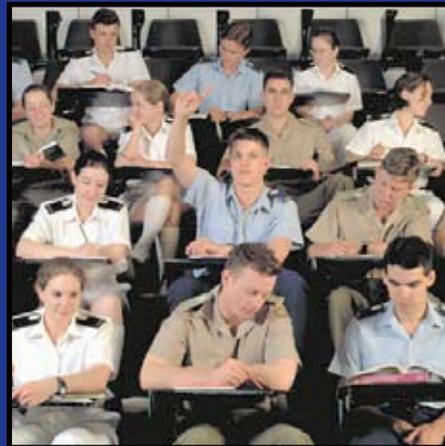


# *Center for the Study of Traumatic Stress*



2008 ANNUAL REPORT

The Center for the Study of Traumatic Stress has uniquely bridged the fields of disaster and military psychiatry. Our work integrates principles of disaster preparedness, response and recovery to foster individual, community, organizational and public health.



## Acknowledgements

The Center for the Study of Traumatic Stress (CSTS) would like to acknowledge and thank each of these organizations for their continued support, guidance, and leadership throughout the past year.

- Uniformed Services University of the Health Sciences
- Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury
- The Henry M. Jackson Foundation for the Advancement of Military Medicine
- The National Center for PTSD
- Deployment Health Clinical Center
- Army Community Service
- CSTS Scientific Advisory Board



# MESSAGE FROM THE DIRECTOR

Dear Colleagues and Friends,

This Annual Report marks our Center's completion of 20 years of dedicated service to Uniformed Services University of the Health Sciences, the Department of Defense, and our nation in advancing trauma knowledge and trauma-informed care. The Center for the Study of Traumatic Stress (CSTS) continues to grow and expand its research, education and consultation in the domains of disaster psychiatry, the neuroscience of traumatic stress, understanding and support of first responders, and care of our nation's soldiers, sailors, airman and marines who experience high stress operations on behalf of national security.

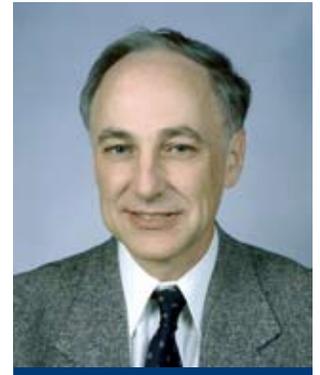
Through domestic disasters that endanger civilian communities and engage the support of our military, the Center has uniquely bridged the fields of disaster and military psychiatry. Our work integrates principles of disaster preparedness, response and recovery to foster individual, community, organizational and public health.

The Center has been and continues to be a pioneer in generating and disseminating knowledge to mitigate the impact of disaster and trauma exposure. Through the Center's involvement and leadership with renowned disaster experts, the arsenal of early intervention for disaster now includes Psychological First Aid. The Center was the first to inform the Department of Defense and the nation about stress exposure to the dead and body recovery essential in the aftermath of serious trauma. Center scientists were the first to identify trends of escalation in child neglect

amongst military families in times of war. The Center with its collaborative networks is at the forefront in examining the neuroscience of post-traumatic stress disorder in the human brain and to have confirmed its findings in animal models. Through the Center's cutting edge research, understanding of community variables that contribute to resilience and recovery in the face of disaster and the neuroscience of post-traumatic stress disorder are closer to our grasp.

This year the Center became a component center of the Defense Centers of Excellence (DCoE) for Psychological Health and Traumatic Brain Injury institutionalizing the Center as the leading academic arm and source of knowledge around traumatic stress. The Center continues to focus on the horizon and to identify new and critical issues for the science and care of those exposed to war, traumatic events and disasters. We invite you to read about our work in more depth in the following pages.

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



**The Center for the Study of Traumatic Stress (CSTS) continues to grow and expand its research, education and consultation in the domains of disaster psychiatry, the neuroscience of traumatic stress, understanding and support of first responders, and care of our nation's soldiers, sailors, airman and marines who experience high stress operations on behalf of national security.**

# THE CENTER FOR THE STUDY OF TRAUMATIC STRESS



## Overview

*“Disasters are a prominent part of our history and will be a part of our future. From gene to protein, cell to organ, and individual to group, the complexity of human responses to disaster trauma is profound. Understanding both individual and community mental health responses to disasters is critical to developing and planning for post disaster interventions across the biological, psychological, and sociocultural levels.”*

—Robert J. Ursano, MD

*Textbook of Disaster Psychiatry, 2007*

The Center for the Study of Traumatic Stress (CSTS) is one of the nation’s oldest and most highly regarded, academic-based organizations dedicated to advancing trauma-informed knowledge, leadership and methodologies. The Center’s work addresses a wide scope of trauma exposure from the consequences of combat, operations other than war, terrorism, natural and human-made disasters, and public health threats. CSTS is a part of our nation’s federal medical school,

**PTSD is a signature illness of our nation’s war on terrorism, and a serious mental disorder affecting many individuals exposed to trauma in the civilian population.**

Uniformed Services University (USU), and its Department of Psychiatry, as well as a partnering center of the newly established Defense Centers of Excellence (DCoE) for Psychological Health and Traumatic Brain Injury. These affiliations represent the Center’s history, mission and future directions as a major contributor to our country’s understanding of the impact of trauma and the advancement of trauma-informed care.

