highest stressors of war, combat death. CSTS has conducted research on the stresses of MA work since 2005. MA detachments that deployed to the Middle East completed pre- and post-deployment surveys assessing factors such as: PTSD and post-traumatic stress symptoms, depression, somatization, anger, hostility, and health risk behaviors (e.g., increases in alcohol tobacco and drug use). In addition, this study examines Soldier resilience, psychological well-being, instrumental and emotional support, identification with the dead and mutilation fear (responses to blood, injury and mutilation). To date, we have collected more than 2,900 surveys. While the majority of Soldiers who have participated in the study have completed one or two surveys, some Soldiers have completed as many as 8 surveys, providing the unique opportunity to examine stress and resilience in Soldiers over time. New in 2017, we began collecting saliva samples along with survey data. The genetic DNA and RNA material in saliva will be analyzed for potential biological markers of PTSD, stress and resilience. Importantly, we will compare the objective measures of DNA and RNA biomarkers to the subjective survey measures of stress and resilience. This study has implications for early intervention, training, education, leadership and health surveillance.

Troop Education for Army Morale (TEAM)

TEAM is an early intervention for mortuary affairs (MA) Soldiers to improve post-deployment readjustment. The intervention is designed to help Soldiers cope with daily challenges after returning

from deployment, including re-integration into family and garrison life. TEAM, based on the evidence-informed principles of Psychological First Aid, involves a randomized group of MA Soldiers and a comparison group (usual care). A total of 125 MA Soldiers in 10 cohorts participated in the study. While the intervention did not reduce rates of PTSD, fewer posttraumatic symptoms were associated with number of workshops attended. In addition, skills taught during TEAM were reported to be helpful and had no negative effects. Additional analyses of the TEAM data are being planned.

Reserve Component of the U.S. Armed Forces

The Citizen Soldiers of the Reserve Component (RC) of the U.S. Armed Forces experience unique stressors, substantially different from those experienced by the Active Component (AC), when the nation is at war and when the RC is called upon for emergency service, such as disaster relief. The Center is strongly committed to supporting the RC through a broad range of activities that are oriented to the RC.

CSTS is conducting a nation-wide longitudinal research study on the physical and mental health of National Guard and Reserve Service members in collaboration with Dr. Sandro Galea at Boston University. This research is unique in that it uses a representative national cohort and specifically addresses the experiences of the Guard and Reserve, as distinct from the experiences of the AC. 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. Four waves of data collection have been conducted to date, and the team developed a protocol to add a fifth wave of data collection to extend the data on trajectories of health in this important population. CSTS is actively analyzing the rich dataset.

The Army STARRS New Soldier Study included survey data collection from approximately 23,000 RC Soldiers, and blood sample collection from a subset, during their first week of basic training. This data collection at the very beginning of Soldiers' military service provides an opportunity to follow them through the course of their military careers and beyond in or-

der to identify risk factors for health outcomes, as well as factors that promote resilience. The blood samples are being used for the examination of biomarkers. Army STARRS research also included RC members in the All Army Study, which included a sample of the entire Army, and in the in-theater study which included a sample of Soldiers serving in Afghanistan. Both of these studies provided data that can be used in long-term research while also providing a snapshot of current health and mental health. These studies create the opportunity for assessment of concentrations of risk in order to develop future interventions to promote and sustain health among RC members.

The STARRS-LS research involves the continuation of data collection from Army STARRS participants and allows further in-depth analysis of risk and resilience factors among members of the RC. The Center conducted biomarker research studies in National Guard units before and after deployment for combat tours in Afghanistan. RC members and their families are included in research designed to address the needs of children and families affected by trauma that is conducted in the CSTS Child and Family Program.

In addition to research that focuses on the RC, CSTS provides consultation to RC units. Through this consultation, the Center provides the RC leadership with information products specifically geared to their needs. CSTS has also enhanced civilian understanding of the special nature of the RC's mission, structure, and unique stressors by devoting a chapter to the RC in the recently published CSTS volume, *U.S. Army Culture: An Introduction for Behavioral Health Researchers*.

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, with particular focus on our nation's military families. Military children and families demonstrate unique strengths and



vulnerabilities as they are affected by combat-related illness and injury, bereavement, child maltreatment and family violence. CFP's pioneering research addressing these complex issues has been translated into scholarly publications, as well as actionable and educational materials for military and government stakeholders, clinicians, and community leaders. CFP also provides consultation to DoD leadership, national media outlets and engages in academic and professional projects that more broadly support children within the U.S. and world-wide.

Family Bereavement

The National Military Family Bereavement Study (NMFBS)

NMFBS is the first scientific study to examine the impact of a U.S. military service death on surviving family members. The goal of the study is to build upon the robust civilian research literature on bereavement and its impact on survivors — how psychological, physical and/or behavioral outcomes of the grieving process are influenced by family members' pre-existing psychological and physical health, social and grief support, and military-specific factors in the population of Service members who have died since 9/11. The longitudinal portion of the study, which consisted of annual interviews over a three-year period, was completed in 2017. Approx-

imately 850 adults and 120 children completed the longitudinal portion of the study, and 981 participants provided saliva samples for analysis of genetic biomarkers associated with bereavement-related outcomes.

Findings from the study have informed ongoing discussion to define appropriate diagnostic criteria for a condition of impairing grief. As a result of this groundbreaking work, CSTS has partnered with colleagues at Columbia University, New York University, University of Pittsburgh, and the University of California San Diego in developing a proposal for alternate and more clinically-relevant criteria of a persistent grief disorder to be included in future editions of the DSM.

In 2017, CSTS Scientists published two scientific manuscripts and gave several presentations regarding findings from NMFBS at national conferences. In addition, the *San Antonio Express-News* published an article based on a paper published in *Military Medicine*.

Stepping Forward in Grief (SFG)

NMFBS found that a sizeable portion of surviving military family members suffer from high levels of grief and distress, putting them at risk for harmful changes in mental and physical health. Based on these results, CFP formed a partnership with the Center for Complicated Grief at Columbia University to adapt Complicated Grief Therapy (CGT) into a digital intervention (GriefSteps) that is designed to assist with grief integration, and decrease risk for long-term problems. CGT helps to resolve grief complications and promote wellness and has been shown to be helpful in civilian populations. The goal of the study is to learn how to best assist military family survivors with their grief and reduce the long-term problems that can occur after a loss.

The SFG study is a randomized controlled trial (RCT). Participants will be assigned to one of two groups: either an intervention group to receive

GriefSteps (informed by CGT) or a control group to receive WellnessSteps that is focused on building resilience through more general wellness strategies. The study will compare overall improvement in grief severity and adaptation to loss among participants in the GriefSteps intervention group, as compared to those in the WellnessSteps control group. GriefSteps and WellnessSteps will be available virtually, either in a mobile app or on the Internet. Each participant will also be assigned a “guide” who is a member of the study team who can help answer questions about the study and support use of the assigned program.

Virtual apps may be an extremely helpful resource for current and future bereaved military family members as they would be easily accessible and provide comfort to military Service members by knowing that this resource exists. During 2017, the training phase of the study was launched, providing opportunities for all research team members to become facile with procedures and responsibilities in preparation for the RCT. The training phase also allowed the study team to determine which study procedures or program materials needed to be updated prior to the next phase of the study. The RCT phase will launch in 2018.

Study of Long-Term Outcomes of Terrorism-Related Grief

CFP 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 positive and negative bereavement outcomes that follow a terrorism-related death, including grief, traumatic symptoms, resilience characteristics and post-traumatic 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. Findings from this study were presented to the research community at professional meetings, and manuscripts are currently in review for scientific publication.

Child Maltreatment in U.S. Military Communities and Families

Several ongoing CFP projects focus on identifying risk factors for child maltreatment to inform the development of prevention and intervention strategies that promote military family health and resilience. Our initial work focused exclusively on child neglect, the child maltreatment type most commonly reported in the U.S and most frequently associated with child fatality. The aim was to identify factors that contribute to elevated risk of child neglect by investigating characteristics of substantiated child neglect cases in U.S. Army families. Data were collected from records of 400 substantiated child neglect cases from Army installations across the country. In 2015, we published the first report examining characteristics of substantiated child neglect in U.S. Army families in *Military Medicine*, including demographic correlates of child victims and offenders by neglect type and subtype. In 2017, a second manuscript about military-specific risk factors for child neglect, including deployment-related risk and its association with different types of child neglect, was published in *Child Maltreatment*. A third manuscript focused on family risk factors associated with distinct types of neglect is forthcoming.

A second CFP project, supported by funding awarded from the DoD in 2016, builds on this line of research to advance understanding of risk and protective factors for child maltreatment in military families from all Service branches. Data from a sample of military families with substantiated cases of child maltreatment and a comparison sample of military families without maltreatment histories will

be used to identify child, family, and military-specific risk and protective factors for various type of child abuse (i.e., sexual abuse, physical abuse, emotional abuse) and neglect. Efforts to date have focused on examining differences in the prevalence of child abuse and neglect types in relation to child, family, and military factors. Future work will include a population-based investigation of all active duty Service members with one or more children between the years of 2004 and 2014 to examine longitudinal trends in child maltreatment in military families. Results from this project will inform our understanding of changes in risk and protective factors across the military life course.

Combat Injured Families

CSTS Scientists have conducted a set of three studies over the past several years to examine the short- and long-term impacts of severe combat injury on military families, aiming to better understand and address the needs of combat injured military families.

The first study involved interviews with military families assessing the unique and complex challenges related to combat injury and associated family functioning. Forty families were interviewed 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), and data analysis continues.

The second study investigates the impact of combat injury on military families over time. Participating families at Walter Reed National Military Medical Center (WRNMMC) and San Antonio Military Medical Center provided valuable information about their experiences with combat injury over time, which will be used to inform intervention strategies for spouses and children of combat injured Service members. Data collection was completed in 2015 and data analyses and manuscript preparation continue.

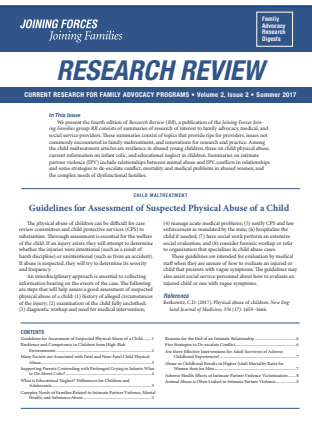
The final study, Families OverComing Under Stress-Combat Injury (FOCUS-CI) consists of a pilot for a novel intervention for children and families of combat injured Service members in

order to establish its feasibility and efficacy. Using a randomized controlled trial approach, the intervention is family-centered, strength-based, and evidence-informed to assist families coping with severe combat injuries by providing instrumental support and teaching emotion regulation, problem solving, communication, and goal-setting skills. Data was collected from families in Washington, DC, Chapel Hill, NC and San Antonio, TX and data analyses comparing the effectiveness of the FOCUS-CI intervention on family functioning to the existing standard of care are ongoing. In addition, data collected from this project have provided novel insight into issues of intimacy within marital relationships between combat injured Service members and their spouses, suggesting that this is negatively impacted by spouse post-traumatic stress related to the Service member's combat injury. A manuscript describing these findings is currently in progress. Along with findings regarding FOCUS-CI intervention effectiveness and those from the other two projects, these data will help us better understand the experience of combat injury, its impact on Service members and their families, and to inform programmatic intervention that can better address the needs of military families.