As part of the USU Department of Psychiatry, the Center conducts translational research in neuroscience examining the neurobiology of brain structure using animal and human models to inform prevention of and treatments for serious stress disorders such as posttraumatic stress disorder (PTSD). PTSD is a signature illness of our nation’s war on terrorism, and a serious mental disorder affecting many individuals exposed to trauma in the civilian population. Center scientists provide consultation to military leadership and the military healthcare system around the impact and treatment of traumatic stress and the stress and health consequences of deployment and combat injury on service members, their families and children. This work fosters psychological health and strength in the military community.

A unique aspect and contribution of the Center is the bridging of military and disaster psychiatry and the integration of disaster mental health and public health. In applying the principles and practices for dealing with individuals and groups exposed to extreme environments in the military, the Center has generated and disseminated its subject matter expertise to inform disaster preparedness, response and recovery principles and practices across a wide range of traumatic events and populations.

Today and into the future, the Center is uniquely positioned to respond to DoD mission relevant activities and issues, especially those of the DCoE, as well as to educate regional and national stakeholders in government, industry, healthcare, public health, and academia on miti-

gating the effects of disaster and trauma in the civilian community to foster human continuity and community and national resilience.

### History

The Center was established in 1987, as a center of excellence for responding to the long-term concerns of the Department of Defense over the substantial health risks resulting from the traumatic impact of: 1) the possibility, or actual use, of weapons of mass destruction (WMD) during combat, acts of terrorism or hostage events; 2) combat, peacemaking, peacekeeping, and operations other than war; 3) natural disasters such as hurricanes, tornadoes, or floods; and, 4) more common stress producing events such as physical assaults and motor vehicle, shipboard, or airplane accidents in both the uniformed and civilian communities.

Prior to Desert Storm, the Center pioneered research on exposure to WMD through its work in Air Force simulation exercises dealing with chemical and biological terrorism. This early work generated an unprecedented body of research, including a database that currently consists of more than 20,000 articles on the psychological, social and behavioral manifestations of exposure to traumatic events. These inferences include mental health responses ranging from resilience to psychiatric illness such as post-traumatic stress disorder, acute stress disorder, and depression.

In the 1990s the Center made major contributions to the newly emerging field of disaster mental health and psychiatry. The Center published a landmark book, one of the most scholarly and comprehensive of its time, *Individual and Community Responses to Trauma and Disaster*. This book and the Center's work on the effects of trauma on first responders helped shape the landscape of disaster and trauma research, education and consultation.

In response to the events of 9/11, CSTS was instrumental in educating leadership at the federal, state and local level about individual and community responses to terrorism. This knowledge drew upon the Center's early work in the psychological and behavioral implications of exposure to WMD. The Center expanded its research to encompass workplace preparedness for terrorism and disaster, and provided consultation to the U.S. Senate, the U.S. House of Representatives, the U.S. Department of State, the U.S. Department of Transportation, a number of Fortune 100 corporations, and numerous government leaders. The Center's Director, Robert J. Ursano, M.D., was part of an Institute of Medicine committee that authored an influential report and publication, *Preparing for the Psychological Consequences of Terrorism*. This book recommended the integration of disaster response principles into the public health arena with significant implications around medical and healthcare preparedness and response to large-scale disasters including public health threats such as a pandemic.



**In response to the events of 9/11, CSTS was instrumental in educating leadership at the federal, state and local level about individual and community responses to terrorism.**



Since the start of the war on terrorism, the Center has generated and disseminated knowledge on the effects of deployment and combat on soldiers, sailors, airmen and marines and their families. The Center has galvanized nationally renowned academics and medical leadership as well as its own subject matter experts to contribute to new areas of trauma need, such as the impact of combat injury on military healthcare providers, service members, their families and children. The Center has also mobilized its existing resources to examine the prevalence of deployment-related family violence, child maltreatment and neglect that has escalated in the military community since the start of the war on terror.

Concomitant with the Center's advances and involvement in military psychiatry, the Center published in 2007 a landmark book, *Textbook of Disaster Psychiatry*. This project, the first book to focus specifically on disaster psychiatry, brought together Center colleagues in trauma and disaster from around the globe to provide a comprehensive review of the psychological, biological and social responses to disaster.

Now a component center of the Defense Centers of Excellence (DCoE) on Psychological

Health and Traumatic Brain Injury, the Center is positioned to contribute to the improved psychological health and strength of the military community through its cutting edge research in neuroscience and as a knowledge center for the psychological implications of combat and service to our nation. The Center's Director, Robert J. Ursano, M.D., Professor and Chairman of USU Department of Psychiatry, is internationally regarded for his academic contributions in the fields of trauma prevention and care, and his leadership in bridging the principles and practice of military and disaster psychiatry to strengthen our nation's health and public health planning and response to local, regional and national disasters and traumatic events.

#### **The Center:**

- Develops and carries out research programs to extend our knowledge of the medical and psychiatric consequences of war, deployment, trauma, disaster and terrorism, including weapons of mass destruction.
- Educates and trains health care providers, leaders, individuals and public and private agencies on how to prevent, mitigate and respond to the negative consequences of war, deployment, traumatic events, disasters, and terrorism.
- Consults with private and government agencies on medical care of trauma victims, their families and communities, and their recovery following traumatic events, disasters and terrorism.
- Maintains an archive on medical literature related to the health consequences of traumatic events, disasters and terrorism of individuals, families, organizations, and communities.
- Provides opportunities for post-doctoral training of medical scientists to respond to and research the health consequences of trauma, disaster, and terrorism.

The Center is positioned to contribute to the psychological health and strength of the military community as a knowledge center for the psychological implications of combat and service to our nation.

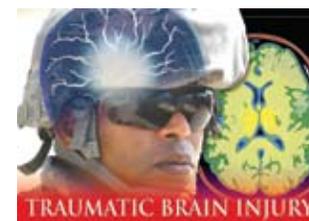


### **CSTS Organizational Structure**

Approximately forty scientists representing multiple disciplines staff the CSTS. These disciplines include psychiatry, military and disaster psychiatry, social and organizational psychology, neuroscience, research design and statistics, social work, risk communication and public health communication. The Center grows its activities through cross-disciplinary research, teamwork and collaborations to respond rapidly to research and education needs. The Center provides real-time consultation (consultation at the time of or immediately following a traumatic event) and just-in-time education (knowledge dissemination at the time of a traumatic incident in the form of electronic fact sheets) for critical events that face DoD and the Nation. The Center has been involved in nearly every large scale disaster the nation has faced in the past 25 years, through its education, research and consultation activities.

The Center funds the majority of its research through extramural grants and funding from a wide range of organizations. The Director of the Center, Robert J. Ursano, M.D., has overall responsibility for Center function, science and fiscal activities. Six Associate Directors oversee the Center's Scientific Research; Public Education and Preparedness; Health Care System Education; Child and Family Program; Consultation and Military Psychiatry; Homeland Security Studies; and, Information Systems and Operations.

The Center moved its major location in 2007 from the National Naval Medical Center to the North Campus of USUHS located on Rockledge Drive in Bethesda, Maryland. Neuroscience laboratories are located on the main campus of USUHS. The CSTS has a Scientific Advisory Board composed of distinguished scientists and national and international trauma experts who provide their counsel and perspective to the Center (see page 21).



**CSTS disciplines include psychiatry, military and disaster psychiatry, social and organizational psychology, neuroscience, research design and statistics, social work, risk communication and public health communication.**



# RESEARCH IN NEUROSCIENCE AND NEUROBIOLOGY

*“We directly apply our basic research in neuroscience and neurobiology to inform clinical interventions for posttraumatic stress disorder diagnosis and treatment. The Center’s translational research model — from bench to bedside to bench — helps us respond to those on the battlefield, as well as those exposed to natural and human made disasters ranging from automobile accidents to terrorism.”*

—He Li, MD, PhD  
Associate Professor  
USU Department of Psychiatry

The Center conducts pioneering, translational research in neuroscience that addresses the brain related prevention, onset and recovery elements of the neurobiology of trauma-related exposures. As part of the Department of Psychiatry of our nation’s military medical school, and a partnering center of the Defense

Center of Excellence (DCoE) for Psychological Health and Traumatic Brain Injury, the Center’s research in neuroscience and neurobiology is focused on solving issues of health and performance to optimize the psychological health and resilience of the military community and the public health of our nation.

Stress, especially the extreme stress of traumatic events encountered in combat, can permanently alter brain neurobiology. Posttraumatic stress disorder (PTSD) represents a serious, potentially disabling and highly prevalent health consequence of deployment to Iraq and Afghanistan since the start of the war on terrorism. Pharmacological prevention and treatment of stress-related disorders such as posttraumatic stress disorder (PTSD) is a topic of significant medical interest. The Center’s neuroscientific research from July 2007 through July 2008 has made major contributions in this arena.

Building upon numerous years of prior research, Center neuroscientists have discovered two new critical paths in the neurobiology of posttraumatic stress disorder (PTSD). These discoveries may lead to new treatments and diagnostic tools for PTSD. The CSTS and its collaborators, using new neurobiologic methodologies have identified the important function of a new gene and protein (p11) and a cellular component (the mitochondria) in PTSD. The studies represent collaborations of CSTS scientists and leading academic and research institutions including the National Center for PTSD of the Department of Veterans Affairs, Stanley Medical Research Institute, National Institute of Mental Health, Yale University and the George Washington



University School of Medicine. The collaborators work together as the Traumatic Stress Brain Study Group (TSBSG), a unique scientific initiative with access to the world's first and only Brain Bank that collects and examines post-mortem brain tissue of PTSD patients.