Family Violence

In 2017, the Center continued to support the Army Family Advocacy Program (FAP) through a variety of functions for the Family Violence and Trauma Project (FVTP). CSTS Scientists conducted analyses of maltreatment data from the Army Central Registry (ACR) for all Army installations that report family maltreatment incidents to the ACR. The Center distributed more than 500 copies of the analyses to the Army Installation Management Command (IMCOM), reporting installations, others in the DoD and Army, and civilian researchers.

CSTS published and distributed two newsletters



on family violence research: *Joining Forces Joining Families* (JFJF) and the *Research Review* (RR). JFJF consists of an interview with a subject matter expert, the background of that person's research, and other features related to family violence research. RR includes brief summaries of scientific research applica-

ble to the Army FAP in such a way to make it useful to the Army.

The Center supported the Army's Family Advocacy Research Subcommittee by reviewing research protocols and coordinating research results on family violence by a variety of civilian and military research organiza-

tions. Center Scientists produced two published articles related to stress and family violence.

CSTS responded to questions from the Army IMCOM and the Office of the Army Assistant Chief of Staff for Installation Management (OACSIM) and wrote summaries and analyses of family violence issues related to recent research involving scientific and medical aspects of child abuse and intimate partner violence. Center Scientists wrote the report for the annual Army Fatality Review Board. This report analyzes family maltreatment fatalities in order to assist the Army in developing prevention and intervention programs for families at high risk family violence.

CSTS conducted daily reviews of published research related to family violence from PubMed and the National Center for Biomedical Information, collected articles for the CSTS database, and distributed articles of high interest to the Army.

RESEARCH IN NEUROSCIENCE AND NEUROBIOLOGY

The Center is actively seeking effective interventions for trauma and stressor-related disorders as well as for other sequelae of trauma. CSTS laboratory and clinical research efforts use cutting edge tech-

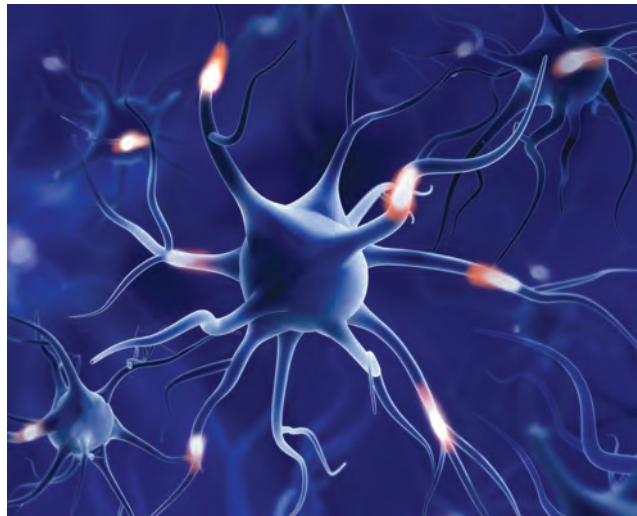
niques in pursuit of new and novel mechanisms to treat the suffering associated with traumatic experiences. These pursuits seek to address military-related health issues including PTSD, mTBI, and suicide.

Laboratory Research in Neuroscience and Neurobiology

Genetics and Biomarkers

CSTS laboratory research expanded biomarker research in 2017 by moving our biomarker identification study towards the understanding of the underlying mechanism. CSTS Scientists use a combined approach of in vivo and in vitro methods to study the association of *FKBP5* SNPs with PTSD in a homogenous high-risk military population (n=3,890) and to determine the mechanism by which *FKBP5* is involved in PTSD. Findings indicate that traumatic stress responses are mediated by *FKBP5*, a glucocorticoid-regulated immunophilin. Four single-nucleotide polymorphisms (rs3800373, rs9296158, rs1360780, rs9470080) covering the *FKBP5* gene are associated with lifetime PTSD in Soldiers. Up-regulated *FKBP5* and significantly increased cortisol levels were observed in the Soldiers with PTSD.

Using an in vitro simulated traumatic situation, CSTS Scientists found that exposure to a stress hormone results in a redistribution of *FKBP5* to mitochondria and concomitant increases of mitochondrial membrane potential and ROS production in the human cell line. The *FKBP5* inhibitor FK506 pharmacologically attenuates the effects of the stress hormone, indicating that *FKBP5* regulation of mitochondrial function is necessary. Further data shows that more *FKBP5* co-localizes with the mitochondria in leukocytes of PTSD subjects compared to controls without PTSD. Additional findings indicate significant down-regulation of mitochondrial complexes I, II and III in PTSD subjects compared to non-PTSD controls, supporting concerns for mitochondrial dysfunction in the disorder. CSTS current research provides evidence showing that *FKBP5* is associated with PTSD and that dysfunction of mitochondria might play a role in the pathology of PTSD and be a promising drug target for PTSD.



Drug Development for the Treatment of PTSD

The Center, in collaboration with the University of California, Irvine (UCI), has recently established a new effort to examine novel compounds for the treatment of PTSD using a non-mammalian rapid throughput model. The zebrafish, or *Danio rerio*, has been established as a new species at USU and will be used as a rapid throughput model for early screening. This rapid throughput model will be used to identify candidate compounds for testing in additional pre-clinical models of stress with the goal of creating therapeutic agents for the treatment of PTSD. The zebrafish lab is currently creating standardized profiles of known compounds and coordinating with collaborators regarding future directions for compound screening. The first novel compounds to be tested include fatty acid amide hydro-lase (FAAH) inhibitors, with activity in the endocannabinoid system. Successful compounds will then be evaluated in an established rodent model at UCI.

Clinical Research in Neuroscience and Neurobiology

Riluzole Augmentation Treatment for Complicated Combat-Related PTSD

CSTS completed enrollment of 70 participants in a multi-site clinical trial at WRNMMC and the Syracuse Veterans Affairs Medical Center. This study tested efficacy of riluzole for treatment of combat-related PTSD in veterans whose symptoms

persist in spite of current evidence-based treatments. Current recommended medications for combat-related PTSD include selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs). While these drugs have some beneficial effect through increasing serotonin concentrations in the brain, they 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 is a modulator of glutamate, a highly prevalent neurotransmitter in the brain. Preclinical research suggests riluzole has a neuroprotective effect and may help reverse damage to the amygdala, anterior cingulate cortex and hippocampus, where excitotoxicity due to an excess of glutamate is believed to contribute to PTSD symptoms. This randomized, controlled, double-blind trial compared the effect of riluzole against placebo over eight weeks and measured symptoms of PTSD, depression, anxiety, and quality of life. This study also seeks to identify magnetic resonance spectroscopy concentrations of neurotransmitters and related chemicals in specific brain regions associated with PTSD before and after treatment as a potential biomarker of illness and treatment response. We hypothesize that treatment with riluzole outperforms placebo in greater PTSD symptom improvement, improvement in depression and anxiety symptoms, and reduced disability compared to placebo. We also hypothesize that spectroscopy changes in the amygdala, anterior cingulate cortex and hippocampus will correlate with improvement due to riluzole treatment. We are currently analyzing data collected in the trial with anticipated publication of results in 2018.

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

CSTS has partnered with the University of California, San Diego to investigate the efficacy of the medication losartan for treatment of PTSD. Losartan is an angiotensin receptor blocker currently in common use as a blood pressure medication. Preclinical investigations suggest losartan enhances fear extinc-

tion in animal models through as yet uncharacterized modifications to the angiotensin system in the central nervous system. Retrospective data in a large cross-sectional study revealed lower rates of PTSD in trauma patients treated with angiotensin receptor blockers. CSTS is currently recruiting participants at WRNMMC for this multi-site study. Other study sites include Massachusetts General Hospital, McLean Hospital, New York University, and George Washington University. This randomized, controlled, double-blinded trial will compare the effect of losartan against placebo on PTSD symptoms over ten weeks of treatment. We will evaluate PTSD and depression symptoms, as well as side effects of medication every two weeks. This study will also seek to identify a potential biomarker, examining the contribution of variations in the angiotensin converting enzyme (*ACE*) gene to treatment response. We hypothesize that treatment with losartan will result in greater reduction of PTSD symptoms than placebo, and that patients with a particular variant of the *ACE* gene will respond more favorably to treatment with losartan. This clinical trial is currently recruiting participants through 2018.

Pilot Trial of Nightmare Deconstruction and Reprocessing (NDR) for Treatment of PTSD-related Nightmares

CSTS is leading a multisite pilot trial of a novel exposure-based psychotherapy for PTSD-related nightmares: Nightmare Deconstruction and Reprocessing (NDR). CSTS is partnering with Naval Hospital, Camp Pendleton, to conduct this pilot study. NDR has been adapted for treating trauma-related nightmares from Clara Hill's 3-stage cognitive-experiential dream model. Study objectives are to evaluate the feasibility and tolerability of NDR for treating PTSD nightmares and insomnia in military Service members and veterans; test changes in symptoms, genetic and inflammatory markers, and physiologic data; and determine the research utility of a wristband device used to collect physiologic data. Specifically, we will evaluate nightmare and insomnia severity, suicidality, PTSD and depression symptoms, and genetic and inflammatory biomarkers, as well as heart rate, electrodermal activity, and

motion via the wristband device. This study will also examine variation in PTSD, depression, and anxiety symptoms and daytime functioning throughout the day using ecological momentary assessment. This pilot trial will begin recruiting participants in 2018.

The VA National PTSD Brain Bank

The VA National PTSD Brain Bank opened in 2015 with a vision of improving the lives of veterans with PTSD through greater understanding of the neuro-anatomy and molecular biology of the disorder. The National PTSD Brain Bank is the first brain tissue repository dedicated to researching the impact of trauma and stress on brain tissue and function. Research conducted by, or facilitated through Brain Bank scientists, will identify biomarkers of susceptibility and resilience to trauma and help target new treatments at the cellular level. Through these efforts, the Brain Bank will pave the way for new approaches to both diagnostic assessment and treatment of PTSD.

The Brain Bank enrolls potential donors throughout the nation and these donors receive comprehensive longitudinal assessment via clinical interview and periodic surveillance from the time of enrollment until the time of their deaths, when their brain tissue is donated to the Brain Bank. The Brain Bank has also developed a protocol for comprehensive post-mortem diagnostic assessment of donors (through medical record review and third party interview) in instances where ante-mortem assessment of PTSD was not possible.

The Brain Bank has collected tissue from more than 150 donors to date. Nearly half of the donors were diagnosed with PTSD, while tissue from other persons without PTSD will be used as controls in ongoing and planned studies. More than 50 living persons have enrolled in the longitudinal follow-up registry as future donors.

CSTS Scientists direct the Brain Bank's Assessment Core and serve on the Brain Bank's Scientific Advisory Board. The Brain Bank is now accepting applications from outside investigators in addition to conducting intramural research and has distributed tissue for several extramural projects.

The VA National PTSD Brain Bank, through

CSTS, is coordinating with the Collaborative Health Initiative Research Program (CHIRP) to perform whole



genome sequencing and methylation studies, in collaboration with Yale, for the Brain Bank's first core study. CHIRP is a precision medicine-based collaborative effort between NIH and the DoD. CHIRP is based at the USU on the campus shared with WRNMMC.

This year, the Brain Bank added new collection and assessment sites in Miami and North Carolina. CSTS welcomed a new scientist to its VA National PTSD Brain Bank team who is working to enhance recruitment and longitudinal assessment of consenting donors in the National Capital Area.