The first study (Zhang et al., 2008) identified a potential biomarker for PTSD, a protein and its associated gene known as p11. This finding has significant implications for posttraumatic stress disorder (PTSD) diagnosis and treatment since it was discovered in both animal models and human PTSD brain tissue. Biomarkers are increasingly used to diagnose diseases promptly and accurately, to identify individuals at high-risk for certain diseases and to follow the course of treatment. In the absence of clinical biomarkers for PTSD, diagnosis has been dependant on only the assessment of clinical symptoms. These symptoms are often missed, misdiagnosed and/or left untreated in thousands of affected individuals (military and civilian), thus disrupting the quality of their lives and the lives of their families and children.

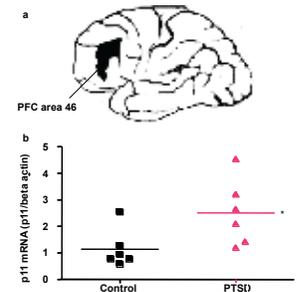
The Zhang et al. study was the first to use human post-mortem brain tissue from individuals who had PTSD. Researchers discovered that p11 (a protein present in all individuals) decreased in patients with depression, a condition often co-morbid with PTSD, but the new findings from CSTS scientists indicated it is *increased* in patients with PTSD. CSTS scientists further discovered a possible molecular mechanism that could explain the increase of p11 in PTSD and the decrease of p11 in depression. Using state of the art techniques of molecular biology, they found that three glucocorticoid (stress hormones) receptor-binding sites reside in the human p11 gene. These sites may regulate p11 gene expression and p11 levels via their interaction with stress hormones in PTSD patients.

This research area has significant implications

for understanding and treating PTSD: 1) the level of p11 may be a biomarker for diagnosing PTSD, as well as for differentiating PTSD from depression; 2) the identification of three glucocorticoid receptor-binding sites suggests a therapeutic target for development of clinical interventions to block or alter p11 levels for PTSD prevention and treatment; and, 3) the presence of p11 in tissue and therefore blood may lead to PTSD screening and monitoring for purposes of disease prediction, diagnosis, and prognosis.

In another area of work, two important research projects involving Center scientists Dr. H Li and L Zhang are being carried out in collaboration with George Washington University and have resulted in the submission of two patent applications. The Su et al. study (2008) identified PTSD-specific gene targets with implications for PTSD detection, diagnosis, prevention and treatment. This study was the first to examine mitochondrial genes using human post-mortem brain tissue from individuals diagnosed with PTSD. Mitochondria are the principal energy source of cells that convert nutrients into energy. Mitochondrial dysfunctions are increasingly recognized as possible key components in stress related mental disorders. The molecular markers associated with mitochondrial functions underlying the pathogenesis of PTSD are poorly understood. Lack of such detailed knowledge greatly hampers the development of effective therapeutic approaches to prevent as well as to treat PTSD.

Using a 3rd generation mitochondria gene chip containing 1,159 genes, researchers examined gene changes in the brain tissue of six post mortem PTSD patients against a control group of six well matched post mortem control subjects without PTSD. Results revealed specific gene expression patterns that distinguished the PTSD patients from the control subjects. These gene changes could serve as a biomarker for PTSD diagnosis as well as a therapeutic target



p11 mRNA expression in postmortem PFC is significantly increased in patients with PTSD compared to age- and sex-matched controls. (a) A perspective of the human brain to locate area 46 in the prefrontal cortex (PFC). (b) P11 mRNA in PFC (area 46) is significantly greater in PTSD patients at postmortem compared to age- and sex-matched controls (n=6 per group, 2 cases died of suicide and 4 died of other causes in PTSD group). Data are shown as means  $\pm$  SEM, \* $p < 0.05$  (control vs PTSD) and have been analyzed by the student's t test.

for PTSD treatment. These findings of PTSD-specific gene expression patterns are of major significance in understanding the molecular basis underlying the pathogenesis of PTSD, and may serve as the basis for further development of strategies and methods for detection, diagnosis, prognosis, prevention and treatment of PTSD. A patent for hMitChip3 has been filed and is currently being processed.