The Brain Indices Study

The goal of the Brain Indices Study is to develop reliable and valid predictors of negative outcomes to inform targeted treatments that can be implemented early, and thereby improve the lives of our wounded warriors and their families. The study, funded by the DoD Congressionally Directed Medical Research Programs (CDMRP) and the Center for Neuroscience and Regenerative Medicine (CNRM), was conducted in the Brain Assessment Research Laboratories at WRNMMC and Fort Belvoir Community Hospital. This longitudinal study was designed to identify measures of brain structure and function that predict PTSD and other deleterious outcomes in Service members with mTBI.

The assessment battery of the Brain Indices study, which comprised neuroimaging (structural MRI/DTI), electrophysiological, neurocognitive, and neurological assessments, was administered soon after injury, and 3 and 6 months later. The outcome measures included interviews for PTSD, depression, and headache, as well as post-concussive symptoms

and overall mental and physical health status.

Since the completion of data collection, CSTS efforts have been directed to quality assurance, data processing and analysis, and preparation of manuscripts.

The Chronic Effects of Neurotrauma Consortium Study 1: Observational Study on Late Neurologic Effects of OEF/OIF/OND Combat

This is a longitudinal, multisite consortium investigation, funded by the DoD CDMRP, aimed at evaluation of the chronic sequelae and comorbidities associated with TBI. An extensive battery of physiological, psychological, neurocognitive, occupational, and social functioning measures is administered to Service members and veterans who sustained TBI in OEF/OIF/OND. Participants undergo periodic in-person and telephone reassessments to monitor their overall status. CSTS directs the electrophysiological (event-related brain potentials and EEG) component of this study, aimed at assessing sensory and cognitive function.

This longitudinal cohort will permit an evaluation of the post-TBI prevalence, natural history, and response to interventions of chronic symptoms and associated comorbidities. Cross-sectional data will allow for analysis of the effect of time post-injury on chronic symptoms, associated comorbidities, and evidence of neurodegeneration or recovery. Data collection is ongoing.

Application of Somatosensory Evoked Potentials to the Diagnosis of Traumatic Brain Injury (TBI): A Translational Approach

CSTS directs this FDA-funded study that aims to: (a) determine the utility of specific EEG biomarkers as diagnostic tools in Service members with blast-induced TBI based on translational work in animal (mouse) models; (b) use components of the somatosensory evoked potential (SEP) to assess neurosensory effects of brain injury; and (c) evaluate correlations between the magnitude of EEG changes and the severity of brain injury. This work is aimed at exploring the use of SEPs as an EEG biomarker for a field-deployable diagnostic for TBI. Data collection

at WRNMMC is expected to commence in early 2018.

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

This study uses a cutting-edge methodology, ecological momentary assessment, to collect data from U.S. military Service members throughout the day on PTSD and post-traumatic stress symptoms (PTSS), depression, somatization, sleep, pain, substance use, psychosocial interactions and other areas of health and functioning. This “daily diary” methodology allows for detailed assessment of variability of symptom patterns as they occur throughout the Service member’s daily routine, providing important insights into the interaction between symptoms and environment, psychosocial relatedness and brain processes. Participants use electronic tablets to complete assessments four times per day over 15 continuous days. Data is recorded and stored using a sophisticated application developed in collaboration with the National Center for Telehealth and Technology (T2) specifically for use in this study. This technology allows for more accurate data collection and real time evaluation. At baseline and at one and three month follow-ups, we collect a wide range of behavioral and psychological assessments including: disorders (e.g., PTSD, depression), distress (e.g., PTSS, sleep difficulties), health risk behaviors (alcohol, drug and tobacco use), and health care utilization. In addition, participants have the option to donate blood and/or saliva samples for genetic analysis to identify potential biomarkers and gene-environment interactions that may distinguish and/or mediate traumatic stress responses and resilience to stress-related disorders. To date, 115 Service members have participated in the study. Data analyses in 2017 included examining daily variation in PTSS across days of the week and the relationship between hours of sleep and PTSS variation. We also are examining PTSD, depression, and daily caffeine and alcohol consumption. In March, we presented our findings of daily variation in PTSS at the American Psychosomatic Society’s 75th Annual Scientific Meeting in Seville, Spain. In April,

we presented a methodological poster exploring the error covariance structure in mixed model analyses at the Anxiety and Depression Association of America's annual conference in San Francisco, CA. This innovative study has implications for interventions and program development through awareness of post-traumatic symptom variability. This methodology informs future use of technology in psychiatric assessment, treatment, and research.

RESEARCH ON DISASTERS AND TERRORISM

Florida Department of Health Response to Multiple Hurricanes

To address the significant impact of disaster exposure, such as the recent devastation from Hurricanes Maria and Irma in Puerto Rico and the U.S. Virgin Islands, CSTS continues to examine the risk and protective factors for post-traumatic disorders, distress, and health risk behaviors in civilian and military populations following traumatic events. Center Scientists are examining the psychological and behavioral responses to the multiple hurricanes that occurred during the 2004 and 2005 hurricane seasons among Florida Department of Health workers, who were both first responders as well as personally affected by the storms. This included injury to self and family, and damage to homes, which in some cases required relocation. Our current focus is on the influence of individual collective efficacy following the four hurricanes and one tropical storm in 2004 on residents' self-reports of daily mental health 21 months later, as measured by the CDC Health-Related Quality of Life Healthy Days assessment. Findings indicated that decreased collective efficacy was associated with increased risk of PTSD and frequent mental distress (reported as 14 or more mentally unhealthy days within the last 30 days). This research suggests the importance of community factors to disaster recovery in residents, and provides actionable recommendations for community leaders and clinicians to address longer-term mental health issues in individuals and communities following natural disaster exposure.

Washington, DC Area Sniper Study

Due to the increase in terrorist attacks worldwide, the Center remains focused on the psychological and behavioral effects of terrorist events. We collected data from Washington, DC area residents at the time of the 2002 DC area sniper attacks. Our research in this area adds to the limited empirical findings, and makes a unique contribution to the literature on terrorist events. Currently we are examining the relationship of perceived safety and TV viewing during the attacks to post-traumatic stress and depressive symptoms. In our study of 1,238 Washington, DC area residents, we found that high amounts of event-related television viewing (at least 2 hours per day) and decreased perceived safety were related to post-traumatic stress and depressive symptoms. Specifically, higher levels of TV viewing were associated with post-traumatic stress symptoms in individuals who reported both low and high levels of perceived safety, whereas high TV viewing was related to depressive symptoms particularly in those who reported low safety. We continue to explore the inter-relationships of these characteristics and others in order to better prepare for terrorist events and inform interventions with individuals and communities.

Washington Navy Yard Shooting Study

In an ongoing collaboration with the University of California, Los Angeles (UCLA) and the National Institute of Justice, the Center is serving as part of a multi-site study to better understand risk and protective factors associated with response efforts following community mass violence. For the study, the Center is collaborating with leadership from the Washington Navy Yard because of the 2013 workplace mass shooting incident. This collaboration furthers an existing partnership between the Center and the Naval Sea Systems Command (NAVSEA) to provide ongoing assessment and interventions in support of NAVSEA personnel who have experienced social and occupational difficulties after the Washington Navy Yard mass shooting event. The Center and UCLA began the next phase of community engagement to further understand the impact of the 2013 event.

Education and Training

A core component of the Center's mission is education and training. 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 provides education to interagency and private sectors leaders and other personnel. 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. In addition, the Center sponsors conferences, seminars and symposia that have educational and training objectives. The Center also educates and expands knowledge through public health efforts and interventions during and after disasters.

An important and long-standing vehicle for the Center's education is through the dissemination of educational materials to inform stakeholders including: healthcare providers, community leaders, families, first responders, teaching professionals and policy makers. For more than two decades, the Center has created customized, easy-to-read, just-in-time educational fact sheets to assist Center stakeholders to effectively manage the adverse effects of traumatic stress through enhanced preparation and response to disaster events.

In 2017, the Center provided educational resources to interagency partners, including DoD and other federal partners as well as state and local agencies, professional associations, and others.



The Center also responded to many disaster events, including the mass shooting incident at Fort Lauderdale-Hollywood International Airport, the concert bombing in Manchester, U.K., the Las Vegas concert shootings, earthquakes in Mexico, and hurricanes in Texas, Florida, and Puerto Rico.

DISASTER RESPONSE AND PUBLIC EDUCATION

Since its inception in 1987, the Center has been providing disaster preparedness and response consultation and education in many situations utilizing numerous formats. Center personnel have provided on-the-ground education and consultation to extreme national and global disasters, as well as immediate and long-term video and telephonic support to support response and recovery efforts to a range of disaster events.

The Center Director serves as Chair of the Disaster Committee for the American Psychiatric Association, the largest professional organizing body of psychiatrists in the world. Current and former Center personnel have been called upon to provide expert guidance on disaster preparation and response activities as a result of the experience and subject matter expertise obtained while working at the Center.

The following are examples of Center disaster response and education activities in 2017:

- CSTS partnered with the National Center for Disaster Medicine and Public Health (NCD-MPH) on a "Crisis Leadership" symposium. A Senior Center Scientist was a key presenter and panel discussant on psychological and behavioral aspects of disasters, with an emphasis on issues relevant to those leading disaster management efforts. The symposium was attended by an international audience of disaster planners, leaders, and educators.
- In preparation for and response to the catastrophic hurricanes in Texas, Florida and Puerto Rico, CSTS developed and disseminated dedicat-

ed website education pages that provided actionable guidance to assist responders and emergency workers, families, healthcare personnel and community leaders in providing support to individuals and communities which reduce distress and enhance well-being. Center Scientists also provided extensive ongoing consultation to national organizations, such as the National Association of State Mental Health Program Directors, the American Psychiatric Association, the Assistant Secretary for Preparedness and Response, and the Substance Abuse and Mental Health Services Administration to support their disaster preparedness and response efforts.

- In an effort to support Spanish speaking communities which were heavily impacted by the hurricanes in Texas, Florida and Puerto Rico, as well as the earthquakes in Mexico, the Center had professional translations made of many of the commonly accessed fact sheets, which provide actionable guidance regarding early interventions following mass trauma, managing the psychological effects of exposure to human remains, supporting the well-being of children following disasters, and resources on grief, stress management and communication designed to aid leaders in supporting their communities. These fact sheets were disseminated to numerous national health and community organizations which advocate for Spanish speaking citizens and communities.
- The Center continues its collaboration with the U.S. Air Force 480th Intelligence, Surveillance and Reconnaissance Wing at Langley Air Force Base to identify and mitigate stress in the intelligence operators managing information from remotely piloted drone aircraft. The collaboration has expanded to include the 711th Human Performance Wing, collectively establishing the Human Performance and Health Data Analytics Work Group (HPH-DAWG)
- The Center partnered with the Drug Enforcement Administration (DEA) as the lead presentation for a three-day reintegration event for DEA agents (and spouses) returning from high-threat overseas posts as well as OEF and

OIF conflicts in the Middle East. Center Scientists provided training that included information on understanding stress, identifying adverse signs of stress, the benefits of seeking help and how to overcome barriers, such as stigma. Agents and their family members spent time with Center Scientists following the formal presentation to share and discuss personal experiences and challenges.