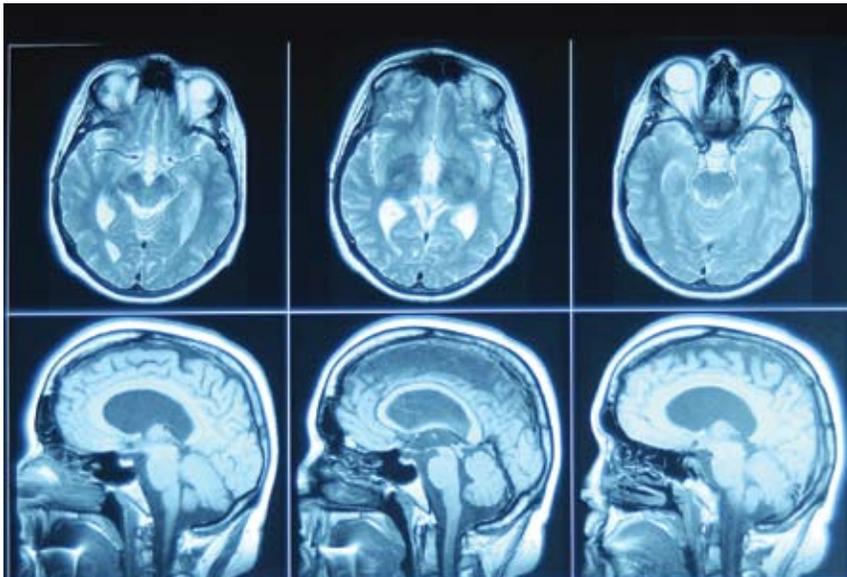
Most of the research performed thus far addressing pharmacological prevention and treatment of stress-related disorders has focused on the effectiveness of serotonin reuptake inhibitors in alleviating the symptoms of stress-related disorders. Although clinical research has shown that these agents are useful in alleviating symptoms, their overall efficacy is limited and hindered by their less selective pharmacological targets, serious side effects and lower efficacy. There is also

some suggestion that they may be less effective in war-related PTSD, which involves chronic exposure rather than single event exposure to traumatic events. The development of more specific pharmacological agents with potentially less significant side effects as a therapeutic strategy aimed at prevention and/or treatment of disorders such as PTSD constitutes an important step in the treatment of these illnesses.

To further address these issues the CSTS has another important research area examining the impact of stress on brain structure that regulates the fear response. From these studies, Center scientists discovered that the 5-HT<sub>2A</sub> receptor is the primary receptor mediating serotonergic facilitation of GABA release and modulating neuronal excitability in the amygdala circuitry, which is the key brain structure that controls the fear response. 5-HT<sub>2A</sub> receptor-mediated effects in the amygdala were found to be substantially impaired by exposure to traumatic stress using a traumatic stress rat model. In this model, the stress-induced behavioral and neurobiological alterations were very similar to those found in PTSD patients. Researchers hypothesized that pre- or post-treatment of subjects exposed to traumatic stress with selective 5-HT<sub>2A</sub> receptor antagonists may be expected to prevent stress-provoked long-lasting serotonin overflow in the amygdala neuronal circuitry and therefore protect 5-HT<sub>2A</sub> receptors from impairment due to receptor desensitization and down-regulation.

In ongoing research the Center is focused on the investigation of the efficacy of pre- and post- stress administration of a selective third generation 5-HT<sub>2A</sub> receptor antagonist MDL 11,939 ( $\alpha$ -Phenyl-1-(2-phenylethyl)-4-piperidinemethanol) in an animal model of PTSD. This study, for the first time, has demonstrated that both pre- and post-stress administration of 5-HT<sub>2A</sub> receptor antagonists are effective in preventing traumatic stress-induced exaggerated fear response, suggesting that 5-HT<sub>2A</sub>

**Researchers discovered that p11 (a protein present in all individuals) decreased in patients with depression, a condition often co-morbid with PTSD, but the new findings from CSTS scientists indicated it is increased in patients with PTSD.**



receptor signaling may play a key role in modulating the traumatic stress response in the central nervous system (Jiang et al., 2008). Thus, the use of 5-HT<sub>2A</sub> receptor antagonists to prevent, treat and promote resilience in traumatic stress-induced neuron pathogenesis represents a novel therapeutic strategy for PTSD medication (a patent for this regimen is currently pending).

Other research using PET neuroimaging completed in 2007–2008 was done by Dr. E. Osuch in collaboration with Dr. Wayne Drevetz at NIMH and has identified critical brain regions for “resilience” and recovery after traumatic stress (E. Osuch et al., 2008).

In its role to educate neuroscientists, the Center hosted *The 3rd Annual Conference on the Neurobiology of Amygdala and Stress* in April 2008 focused on basic neuroscience and translational research. The conference attendance was at full capacity and featured internationally renowned speakers addressing topics ranging from ‘Mechanisms of Lasting Change in Anxiety Produced by Severe Stress in Animals’ to ‘Different Effects of Early Exposure and Cognitive Therapies on Fear and Avoidance.’



# MILITARY PSYCHIATRY

*“Your Center’s participation on the Family Forum panel during the Army Strategic Leaders Development Program will be of great assistance to our future general officers and their spouses as they assume key roles in our Army. Thank you for your outstanding work and for all you have done for our Army and Nation.”*

—George W. Casey, Jr.  
General, United States Army  
Chief of Staff

Military psychiatry addresses the psychiatric, psychological and mental health issues that affect and occur within the military community (service members, their families and children) including Active Duty, Guard and Reserve personnel and veterans. The Center advances the field of military psychiatry through: 1) translational research in neuroscience to understand and inform treatments for traumatic stress disorders (see Neuroscience); 2) education of USU medical students committed to service in our nation’s Army, Air Force, Navy and public health service; 3) development and dissemination of educational resources on timely issues of military health and mental health to educate physicians (military and civilian) and healthcare providers engaged in military and trauma-informed care, and; 4) consultation

with DoD leadership, government, academia, industry and the media to foster knowledge, educational and clinical resources, and outcomes for optimizing and sustaining military health and influencing military health policy.