- CSTS provided two educational seminars to seventeen tri-service healthcare professionals enrolled in the Master in Public Health program at USU. The content addressed mental health issues relevant in domestic, as well as international, disaster response. The information and resources provided within the seminar serve as the core mental and behavioral health education within the curriculum, serving to ensure these student leaders are equipped to address the broad range of national and global health security issues relevant to disaster events.
- For the fourth consecutive year, a Center Scientist presented a one-day seminar to the senior psychiatry residents at the University of Maryland and Sheppard Pratt combined Psychiatry Residency Program, providing the only education in disaster psychiatry for these junior psychiatrists. As a result of that relationship, a Center Scientist was invited to give a presentation on climate-related disasters and mental health at Grand Rounds for the Residency Program.
- A Center Associate Director gave the opening keynote address and conducted a workshop on Integrating Emergency Management and Disaster Behavioral Health at SUNY New Paltz, Institute of Disaster Mental Health, for their 14th Annual Conference on Psychosocial Response to Pandemic Disasters, Infectious Diseases, and Bioterrorism.

NEUROSCIENCE MODULE FOR PRE-CLERKSHIP USU MEDICAL STUDENTS

The neuroscience module develops pre-clerkship medical students' understanding of the principles of neuroscience through integrated clinically relevant content in head and neck anatomy, neurology, psy-

chiatry, neurobiology, and behavior. This foundation allows students to recognize, describe, and diagnose common neuroscience related medical conditions with an eye towards effective management of a wide variety of neurologic and psychiatric conditions.

Co-directed by the Department of Psychiatry, including CSTS Scientists, and the USU Department of Anatomy, Physiology, and Genetics, the module covers topics related to the head, neck, and nervous system integrated across the disciplines of gross anatomy, neuroanatomy, radiology, physiology, histology, embryology, biochemistry/metabolism, pharmacology, microbiology, pathology, medical psychology and psychiatry. Instructional methods include large group lecture, small group case discussions, laboratory sessions, self-study units, and supervised clinical experiences that foster the development of clinical skills and professional attitudes. Effective, safe and patient-centered clinical skills, including the performance of neurologic and mental status examinations, are also developed through simulated patient experiences.

Topics related to military medicine, medical history, human context and health service support are integrated throughout the module to further foster the student's professional identity as an officer and physician committed to fulfill a promise of duty and expertise through personal values, knowledge, skills and a desire to master the basic and clinical science needed to help one's patient and one's unit.

EDUCATION AND TRAINING IN COMBAT AND OPERATIONAL STRESS CONTROL: OPERATION BUSHMASTER

Combat and Operational Stress Control (COSC) is a core component in military medical education. CSTS Scientists are an integral part of COSC education at USU as teaching faculty during the annual medical field training exercise, Operation Bushmaster. During Operation Bushmaster, students learn in a four-day, large-scale medical simulation in which they must practice medicine in a realistic combat environment. Evaluation and treatment of combat and operational stress reactions are among many skills USU students must demonstrate. COSC scenarios

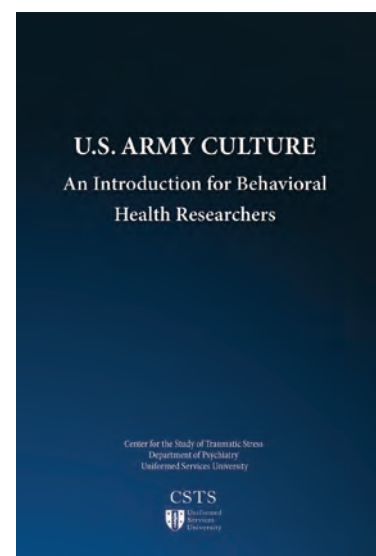
are seamlessly integrated into the simulation and CSTS Scientists use these scenarios to assess student performance in basic combat and operational stress control skills. In 2017, CSTS Scientists published an article in *Academic Psychiatry* entitled *Real Stress Reactions in Simulation: Vignettes from Extended Mass-Casualty Simulations* based on experiences in the field exercise.

FAMILY SAFETY EDUCATION

The Center developed the Personal Firearm Safety Education Project in partnership with the Yellow Ribbon Reintegration Program (YRRP) and the Defense Suicide Prevention Office (DSPO). The project delivered multimodal educational materials on personal firearm safety to support DoD suicide prevention efforts by educating Service members on the importance of personal firearm safety within their homes. As a final element of this project, the Center gathered a collection of subject matter experts and stakeholders from the DoD and VA for a day-long forum on health and national security entitled, "Family Safety and Military Service members: Understanding Risk and Intervention Strategies." The forum examined themes of epidemiology of firearm death and injury among active duty families, risk communication and decision-making around risk, and considered strategies to minimize the risk of personal firearms to families.

TEXTBOOK ON U.S. ARMY CULTURE

The Center published a book titled *U.S. Army Culture: An Introduction for Behavioral Health Researchers*. The book was edited by two Center Scientists and the Center Director (Drs. Meyer, McCarroll, and



Ursano) and includes contributions from 19 national experts on Army Culture. At 89 pages, the book covers the basics of cultural competence and conducting research in the Army, followed by a review of Army culture and sub-cultures, structure, training, and transitions. It then highlights special aspects of the National Guard and Reserves followed by an overview of how technology and war can impact Army cultural identity. The book is highly referenced and has been incorporated as a resource for applicants applying for MRMC/CDMRP grants.

INNOVATIVE BOOK PUBLICATION

Dr. Flynn, CSTS Associate Director for Health Systems, co-edited and contributed chapters to a book entitled, *Integrating Emergency Management and Disaster Behavioral Health: One Picture through Two Lenses*. His co-editor and fellow chapter contributor, Mr. Ron Sherman, was a former Federal Emergency Management Agency (FEMA) senior executive. The book is unique in both its content and format, and the only book ever published on this topic.

The approach follows the Center's long standing efforts to integrate our interests, expertise, and priorities with those of stakeholders in different professions, occupations, and responsibilities. The goal is always to share what we know and learn from others in service of enhanced outcomes for individuals, organizations, and systems. This book, solicited by Elsevier, combines the many years of work in disaster preparedness and response shared by the co-editors and their consistent experience that when integration of these two professions and professional cultures occur, outcomes are consistently enhanced. In preparation for this book, both emergency managers and disaster behavioral health experts were surveyed to determine the topical areas most critical for such a book. The topics addressed reflect those priorities.

The format of the book is also unique. In order to model the desired integration, each chapter/topic has two authors: one an experienced emergency manager and one an experienced disaster behavioral health expert. Both comment on a shared topic



Amygdala Conference presentation.

from their unique perspective and experience. Each chapter then concludes with practical advice on how to achieve and sustain integration on the topic. The book has enjoyed wide recognition and acceptance in both professions and appears to have stimulated integration efforts across the nation.

UPCOMING TEXTBOOK ON PTSD

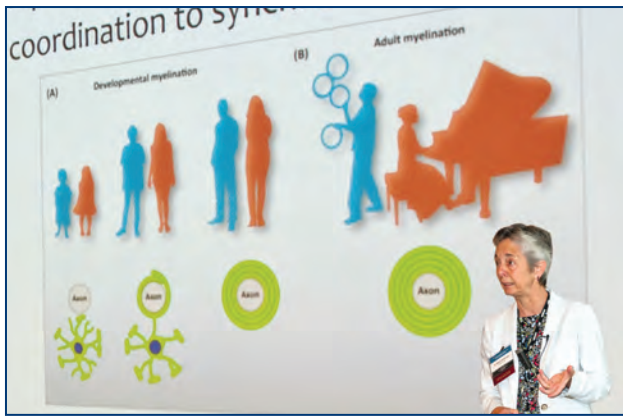
Center Scientist LTC Wynn and Center Associate Director COL Benedek are currently completing work as editors and authors on the American Psychiatric Association's textbook on PTSD. Working with the American Psychiatric Press, Drs. Wynn and Benedek have engaged experts in the field of PTSD to put together a full professional textbook on the topic. The textbook will cover a wide spectrum of topics from the basics of diagnosis and neurobiology to working with special populations and cultural considerations. The book is slated for publication in the fall of 2018.

EDUCATIONAL CONFERENCES

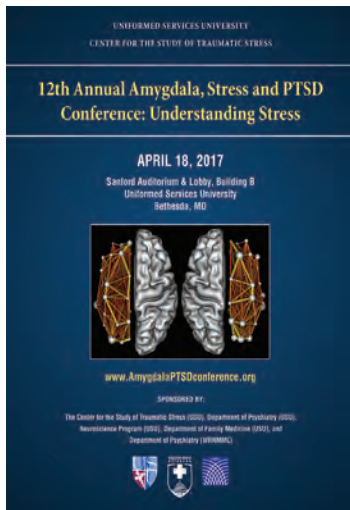
The Center sponsored two educational conferences in 2017: the 12th Annual Amygdala, Stress and PTSD Conference, and the Forum on Health and National Security.

Amygdala, Stress and PTSD Conference: Understanding Stress

Since 2004, CSTS has sponsored the Amygdala, Stress and PTSD Conference in collaboration with the USU Department of Psychiatry, USU Neurosci-



Amygdala Conference presentation.



ly, aims to bring together scientists, clinicians and policy makers for a day of working towards solving the biological basis of stress, fear and PTSD. The nationally renowned speakers came from leading institutions across the U.S. including Yale University, Duke University, University of Missouri, and Boston University. The speakers presented and discussed topics such as the cellular and genetic studies of PTSD, the role of glial cells in PTSD, and trauma as a population health concern. In addition to the conference, the Center partnered with the *Journal of Neuroscience Research* to put together a special issue based on the conference.

Forum on Health and National Security

As part of continued efforts to better understand the importance of family safety and how best to

train our health care providers who strive to decrease PTSD and suicide risk, CSTS hosted a Forum on Health and National Security in January 2017, gathering experts from across the country to meet with scholars from the military health system to consider the issues. This forum examined firearm deaths in military members, how military members assess safety risks and make safety decisions in their homes, and considered strategies to reduce this risk. Notable themes identified in the forum include the need for better data on personal firearms and risk among military members, strategies to better identify at-risk populations, and public health interventions that may reduce risk.

TRAINING TO SUPPORT RESEARCH

CSTS activities include not only educating and training others, but also educating and training our own staff, including research support staff. Our research support staff include Program Managers, Program Coordinators and Research Assistants (RAs).

RAs play an important role in supporting research at CSTS, and are provided with many opportunities to learn. CSTS Scientists provide the RAs with training and oversight for many research-related tasks.

At CSTS, RAs learn by doing. They work closely with CSTS Scientists as members of the teams that design and conduct research. The RAs contribute to Center research in many ways including conducting



CSTS Research Assistants making a presentation about science communication.

literature searches, data collection, data entry, data editing, writing meeting minutes, and writing summary reports of meetings.

CSTS Scientists train the RAs in not only how to design and implement research, but they also educate RAs in how to write-up and present the findings of research. Skills the RAs develop at CSTS include how to create slides and posters for research presentations, how to communicate research findings to a professional audience of scientists, and how to present complicated findings in an easily understandable way to the general public. In addition, RAs are offered many professional development opportunities including attending and presenting posters at professional conferences, and assisting in preparing manuscripts for publication in peer-reviewed scientific journals.