Notably, the Center, through its affiliation with the Department of Psychiatry of Uniformed Services University, has since its establishment in 1987 institutionalized our nation’s knowledge of military psychiatry as a field of academic and medical study. The Center has expanded its contributions over the last three decades to strengthen the performance, the health and mental health of our troops in combat and in operations other than war, and to foster the resilience of military families and children. Today, the Center, now a partnering center of the Defense Centers of Excellence (DCoE) for Psychological Health and Traumatic Brain Injury, is positioned to further commit and utilize its resources and expertise in military psychiatry for integrated, multi-disciplinary research, education and consultation around DoD mission relevance and overall excellence in trauma-informed care.

## **Military Psychiatry Research**

The Center is currently engaged in cutting edge research to improve the health and psychological resilience of troops and their families through research in neuroscience, social epidemiology and risk modeling of trauma, prevalence studies of deployment stressors, and child and adolescent psychiatry-related research. Through neuroscience and neurobiology, the Center is examining the molecular mechanisms underlying traumatic response disorders such as posttraumatic stress



disorder (PTSD) and translating findings to inform clinical and therapeutic interventions for diagnosis and treatment (see Neuroscience).

The Center's new research projects related to the health and mental health consequences of deployment stress include a major collaboration with Dr. Sandro Galea of the University of Michigan on the epidemiology and the trajectory of posttraumatic stress, deployment stress, health risk behaviors and health care utilization in National Guard and Reserve. In addition, the Center has established, funded by DoD, an integrated research collaboration of USU, NIMH, Walter Reed National Military Medical Center, DC Veterans Administration, and Armed Forces Retirement Home to provide world-class clinical research capability for PTSD and Traumatic Brain Injury (TBI) aimed at improving psychiatric and psychological care to service members and veterans.

The Center continues to identify and pursue research with vulnerable and forgotten populations exposed to trauma. The Center is conducting prevalence studies to determine deployment-related stressors on our nation's Mortuary Affairs (MA) soldiers who perform necessary, but emotionally difficult tasks in times of combat. Center scientists have conducted nearly 1,000 on site surveys of personnel from four MA companies in the active Army and the U.S. Army Reserve. This work, past and present, has distinguished the Center as a leading source of knowledge in body recovery, an essential task in military and civilian disasters. The Center has provided consultation and training around these issues to the Army and other government agencies such as the State Department concerned about mitigating stress and sustaining performance in disaster response environments. The Center's Family Violence and Trauma Project Director also teaches a class on the psychological stress of mortuary affairs operations at the U.S. Army Mortuary Affairs Center and School at Ft. Lee, Virginia.

In collaboration with the University of Virginia, the Center has examined "community shielding" for military installations in cases of bioterrorism, nuclear or pandemic events. The Center's Child and Family Program area is engaged in clinical and therapeutic interventions research for children and families of injured soldiers (see Child and Family Program).

The Center's research literature on military medicine is extensive and its database is rich in important historical and contemporary publications. These references inform and guide current research and policy.

Research of Center Scientists is funded by DoD, U.S. Army, Centers for Disease Control and Prevention, National Institute of Mental Health, National Institute on Drug Abuse and other public and private foundations.

**The Center is currently engaged in cutting edge research to improve the health and psychological resilience of troops and their families through research in neuroscience, social epidemiology and risk modeling of trauma, prevalence studies of deployment stressors, and child and adolescent psychiatry-related research.**

### **Military Psychiatry Education**

The Center educates and trains providers in the military health care system, which includes doctors, nurses, psychologists and family outreach professionals, military leadership as well as civilian providers and organizations who serve military members and their families. This education focuses on preventing, mitigating and responding to the negative consequences of war, deployment, combat injury and other trauma related issues. Center experts serve as faculty for undergraduate medical student education in general and military psychiatry, and also oversee clinical psychiatry clerkships and residency programs in the major military medical centers in the National Capital region. Center educators provide continuing medical education in military trauma, disaster and terrorism





as Visiting Professors at civilian and military medical training centers throughout the country as well as through distance learning programs.

The Center also sponsors military psychiatry fellowships that have brought international scholars and clinicians to the Center expanding its academic influence globally.

In 2008, the CSTS graduated its second Preventive/Disaster Psychiatry Fellow, Major Art Therakopian, M.D. who spent two weeks in Afghanistan during his practicum year with the CSTS after receiving his Master in Public Health. He also served as an appointed fellow to the American Psychiatric Association's Disaster Psychiatry Committee and published an important article on measurement of PTSD in the *Journal of Traumatic Stress*.