The training and experience RAs receive at CSTS prepare them for the future. Many RAs move on to further their education by pursuing advanced degrees. Others move on to careers in research and related fields. CSTS RAs have furthered their education at institutions including Yale, Notre Dame, Johns Hopkins, Duke, Columbia, London School of Hygiene and Tropical Medicine, and USU. Opportunities our Research Assistants have pursued following their training and experience at CSTS have included:

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

DISSEMINATION AND IMPLEMENTATION OF HEALTH AND RESEARCH KNOWLEDGE

Fact Sheets

Fact sheets are a long-standing tool of CSTS to provide disaster mental health education for enhancing preparedness, response and recovery efforts. The Center develops, updates and rapidly disseminates fact sheets, in real time, following major disasters and traumatic events such as community

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ASSESSMENT INSTRUMENTS FOR FIRST RESPONDERS AND PUBLIC HEALTH EMERGENCY WORKERS

First responders and public health emergency workers can experience a variety of stressors and potentially traumatic events, which increase the risk for distress and mental health disorders. Effective recognition and management of these stressors can enhance the health, well-being, and occupational functioning of these personnel. Below are instruments that assess a broad range of work-life stressors.

First responders and public health emergency workers can experience a variety of stressors and potentially traumatic events, which increase the risk for distress and mental health disorders.

Work/Life Balance
Work/Life Balance is a 1-item self-report measure that assesses the impact of balancing home and work responsibilities during, and in the aftermath of, a stressful or traumatic experience (Herberman-Mash, Fullerton, Kowalski-Trakofler, Reissman, Scharf, Shultz, & Ursano, 2013). Respondents are asked "How difficult was it to balance your concerns for your family while performing your job during the [stressful or traumatic experience]" and provided with six answer choices: *Not at all*, *A little bit*, *Moderately*, *Very*, *Extremely*, and *Not applicable*.

Career Satisfaction
Professional Quality of Life (PROQOL-V)
The Professional Quality of Life is a 30-item self-report measure that assesses the positive and negative effects of working with people who have experienced extremely stressful events (Stamm, 2010). Response choice range from 1 = *Never* to 5 = *Very Often*.

Family/Friends
Conflict Tactics Scale
The Conflict Tactics Scale is a self-report measure that assesses both the extent to which partners in a dating, cohabitating, or marital relationship engage in psychological and physical attacks on each other, and also their use of reasoning or negotiation to deal with conflicts (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Originally a 19-item scale, and later broadened to a 78-item version, the scale has been modified to a 23-item measure at the Center for the Study of Traumatic Stress (McCarnoll, Ursano, Liu, Thayer, Newby, Norwood, Fullerton, 2010). Respondents are instructed to indicate the extent to which certain statements apply to them during a specified time period.

Friendship Scale (FS)
The Friendship Scale (FS) is a 6-item self-report measure that assesses perceived social isolation during the past four weeks (Hawthorne, 2006). Respondents are instructed to place an "X" on the line if they agree with the statement during the specified time period.

Fatigue Checklist
The Fatigue Checklist is a 10-item self-report measure developed to examine fatigue and performance (Pearson & Bryars, 1956). Respondents indicate the degree to which they feel *Better than*, *Same as*, or *Worse than*, at the present moment. Scores on the Fatigue Checklist are correlated with performance and have been shown to change with performance demands and decreased sleep.

Identification & Sensitivity
Identification with the Dead
The Identification with the Dead is a 5-item self-report measure that assesses a respondent's identification with deceased victims (Ursano, Fullerton, Vance, & Kao, 1999). The measure contains three subscales: Identification-Self, Identification-Family, and Identification-Friend. Respondents score each item on a 5-point scale ranging from 0 = *Not at all* to 4 = *Extremely* with an additional option for 5 = *Not Applicable*.

Sensitivity to Blood, Injury, and Mutilation (SBIM)
The Sensitivity to Blood, Injury, and Mutilation is a 5-item self-report measure that assesses fear associated with gruesome or dangerous tasks or events where bodily injury or mutilation are possible (Naléfé, Ursano, Benfer, et al., 2015). Derived from the 30-item Mutilation Questionnaire

violence, terrorism and bioterrorism, and public health threats. CSTS fact sheets provide readers with resources tailored to the unique aspects of each disaster event. Fact sheets are easy to understand, topic-focused tools that CSTS develops using expert knowledge to communicate the basics surrounding an often difficult and/or crisis related issue. CSTS fact sheets address the needs of different partners and stakeholders, including health care providers, community leaders, family members, safety and emergency workers, and policy makers. CSTS maintains a growing repository of fact sheets on disaster preparedness and response, risk and crisis communication, and health risk education, which are readily available to all visitors of the CSTS website.

Recently developed fact sheets include "Leaders Guide to Risk Communication in the Face of Emerging Threats," "Assessment Instruments for First Responders and Public Health Emergency Workers," and "Assessment Instruments for Special Operators;" the latter two can be particularly useful to better understand survey instruments that can be useful in studying the effects of a broad range of operational

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创伤应激研究中心 (CSTS) 是美国国防医科大学精神病学系的一部分

心理急救： 您如何为灾难受害者提供身心健康支持

人们经常对灾难产生强烈和不愉快的情感和身体反应。这些反应可能包括困惑、恐惧、绝望、无助、失眠、身体疼痛、焦虑、悲痛、震惊、攻击性、多疑、自责、羞耻感、对宗教信仰产生怀疑和对自我或他人失去信心。多种有帮助的干预方法可协助个人和社区复原。

灾难发生后，政府和救济组织在减轻受害者和更大范围社区成员的悲痛方面起到重要的作用。确保资源的公平分配（例如食品、衣物和住宅）和及时获得健康护理可增强信任感和改善结果。在提供干预和救济服务时坚持道德原则可增强社区的福祉。

在与受灾难事件影响的个人交往时，国际灾难应对专家和研究人员一致认为，心理急救（PFA）有助于减轻痛苦的情感，并降低灾难最初反应造成的进一步伤害。您的行动和与他人的交往有助于向处于困境的人提供心理急救。方法是创造和保持 (1) 安全感、(2) 平和、(3) 与他人紧密联系、(4) 自我效能和 (5) 充满希望的环境。请考虑以下建议：

应当：

- 帮助人们满足对食品和住宅的基本需求，并获取紧急医疗护理。提供有关如何获取这些物品和服务的重复、简单、准确的信息（安全感）。
- 倾听愿意分享自己的经历和情感的人说话；请记住感觉不存在错误或正确之分（平和）。
- 即使人们表现得很固执，也要表现友善和富有同情心（平和）。
- 提供有关灾难或创伤和救济工作的准确信息。这将帮助人们理解现状（平和）。

灾难发生后，政府和救济组织在减轻受害者和更大范围社区成员的悲痛方面起到重要的作用。

- 帮助人们与朋友或亲人取得联系（紧密联系）。
- 尽可能让家人在一起；让孩子与父母或其他近亲在一起（紧密联系）。
- 提出切实可行的建议，鼓励人们自助和满足自身的需求（自我效能）。
- 指导人们前往可提供政府和非政府服务的地点（充满希望）。
- 如果您得知很快能获得更多的帮助和服务，请在人们表现出恐惧或担忧时告诉他们（充满希望）。

不应当：

- 强迫人们与您分享自己的经历，尤其是极为私密的细节（可能会减弱平和感）。
- 说出简单的安慰话，例如“一切都会好起来的”或“至少您是幸存者”（经常会消除平和感）。
- 告诉人们他们认为他们现在应当有何种感受、怎样思维或行事，或他们本应怎样行动（降低自我效能）。
- 告诉人们你为什么认为他们会感到痛苦，并列举造成他们的个人行为或信念的原因（也会降低自我效能）。
- 作出可能不会兑现的承诺（降低希望）。
- 在需要接受服务的人面前批评现有服务或救济活动（降低希望和平和感）。

Psychological First Aid (PFA) (11-2017)

stressors in those who work in a variety of high-tempo, high-threat career fields.

This year, the Center translated several of our most frequently accessed fact sheets into Spanish and Mandarin, to support Spanish and Mandarin-speaking communities within the United States and abroad. The Spanish fact sheets were widely disseminated and utilized following the Mexico earthquakes and series of devastating hurricanes in Texas, Florida, Puerto Rico and the Virgin Islands.

Website

The Center website (www.CSTSONline.org) is another tool used to further our goal of disseminating relevant and timely information to a wide range of stakeholders. This year, we conducted a significant overhaul to the website to continue adding content and making content more accessible. Material available on the website includes summaries of current research activities, publication citations, newsletters, conference reports, and a searchable repository of

our disaster mental health education fact sheets. A “What’s New” section of the website highlights recent disaster education materials, research initiatives, publications, conference summaries and announcements of upcoming events. In 2017, the CSTS website was visited by 14,788 people. Most of those people (77%) were between the ages of 18 and 44 years, and most (78%) were from the United States. The 11,595 people from the U.S. who visited our website in 2017 represented all 50 states and the District of Columbia. The people from outside the U.S. who visited our website in 2017 were from 122 different countries.

Social Media

In 2017, the Center continued to grow its online presence through the use of social media. These social media resources allow for the timely dissemination of relevant content to our partners. CSTS Twitter followers increased by 55% and CSTS Facebook followers increased by 32% in the past year.

The Center encourages people to visit and follow CSTS postings via Twitter and Facebook to stay up-to-date on new CSTS activities and publications. “Like” CSTS on Facebook at Center for the Study of Traumatic Stress and follow CSTS on Twitter at @CSTS_USU.

The screenshot shows the CSTS website homepage with a blue header and navigation menu. The main content area includes a 'DIRECTOR'S MESSAGE' with a photo of a man, a 'FACT SHEETS' section with a search engine, a 'RESOURCES' section with a list of journal articles and newsletters, a 'RESEARCH' section with active research studies and funded grants, and an 'EDUCATION AND TRAINING' section. A 'WHAT'S NEW' section on the right highlights the 11th Annual Antigua, St. John and PTSD Conference. A smartphone is shown in the bottom right corner displaying the website on a mobile device.

Consultation

The Center has developed partnerships with, and provides consultation to, many agencies and organizations throughout the DoD and other Federal agencies, as well as with state, local and national agencies, professional associations, and international organizations.

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 build bridges that provide opportunities to contribute our resources and expertise in the service of others and to monitor real time needs of partners and stakeholders. The following are examples of some of our long-standing consultations as well as some new consultations in 2017.

National Association of State Mental Health Program Directors (NASMHPD)

For more than a decade, CSTS has had a long-standing relationship with NASMHPD, a membership organization representing state mental health authorities (Commissioners). The Commissioners are responsible for directing the public mental health system in their states. The state public mental health systems are largely responsible for preparedness, response, and recovery from many large and small scale disasters. CSTS assists the Commissioners in addressing the many challenges inherent in those systems. Many military families and veterans are served by the state public mental health systems. CSTS and NASMHPD leadership are in frequent contact to share experience and meet mutual needs.

Following the leadership change at NASMHPD with the appointment of a new Executive Director, the two organizations have continued to be in regular contact and sustain a close partnership. It is common following disasters for the Center to provide

unsolicited general and targeted public information to NASMHPD for distribution to impacted states. In addition, it is common for NASMHPD to request help and specialized information and consultation regarding individual events.

Substance Abuse and Mental Health Services Administration (SAMHSA)

SAMHSA is one of the oldest and most important federal partners for CSTS. This relationship goes back to SAMHSA's founding in 1992. Located within the Department of Health and Human Services, SAMHSA is the lead federal entity responsible for supporting and improving mental health services in the nation. A Center Associate Director continues to serve on the Disaster Distress Helpline (DDH) Steering Committee to provide guidance and feedback to this SAMHSA-funded resource that assists those needing help in their recovery from disasters.

2017 saw continued work between the two organizations including review of documents and programs, in light of changing SAMHSA staffing, and meetings with CSTS leadership to update ongoing collaborative activities and explore additional opportunities.

The National Center for Disaster Medicine and Public Health (NCDMPH)

In addition to partnering with NCDMPH on the global "Crisis Leadership" symposium, a Center Scientist was the featured presenter for the first 2017 NCDMPH Webinar series, presenting on "Disaster Behavioral Health: Education Fact Sheets to Enhance Preparedness and Response." This presentation drew greater participation than any previous NCDMPH webinar with 250+ attendees from over 80 different federal agencies and private entities working in disaster management and public health.

At the request of our partners at the NCDMPH who oversee disaster training for the USU MPH program, two CSTS staff presented an afternoon seminar

“Critical Concepts in Disaster Behavioral Health” to ten Joint Service, interdisciplinary MPH students.

Two members of the Center’s leadership team serve as Associate Editors for the journal *Disaster Medicine and Public Health*, a publication based in NCDMPH.

This partnership within USU continues to develop into an extremely productive one for both entities. Our missions and goals are complimentary and the combined experience and expertise of leaders in both organizations is creating much creative planning. Ongoing partnerships are in development for 2018 and beyond.

Centers for Disease Control and Prevention (CDC)

Two members of the Center’s leadership team participated in an exploratory consultation to five members of the Deployment Risk Mitigation Unit in CDC’s Office of Preparedness and Response. The goal was to learn about that Unit’s mission and needs and to explore the possibility of an ongoing partnership with CSTS. This is a relatively new Unit, formed during the Ebola response, with the primary mission of enhancing the health, safety, and well-being of deployed CDC staff and their loved ones. A wide variety of areas of potential collaboration were explored including research, knowledge consolidation and sharing and organizational and systems consultation from CSTS. Follow-up activities are planned.

The American Psychiatric Association (APA)

CSTS has extended its knowledge and reach by working with national medical associations, such as the APA, through education and training on disaster mental health. CSTS helped establish the APA’s Committee on Disaster Psychiatry in 1992, and the Center Director continued this year in his role as Chair of the committee. This year, CSTS Scientists provided formal and informal disaster consultation and education resources to APA District Branches in response to a wide range of disaster events, including the severe hurricanes in Florida, Texas, and Puerto Rico; recurrent wildfires in California; and mass shootings at the First Baptist Church in Texas and the Route 81 concert in Las Vegas. Consultation

services include guidance and resources on enhancing preparedness, response and recovery following disasters. Education fact sheets serve as an important resource for District Branches to assist them in rapidly disseminating critical, time-sensitive, actionable information to reduce distress, optimize well-being, and improve functioning of patients and other community members.

At the APA Annual Meeting, CSTS Scientists presented a workshop on climate-related disasters and mental health, addressing issues such as psychological and behavioral responses, populations most vulnerable to the impacts of climate-related disasters, and evidence-based early interventions to reduce distress and enhance well-being. The audience of 67 psychiatrists from across the globe participated in a series of interactive case-based learning sessions to apply and reinforce content.

At the Annual Conference for the Institute of Psychiatric Services, which was organized by the APA, a Center Scientist presented to an audience of 58 international psychiatrists on the mental health aspects and climate-related disasters. The presentation served as a springboard for discussions about how to become more engaged in disaster mental health care and efforts to address mental health effects of climate-related disasters through effective preparedness and response.

National Child Traumatic Stress Network (NCTSN)

The Center worked with NCTSN in partnering with the Network’s Military and Veteran Families Program in their efforts to develop and implement trauma-informed, evidenced-based interventions and approaches to military children and families. CSTS also serves as a NCTSN Treatment and Services Adaptation Center (Category II site), which involves providing expertise on specific types of traumatic events experienced by military families, as well as programs and providers that specialize in treatment and services for military communities.

Military Child Education Coalition (MCEC)

The MCEC seeks to identify and address issues specific to children with military connections. A

Center Scientist presented at MCEC's 2017 annual meeting to discuss military children's access to mental health services.



GLOBAL HEALTH

Global Health Engagement

The Global Health Engagement focus at USU has continued to evolve and solidify during 2017. As context, the Center Director participated in the USU School of Medicine Strategic Planning meeting to discuss the mission of the School of Medicine as it relates to the DoD's initiatives in addressing national security, global health and global health engagement. The result was USU's decision to consolidate its activities into the USU Center for Global Health Engagement (CGHE). During 2017 CSTS hosted representatives of the CGHE as part of a series of ongoing meetings intended to increase CGHE's understanding of the roles of CSTS and the Department of Psychiatry. In addition, the Center regularly participates in briefings by CGHE for all relevant USU stakeholders.

In related activities, the Center Scientists provided consultation to the Harvard Program in Refugee Trauma in support of their work with the Syrian American Medical Society and their efforts to remotely supervise Syrian civilian healthcare providers delivering care to combat casualties. The consultation explored issues related to trauma exposure, moral injury, training and supervision in the context of delivering remote healthcare consultation and supervision.

CSTS translated the first two in a series of CSTS disaster education fact sheets into Mandarin. This is to support colleagues, friends, the Chinese-American population, and others following disasters in

China (e.g., the Southeast Asian Tsunami). This translation project will ultimately result in 10 disaster education fact sheets translated into Mandarin and Spanish to expand the reach of our disaster preparedness and response education resources.

International Outreach

The Center sent a scientist to Baghdad, Iraq to support the DoD on a Defense Institute for Medical Operations (DIMO) mission. DIMO facilitates healthcare education and training to international partners by utilizing subject matter experts (SMEs) from the DoD to develop curriculum and teach courses around the world. On this mission, CSTS provided global mental health education and training by sharing the fundamentals of Disaster Psychiatry with the Iraqi Special Forces and the principles of setting up a Military Behavioral Health Care System to military medical leadership. At the same time, the team coordinated efforts with the U.S. assets, helping prioritize future efforts. The 28 participants included seasoned combat medics, new recruits, senior medical officers from the Iraqi Ministry of Defense, and faculty from the Iraqi Military Medical School.

CSTS hosted a delegation of Iraqi mental health practitioners, educators and service providers as part of an International Visitor Leadership Program (IVLP) sponsored by the U.S. State Department. The delegation consulted with Center Scientists on how to support post-war recovery of Iraq, with particular focus on the psycho-social rehabilitation of traumatized children and youth. The participants discussed a variety of complex psycho-social challenges that Iraqi children face, including traumatic exposures, sectarian aggression and violence, as well as inadequate infrastructure to meet their needs. CSTS encouraged programmatic public health approaches to address the problems (e.g., preventive health strategies, school based interventions), discussed trauma-informed evidence based clinical practices and recommended making connections with other large U.S. organizations that address child trauma, such as the federally funded and SAMHSA administered National Child Traumatic Stress Network (NCTSN).

The Center was selected to support the USU

U.S. Forces Korea (USFK) task force. The task force provides needs assessment to the military line and medical commands in South Korea to optimize their training and education of medical concerns related to radiologic and nuclear threats. Center Scientists assist with reviewing policy and procedure for enhancement recommendations, as well as providing education and training to personnel to assist USFK in optimizing their preparedness and response efforts in the face of real or threatened radiologic or nuclear events.

Other examples of CSTS international outreach in 2017 included:

- The Center Director met with scientists in Latvia at a NATO-sponsored military suicide prevention meeting and presented on suicide and suicidality.
- The Center Director travelled to Australia to provide consultation to the Australian Army and to make a presentation on PTSD, suicide, TBI and other trauma-related disorders to the Australian Trauma Society.
- A Center Scientist travelled to Canada to serve as a panel member for the NATO Human Factors and Medicine (HFM) Panel meeting on Leveraging Technology in Military Mental Health.
- A Center Scientist travelled to Spain to present findings of the research “Ecological Momentary Assessment of Daily Variation in Post-Traumatic Stress Symptoms” at a meeting of the American Psychosomatic Society in Seville.
- Dr. Jun Shigemura of the National Defense Med-



ical College of Japan visited the Center, presented research findings to CSTS Scientists on the aftermath of the Fukushima Nuclear disaster, and met with the Center Director.

- The Head of the Department of Psychological Medicine of the National University of Singapore, Dr. John Wong, visited the Center, discussed the National University and Mind Center with CSTS Scientists, and met with the Center Director.
- Dr. Alexander McFarlane, Director of the Centre for Traumatic Stress Studies in Australia, visited CSTS, presented research findings on the prolonged and unanticipated impact of traumatic stress, and met with the Center Director.
- The Assistant Director of Health and Safety Division of the Western Australia Police Force, Ms. Fiona Donaldson, visited the Center and met with CSTS Scientists who provided consultation on resilience programs in emergency responder and military agencies.
- The CSTS website was visited by persons from 122 different countries outside the U.S.

Extreme Weather-Related Disasters and Mental Health

Center Scientists served as SMEs in the review of national and global documents in the field of extreme weather-related disasters, including the 4th National Climate Assessment, developed by the U.S. Global Change Research Program, a confederation of the research arms of thirteen different federal agencies. Center Scientists served as SMEs and provided consultation in the development of the American Psychological Association’s 2017 document, “Mental Health and Our Changing Climate: Impacts, Implications, and Guidance” as well as the American Psychiatric Association’s family education resource pages on extreme weather change and mental health.

A Center Scientist delivered Grand Rounds on the topic of extreme weather-related disasters and mental health to behavioral health faculty at the joint program of the University of Maryland, Sheppard Pratt, and Veterans Administration, as well as at WRNMMC.

Interview with a CSTS Scientist

Gary H. Wynn, MD
Lieutenant Colonel, Medical Corps, U.S. Army

Dr. Wynn is an Associate Professor and Assistant Chair in the Department of Psychiatry at USU and a Scientist at CSTS. After graduating from West Point in 1996, Dr. Wynn received his medical degree in 2000 from USU and completed a combined residency in Psychiatry and Internal Medicine at Walter Reed Army Medical Center. After completing his residency, he spent a year as the Division Psychiatrist for the 2nd Infantry Division at Camp Casey, Korea. Dr. Wynn spent the next three years as the Assistant Chief of Inpatient Psychiatry at Walter Reed Army Medical Center where he worked with Service members returning from the conflicts in Iraq and Afghanistan. From 2009 through 2013, Dr. Wynn worked as a research psychiatrist in the Military Psychiatry Branch of the Center for Military Psychiatry and Neuroscience at the Walter Reed Army Institute of Research in Silver Spring, MD. In July, 2013, Dr. Wynn joined the USU Department of Psychiatry.

Dr. Wynn has been a leader at CSTS in new and innovative approaches to neuroscience in relation to recently emerging themes in DoD. We interviewed Dr. Wynn about his work in this area.

What is on the horizon for the use of new technologies in DoD and the military mental health system?

The future of the use of technology in military mental health is pretty amazing. Right now we are seeing a great deal of innovation in the use of a variety of technologies that will be integrated into clinical care in the coming years. The big areas of advancement are in the



use of computer-aided therapies, neurostimulation, smart phones apps, and virtual realities. In some ways, this will really change the way we provide care. The ability for individuals to undergo therapy with the aid of an app without ever interacting with the healthcare system represents a large change in how we think about and how we deliver care. There are apps and computer programs that can provide cognitive behavioral therapy, narrative expression therapy, supportive therapy, and suicide prevention with more becoming available all the time. The big questions about these programs are how well do they work, how do we get them in the hands of those who need them, and how do we deal with what

happens when someone does not get better from using these technologies. In addition, advances in areas like neurostimulation provide yet another avenue for clinicians to care for those suffering from a variety of mental health issues.