**The Center educates and trains providers in the military health care system, which includes doctors, nurses, psychologists and family outreach professionals, military leadership as well as civilian providers and organizations who serve military members and their families.**

Other scholarly articles and papers of impact in military psychiatry include editorials and commentaries in *JAMA* written by Dr. Ursano with Dr. Jon Shaw of the University of Miami, a commentary on recent work in the UK on deployment by Drs. Ursano, Engel and Benedek in the distinguished *British Medical Journal*, and a commentary by Drs. Ursano and Benedek in one of the leading science journals, *Public Library of Science* (PLOS) on the first study to examine the epidemiology of war related mental illness in Palestine, which was written by Dr. Elie Karem and Dr. Ron Kessler.

A highly successful educational product drawing upon the Center's expertise in military psychiatry is its *Courage to Care* initiative. Launched in 2004, *Courage to Care* is an ongoing, electronic health communication campaign addressing

important and timely topics of military health, as well as issues pertaining to homeland security and the nation's health. It is intended for medical leadership and practitioners, as well as military families throughout the globe. This year's installments included the following provider resources: 'Alcohol Misuse through Brief Screening and Counseling,' 'Healthcare Continuity of Military Families,' and 'Fostering Recovery from Medical Illness, Injury and Disease.' Military family fact sheets included: 'Alcohol and Your Health' and 'Military Families on the Move: Tips for Keeping Your Family Healthy.'

### **Child and Family Program**

The Center has a robust Child and Family Program (CFP) that has expanded the Center's reach and expertise on the effects of trauma on families and children from war, natural disaster, terrorism and bioterrorism. Dr. Stephen Cozza, former Chief of Psychiatry at Walter Reed Medical Center (WRMC), joined the CSTS in 2006 as an Associate Director to head up CFP. The Center's contributions this year in advancing the health and mental health of military families and children have been extensive.

Seed funding from DoD Military Community and Family Policy and DoD Health Affairs supports research and education related to military children and families, the impact of parental combat deployment on children, and the work of the Center as a Category II site of the National Child Traumatic Stress Network (NCTSN). As part of the NCTSN, the Center serves as a knowledge development and dissemination center providing expertise in the impact of trauma on military children and families.

Through Congressionally Directed Medical Research Program (CDMRP) funding the Center's CFP is assessing the impact of parental combat injury on children and families as part of a collaborative grant with WRAMC, Brooke Army Medical Center and the 2nd Infantry Division

at Ft. Stewart, Georgia. Research is also being carried out to examine the relationship between military family and community characteristics, and the prevalence of child neglect in the Army.

In December of 2007, the Center hosted a *Workgroup on Intervention with Combat Injured Families* bringing together national experts in adolescent and child psychiatry, military medicine and trauma to create guidelines of care around the impact of combat injury on military children and families. The Center produced an important educational document, *Principles for Caring for Combat Injured Families*, a set of ten core principles that are evidence informed and serve to guide the practice of both health care and community providers serving this special population of military families. The principles were developed to encourage scientific study that will further inform evidence-based approaches to care.

In July 2008, the Center introduced a new health communication campaign, *Resources for Recovery*, to further disseminate its knowledge around the impact of combat injury on our nation's military children and families. The first installment, "The Combat Injured Family: Guidelines for Care," is based upon the *Principles for Caring* document. Future installments of *Resources for Recovery* will cover the principles of communicating about injury, both within the family and between family members and health care/community service providers, understanding child and family distress as a result of combat injury, and sustaining parental availability during the recovery process.

Another important contribution of the Center and its CFP is the *Parent Guidance Assessment-Combat Injured* (PGA-CI). The PGA-CI was developed to assist skilled mental health professionals in the development of family assistance strategies and plans. While it is not specifically intended for other populations, the PGA-CI has applicability for other families with an



injured parent such as might appear in a trauma center after a major motor vehicle accident.

### **Family Violence and Trauma Project**

The Center's Family Violence and Trauma Project (FVTP), now in its thirteenth year, represents another domain of military psychiatry. Through research to develop evidence for practice, the FVTP addresses the prevalence and trends of spouse abuse and child maltreatment in the U.S. Army. Funded by the U.S. Army, the FVTP provides support via briefings, papers, staff studies and a quarterly newsletter, *Joining Forces Joining Families*, to inform Army leadership and the Army's Family Advocacy Program of the scientific and medical aspects of child and spouse abuse.

Program Director Dr. James McCarroll and CSTS scientists examined long-term trends in child maltreatment and made the first observations on increased rates of child neglect in the US Army since the onset of the war on terrorism. These early observations were independently con-

firmed in two subsequent published papers. The Center's original findings were published recently in *Child Abuse Review*. This research has highlighted the importance of child neglect in the Army during periods of high family stress due to rapid and frequent deployments. In addition to the research on child maltreatment trends, the FVTP has continued to perform regular analyses of the rates of spouse and child maltreatment in the Army for each Army installation and performs special studies for Army leadership.