What are you currently working on regarding new drug development?

Over the past two years, with the support of CSTS, I and my co-investigator Dr. David Mears, have set-up a zebrafish lab and a collaboration with Dr. Daniele Piomelli and the University of California, Irvine. This zebrafish lab is intended to be a rapid screening tool for drug discovery with our partnered rodent model at UCI. The reason for this effort is that drug discovery for PTSD has been underperforming over the past couple decades. Only two drugs have been FDA-approved for PTSD and the last one was closing in on twenty years ago. Our hope is to screen candidate compounds in order to decrease the risk of the early investigational phase of drug discovery and then partner with biotech firms when we discover promising compounds. Putting more promising compounds in the hands of drug

developers will hopefully stimulate the private sector drug development pipeline so that new and effective treatments for PTSD end up in the hands of clinicians working tirelessly to treat those suffering from this disabling disorder.

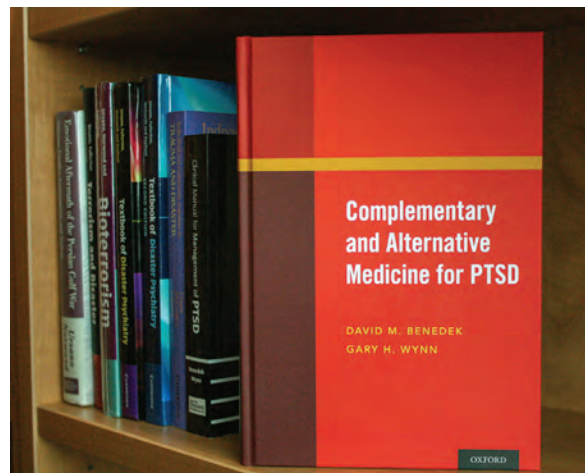
What do you see as the future of complementary and alternative medicine for military mental health?

That is a complicated question. Complementary and alternative medicine for the treatment of military mental health issues is a burgeoning topic with a lot of potential. Dr. Benedek and I just recently published an entire textbook on the topic — *Complementary and Alternative Medicine for PTSD* — that is an excellent resource for those interested in further reading on the issue. It is a good look at the topic but it is not an exhaustive review given the incredibly broad nature of CAM. From acupuncture to yoga to animal-assisted therapies to alternative pharmacology, the topic spans such a broad arena, but there are signs that many of these approaches are worth further exploration. The current limitation is that while many of these modalities are being used in the community and even supported by some healthcare organizations, especially given the low risk, there is very little rigorous research to support the majority of these approaches. Additionally, there is concern that the use of these approaches is only helpful while the individual continues to participate. A recent study of yoga for PTSD showed that the most important factor in who responded to

treatment with yoga was long-term continued yoga practice. Such issues need to be fully understood so that clinicians can be informed as to the best practices for CAM.

Can you tell us about your role as the U.S. Representative to the NATO Research Task Group on Leveraging Technology in Military Mental Health?

For the past two years, I have been the U.S. Representative to the NATO Research Task Group (RTG) on Leveraging Technology in Military Mental Health. This effort was undertaken given the rapid advancement in technology that has been occurring over the past 10 years. Our group of NATO reps proposed this RTG to NATO and were approved for a three-year study of how to better utilize technology to address military mental health issues for NATO member states. We have representatives from a number of NATO countries including Canada, The Netherlands and Germany. We are holding meetings every 6 months for three years to review areas of technology that are ready to be integrated into clinical care or show substantial promise in impacting clinical care in the near future. Our two most recent meetings involved a thorough review of biomarkers including neuroimaging which occurred in Toronto, Canada, and a review of virtual reality and serious gaming which occurred in Amsterdam, Netherlands. After the entire series of meetings, we will create a technical report on the topic that will be shared with NATO member states.



Publications

(Names in bold text are CSTS personnel)

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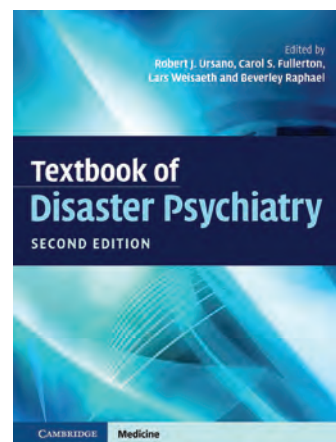
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Presentations, Briefings, Interviews and Awards

(The names in bold text are CSTS personnel.)

PRESENTATIONS

- Disaster Behavioral Health: Education Fact Sheets to Enhance Preparedness and Response. **Morganstein, J. C.** Presented at the 2017 NCDMPH webinar series, January 2017.
- Psychological Effects of Disasters. **Benedek, D.** Presented at the Hospital Management of Chemical, Biological, Radiological, Nuclear and Explosive Incidents (HM-CBRNE) course at the US Army Medical Research Institute of Chemical Defense (USAMRICD), Aberdeen Proving Ground, MD, February 2017.
- Ecological Momentary Assessment of Daily Variation in Post-Traumatic Stress Symptoms. **Biggs, Q. M., Fullerton, C. S., Wang, J., Krantz, D. S., Wynn, G., Probe, D., Dacuyan, N., Franz, M., Carr, R. B., & Ursano, R. J.** Presented at the annual meeting of the American Psychosomatic Society, Seville, Spain, March 2017.
- Association of General Belief in a Just World and Mental Health Outcomes Following the 9/11 Terrorist Attacks. **Christopher, E., Fisher, J. E., Zhou, J., Liu, A. G., Karp, J. N., Chen, S., Fetchet, M., Fullerton, C. S., Ursano, R. J., Cozza, S. J.** Presented at the 12th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2017.
- Community Strength & Disasters: Collective Efficacy Following the 2004 Florida Hurricanes. **Morganstein, J.C., Herberman Mash, H.B., Franz, M., Wang, L., Meyer, E.G., Santiago, P.N., Fullerton, C.S., Ursano, R.J.** Presented at the 12th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2017.
- Community Strength & Disasters: Collective Efficacy Following the 2004 Florida Hurricanes. **Morganstein, J. C., Herberman Mash, H.B., Franz, M., Wang, L., Meyer, E.G.,**
- Santiago, P.N., Fullerton, C.S., Ursano, R.J.** Presented at the WRNMMC Research Innovations Symposium, Bethesda, MD, April 2017.
- Decomposition of Daily Variation in the Posttraumatic Stress and Depression Symptoms in U.S. Military Service Members: Trait, State and Error. **Wang, J., Biggs, Q. M., Fullerton, C. S., Wynn, G. H., Probe, D., Dacuyan, N., Franz, M., Carr, R. B., & Ursano, R. J.** Presented at the 12th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2017.
- Decomposition of Daily Variation in the Posttraumatic Stress and Depression Symptoms in U.S. Military Service Members: Trait, State and Error. **Wang, J., Biggs, Q. M., Fullerton, C. S., Wynn, G. H., Probe, D., Dacuyan, N., Franz, M., Carr, R. B., & Ursano, R. J.** Presented at the Anxiety and Depression Conference, San Francisco, CA, April 2017.
- Grief, Anxiety, and Depression Independently Predict Cognitive Failures in Bereaved Family Members. **Liu, A. G., Fisher, J. E., Zhou, J., Christopher, E., Karp, J., Fullerton, C. S., Ursano, R. J., & Cozza, S. J.** Presented at the 12th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2017.
- Just When You Thought It Could Not Get More Complicated. **Flynn, B. W.** Presented the opening keynote address at SUNY New Paltz, Institute of Disaster Mental Health, for their 14th Annual Conference, New Paltz, NY, April 2017.
- Multiple Notifications of Human Remains in Families of September 11th Decedents Associated with Depression and Posttraumatic Stress Disorder. **Karp, J., Fisher, J., Chen, S., Liu, A., Christopher, E., Zhou J., Fullerton, C., Ursano, R., Cozza, S.** Presented at the 12th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2017.
- Promoting Family Safety through Personal Firearm

- Safety Education. Fisher, A. V., **Liu, A. G., Stephens, T., & West, J. C.** Presented at the 12th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2017.
- Stepping Forward in Grief: An Online Selective Intervention for Bereaved Military Families. **Cozza, S. J.** Presented at the annual MOMRP Military Family IPR, Ft. Detrick, MD, April 2017.
- The Impact of Service Member Death on Military Families: A National Study of Bereavement. **Cozza, S. J.** Presented at the annual MOMRP Military Family IPR, Ft. Detrick, MD, April 2017.
- The Protective Effect of Social and Support Networks among US Army Soldiers. **Dempsey, C. L., Benedek, D. M., Nock, M. K., Wang, L., Ng, T. H., Riggs, C., Long, W. & Caulfield, N.** Presented at the 12th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2017.
- Use of neuromodulation techniques in the treatment of post-traumatic stress disorder. Shea, C. J. & **Wynn G. H.** Presented at 12th Annual Amygdala, Stress and PTSD Conference, Bethesda, MD, April 2017.
- Disaster Psychiatry: Current Needs in Managing Climate Change. **Morganstein, J. C.,** Cooper, R., Van Susteren, L., **West, J. C.** Workshop presented at the Annual Meeting of the American Psychiatric Association, San Diego, CA, May 2017.
- Grief, Anxiety, and Depression Independently Predict Cognitive Failures in Bereaved Family Members. **Liu, A. G., Fisher, J. E., Zhou, J., Christopher, E., Karp, J., Fullerton, C. S., Ursano, R. J., & Cozza, S. J.** Presented at the Association for Psychological Science's 29th Annual Convention in Boston, MA, May 2017.
- Buying Compliance: Our Best Bet for Better Antipsychotic Adherence or a Deal with the Devil? Gray K., **West J. C., Wynn G. H., Howe E.** Presented at the American Psychiatric Association Annual Conference, San Diego, CA, June 2017.
- CV Workshop. **Morganstein, J., Meyer, E, West, J. C., Wynn, G.H.** Presented at the Tri-Service Conference of the Society of Uniformed Services Psychiatrists, San Diego, CA, June 2017.
- Forensic Aspects of the Treatment of Victims of Military Sexual Assault. **Benedek, D. M.** Presented at the annual Artiss Symposium, Bethesda, MD, June 2017.
- PTSD and Suicide — Army STARRS Genotype, Phenotype, and Timing in Precision Medicine. **Ursano, R. J.** Presented at the 2017 Military Operational Readiness: Precision Medicine Conference in Potomac, MD, June 2017.
- Towards Beneficence: Ethical Controversies and Evolving Views on the Involuntary Treatment of Substance Use Disorders. **Yang, S., West, J. C., Wynn, G. H., Howe E.** Presented at the American Psychiatric Association Annual Conference, San Diego, C.A., June 2017.
- Personal Firearm Safety: What Every Provider Should Know on Firearm Safety. **West, J. C.** Presented at the Naval Center for Combat and Operational Stress Control (NCCOSC) Symposium, Bethesda, MD, August 2017.
- Crisis leadership: Behavioral Health Considerations. **Benedek, D. M.** Presented as a panelist at the USU National Center for Disaster Medicine and Public Health Crisis Leadership in Disaster Symposium, Bethesda, MD, September 2017.
- Assessing Individuals in Crisis with PTSD. **Wynn, G. H.** Presented at the Virginia Community Services Board Annual Conference in Roanoke, VA, October 2017.
- Climate Change and Disaster Psychiatry. **Morganstein, J. C.** Presented at Climate Change: The Ultimate Social Determinant of Health and Mental Health, Institute of Psychiatric Services, New Orleans, LA, October 2017.
- Five Critical Concepts Care Providers and Ethics Consultants Should Know When They Care for Transgender Persons in Clinical Settings. **Howe, E. G.** Presented at the Annual American Society for Bioethics and Humanities (ASBH) meeting, Kansas City, KS, October 2017.
- Risk and Protective Factors for Military Suicide. **Benedek, D. M.** Presented at the fall meeting of the Psychiatric Society of Virginia, Virginia Beach, VA, October 2017.

Senior Career Mentoring. **Morganstein, J.**

C. Presented at the American Psychiatric Association Public Psychiatry Fellowship at the Annual Conference, Institute of Psychiatric Services, New Orleans, LA, October 2017.

BDNF Val66Met polymorphism associated with increased risk of complicated grief following bereavement, independent of its effect on depression. **Fisher, J. E., Zhang, L., Zhou, J., Hu, X., Fullerton, C. S., Ursano, R.J., & Cozza, S. J.** Presented at the ISTSS Annual Meeting, Chicago, IL, November 2017.

Longitudinal Effects of Deployment, Recency of Return, and Hardiness on Behavioral Health Symptoms in US Army Combat Medics. **Krauss, S., Russell, D., Kazman, J., & Deuster, P.** Presented at the Military Health System Research Symposium, Kissimmee, FL, November 2017.

PTSD Pharmacology: State of the Science. **Wynn, G. H.** Presented at the Marne Behavioral Health Summit in Ft. Stewart, GA., November 2017.

The Impact of Self-quantification: How Gamification of Personal Data Motivates Individual through Affective Response. **Honea, H. & Russell, D.** Presented at the 7th Annual Games for Health Europe Conference, Eindhoven, Netherlands, November 2017.

The protective effect of social and support networks among U.S. Army Soldiers at risk for suicide. **Dempsey, C. L., Benedek, D. M., Nock, M. K., Wang, L., Ng, T. H., Riggs, C., DeStefano, S., & Caulfield, N.** Presented at the ISTSS Annual Meeting in Chicago, IL, November 2017.

What is Psychopathology: Relationship to pathophysiology, epidemiology, health services research, and mental health policy? **Regier, D. A.** Presented at the Walter Reed Department of Psychiatry, Bethesda, MD, November 2017.

Disaster Mental Health and Climate Change: Making the Connection. **Morganstein, J. C.** Presented at the Grand Rounds for the University of Maryland Psychiatry Department, Baltimore, MD, December 2017.

BRIEFINGS AND INTERVIEWS

- Dr. Benedek was a panel discussant of the Burns & Novack Vietnam Documentary at the Army Heritage Center in Carlisle, PA. There was a publication this week from a group at Yale with whom Dr. Benedek and Dr. Ursano are associated (the Traumatic Stress Brain Studies Group).
- Dr. Cozza was invited by the Military Family Research Institute to speak at their “Battlemind to Home Mental Health Summit” held at Purdue University. Dr. Cozza’s presentation included research findings from the Bereavement Study.
- Dr. Morganstein conducted a videotape interview for *Airman Magazine* as part of a series on “Invisible Wounds” on disasters, combat and trauma.
- Dr. Morganstein was interviewed by *Medscape* on current knowledge regarding the psychological and behavioral effects of climate-related disasters and how healthcare providers can assist individuals and communities to more effectively prepare for and respond to these events.
- Dr. Morganstein was interviewed by *Medscape*, an online health care education, training and knowledge dissemination portal for health care providers and patients, about the background, importance, and utility of the American Psychiatric Association’s recently published position statement on “Mental Health and Climate Change.”
- Dr. Ursano and Dr. Ron Kessler (Harvard Medical School) briefed Senior Army Leadership at the Pentagon on Army STARRS and STARRS-LS at the first Interim Progress Report (IPR). The audience included the new Secretary of the Army (Hon. Mark Esper), Army Surgeon General, Deputy under Secretary of the Army, G-1 and other senior Army leaders. Dr. Wagner (University of Michigan), Mr. Ludtke (ODUSA), Dr. Cox (USAPHC), Dr. Gifford (CSTS), and Mr. Hurwitz (CSTS) also attended.
- Dr. Ursano gave a webinar through the Inter-university Consortium for Political and Social Research (ICPSR) entitled, “An Introduction to the Army STARRS Survey Data.”



Dr. Ursano speaking at the 2017 Amygdala, Stress and PTSD Conference.

- Dr. Ursano briefed the STARRS-LS Government Steering Committee (GSC) at a meeting at the Office of the Deputy Undersecretary of the Army. The briefing described the progress made by the research team on the STARRS-LS project. Dr. Gifford (CSTS) and Mr. Hurwitz (CSTS) also attended.
- Dr. Ursano was interviewed by *MD Magazine* regarding an Army STARRS publication in *JAMA Psychiatry* entitled, “Risk of Suicide Attempt among Soldiers in Army Units”.
- Dr. Ursano, as chairman of the American Psychiatric Association’s Committee on Psychiatric Dimensions of Disasters, was interviewed by *CNN* after the London Grenfell fire tragedy for a feature focusing on the psychological impact of rebuilding after a disaster.
- Drs. West and Morganstein were interviewed with Mark Moran of *APA Psychiatric News* regarding medical education on trauma with a focus on large scale events, responses and interventions.
- Dr. West participated in a meeting with the Harvard Program in Refugee Trauma (HPRT) entitled, “Working with Syrian Refugees: Medical and Psychological Implications for Self Care” in which he presented alongside the Director of Telemedicine for HPRT, Eugene Augusterfer, on distance supervision via telehealth in hostile environments. The meeting was convened for the

benefit of the Syrian American Medical Society (SAMS) to advise on their ongoing medical care of Syrian refugees and assistance to physicians in Syria in areas of active conflict.

- Dr. Wynn served as a panel member for the NATO HFM Panel meeting on Leveraging Technology in Military Mental Health in Toronto, Canada.
- Dr. Wynn was interviewed by *OZY.com* and quoted in their article about drug treatment for PTSD.

AWARDS

- Dr. Meyer, MAJ, USAF, MC, Assistant Professor, Department of Psychiatry, Associate Psychiatry Clinical Clerkship Director was awarded the USUHS 2017 Innovation in Education award, by popular vote, for his presentation, “A New Psychiatry Clerkship Experience: Improved Skills in a Simulated Clinical Environment.”
- The 2016 CSTS Annual Report was among the winners of the 2017 American Graphic Design Awards.
- The CSTS poster, “The Protective Effect of Social and Support Networks among US Army Soldiers,” won the “2017 Outstanding Poster Presentation Award” at the 12th Annual Amygdala, Stress and PTSD Conference held in Bethesda, MD.
- Drs. Flynn and Morganstein accepted appointments as Associate Editors for the journal, *Disaster Medicine and Public Health*. This invitation was initiated by the National Center for Disaster Medicine and Public Health, a CSTS partner Center at USUHS.
- Dr. Gabbay was invited to serve on the Editorial Board of the journal, *Policy Insights from the Behavioral and Brain Sciences*, published by Sage for a term that begins immediately.
- Dr. Gabbay was invited to serve a three-year term as Consulting Editor for the journal, *Psychophysiology*.
- Dr. Russell was selected for his second Fulbright scholarship and will be working on a substance use project with the European equivalent of the National Institutes of Health.
- Dr. Russell was selected to serve as a behavioral health research consultant to the FDA Commissioner.

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GRANT	FUNDING INSTITUTION
Development of an Education Curriculum for Personally Owned Firearms Safety Enhancements Initiative	DSPO
Riluzole Augmentation Treatment for Complicated Posttraumatic Stress Disorder	USAMRMC
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
Study to Assess Risk and Resilience in Servicemembers — Longitudinal Study (STARRS-LS)	DHP
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
Military-Related Risk for Child Neglect in DoD Families: A Population Study to Inform Future DoD Child Neglect Prevention Efforts	MCFP
Enhancing Fear Extinction via Angiotensin Type 1 Receptor Inhibition: A Randomized Controlled Trial in Posttraumatic Stress Disorder	UCSD
Examination of the Short and Long-term Impact of School Shootings	UCLA
Pilot Trial of Nightmare Deconstruction and Reprocessing, a Novel Treatment for PTSD-Related Nightmares and Insomnia	USAMRMC
Center for the Study of Traumatic Stress (CSTS) Program	DHP

Partnerships

CSTS 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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Broad Institute
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National Child Traumatic Stress Network
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Yale University
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Zero to Three

CSTS Timeline Highlights

Three Decades of Consultation, Research and Training

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1985	Gander, Newfoundland Army Plane Crash Consultation
1987	Chemical & Biological Warfare Consultation & Research
1988	Ramstein Air Show Crash Research
1989	USS Iowa Gun Turret Explosion Consultation & Research
1989	United Plane Crash, Sioux City Consultation & Research
1989	Armenian Earthquake Consultation
1990	Operation Desert Storm, USNS Comfort Hospital Ship Consultation & Research
1990	Motor Vehicle Accidents Research
1992	Hurricane Andrew Research
1994	<i>Individual and Community Responses to Trauma and Disaster: The Structure of Human Chaos</i>
1996	<i>Emotional Aftermath of the Persian Gulf War: Veterans, Families, Communities, and Nations</i>

Through leadership, education and training, research and scholarship, service and outreach, global health engagement, and enhancing preparedness, CSTS strives to mitigate the impact of trauma from exposure to war, disasters, terrorism, community violence and public health threats.

— Robert J. Ursano, MD, Director, CSTS



CSTS has historically held a “Trauma Team” meeting of all personnel at the end of every week to share, inform and teach.

2000s–2010s

2001	ABC Interview with Robert J. Ursano: <i>Psychological Consequences of 9/11</i>
2001	9/11: NYC, Pentagon, USNS Comfort Hospital Ship Consultation & Research
2002	<i>Mental Health & Mass Violence: Evidence Based Early Psychological Intervention, Consensus Conference</i>
2002	DC Sniper Attacks Research
2003	<i>Terrorism and Disaster: Individual and Community Mental Health Interventions</i>
2004	Florida Hurricanes Consultation & Research
2004	Mortuary Affairs Soldiers Intervention (TEAM)
2005	1st Annual Amygdala Conference
2005	Asian Tsunami Consultation
2005	Hurricanes Katrina and Rita: U.S. Postal Service Research
2006	<i>Workplace Preparedness for Terrorism, Sloan Foundation Report</i>
2006	Sesame Street Bereavement Intervention
2006	National Guard and Reserve Research
2007	<i>Textbook of Disaster Psychiatry</i>
2007	<i>Five Essential Elements of Immediate and Mid-Term Mass Trauma Intervention: Empirical Evidence</i>
2007	<i>First Responders: Mental Health Consequences of Natural & Human-Made Disasters for Public Health & Public Safety Workers</i>
2008	Child Neglect and Bereavement in Military Families Research
2009	Families of Injured Soldiers Intervention
2009	Army STARRS Research
2010	1st Forum on Health and National Security
2011	<i>Clinical Manual for Management of PTSD</i>
2014	<i>Clinical Manual for the Care of Military Service Members, Veterans and their Families</i>
2014	STARRS-LS Research
2014	Curriculum for Firearm Safety Enhancement
2017	<i>Textbook of Disaster Psychiatry (2nd edition)</i>
Ongoing	Fact Sheets and Just in Time Resources for War, Disaster and Terrorism



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