Additional highlights of 2007-2008 include the publishing of a book, *Building Bridges to Research*, a collection of statistics articles previously featured in the *Joining Forces Joining Families* newsletter. This book was disseminated to the Army Community Service, the Army Family Advocacy Programs, and other military and civilian consumers such as graduate schools of social work. During this period, the FVTP also collaborated in a research project with the Fordham University Graduate School of Social Service to develop a training curriculum for Army social workers. This training curriculum was developed using an evidence-based methodology for the assessment of domestic violence victims.

Additionally, FVTPs has contributed to the Center's literature database to improve the development of family violence research protocols and to further military and civilian social workers' research education. From continuous analyses of child and spouse maltreatment statistics, to collaborations with academic institutions to develop evidence-based training, to publication of scholarly papers and books, to on site research, FVTP demonstrates the Center's unique ability to go from bench to bedside to bench.

The Center also developed an e-education campaign for Army

Community Support, *Joining Forces Joining Families: Helping, Caring and Learning*. This bi-monthly e-education program is directed to advancing and supporting the work of the Army Community Support leadership.

### Military Psychiatry Consultation

The Center provides real-time consultation to the military healthcare system and its leadership as well as to government and state agencies, industry and academic institutions regarding military unique health and mental health issues. Drs. Ursano, Benedek and Cozza presented the Center's work on traumatic stress in soldiers and families to the four star generals of the U.S. Army and their wives at the U.S. Army Chief of Staff's (General Casey's) meeting. A letter of appreciation from GEN Casey supported the excellent reception of the presentation. The success of the presentation resulted in requests to present to the "generals school" conference in Washington DC.

Center scientists also consult with national and local media and educational organizations to inform their risk communication and educational outreach around military unique health issues. Dr. Cozza has served as a consultant to Sesame Workshop to assist their production of an innovative DVD series to support the children of deployed military personnel. He participated in the development of their second installment, *Talk, Listen, Connect: Deployments, Homecomings, Changes*, launched in April 2008. The materials help families cope with multiple deployments and the return of a parent who has been injured in combat. Dr. Cozza also consulted on a book on bereavement for children, sponsored by Arlington Cemetery, with a focus on helping children of military families deal with loss.

The Center's work in military psychiatry research, education and consultation spans a vast terrain. This work encompasses research on the neurobiology of brain structure to understand



human responses to fear, studies to evaluate the stressors of combat operations on soldiers who fight, even those who must recover and return our fallen heroes, resources that address the impact of deployment, reintegration and combat injury on our military families and children, education for our military leadership on the complexity of trauma, and consultation with national media on the production of valuable and sensitive resources that foster strength and resilience in our military community. The Center's work and strength is its capacity to go from bench to bedside to bench. We use this metaphor to illustrate how the Center's research informs practical applications in the form of disaster preparedness recommendations to clinical care of trauma victims, and how these real world experiences in turn help the Center identify new and advanced research needs.



As part of Uniformed Services University's military medical school and a partnering center of the Defense Centers of Excellence (DCoE) for Psychological Health and Traumatic Brain Injury, the Center for the Study of Traumatic Stress is proud to serve our nation and provide consummate leadership in the field and practice of military psychiatry.

## DISASTER PSYCHIATRY

*“The Center’s work has always focused on themes of individual and community responses to trauma and traumatic events, and has helped shape and re-shape the landscape of disaster and trauma research, education and consultation.”*

—Carol S. Fullerton, PhD, Professor,  
Department of USU Psychiatry,  
Science Director, Center for the  
Study of Traumatic Stress

Disaster psychiatry examines the psychological and behavioral effects of traumatic events on individuals and populations to inform disaster preparedness, response and recovery. Disaster psychiatry brings together the knowledge and practice of psychiatry to inform approaches aimed at preventing, mitigating and responding to the psychological and behavioral out-

comes of disasters on individuals, families and communities. The Center is one of the leading institutions in the world to address the field of disaster psychiatry and disaster behavioral health, bringing lessons learned from studying human behavior under extreme stress in the military to individual and population-based impact on civilian lives and organizations.

### Disaster Psychiatry Research

The Center's Scientific Director, Carol S. Fullerton, PhD, leads an innovative public health study partnering with Centers for Disease Control and Prevention (CDC), the National Institute of Occupational Safety and Health, and the University of Miami and Florida Department of Health. The study involves longitudinal research to understand the vulnerability and resilience of our na-

**Disaster psychiatry examines the psychological and behavioral effects of traumatic events on individuals and populations to inform disaster preparedness, response and recovery.**

tion's public health responders and their work in the hurricanes of 2004 and 2005. This study also demonstrates a partnership across federal, state and academic organizations helping to prepare our nation's health care personnel. Dr. Fullerton provides invaluable leadership as the recipient of the prestigious, James Leonard Award for Excellence in Clinical Research for her research on the acute and long-term effects of trauma exposure on disaster workers that was a feature article in the *American Journal of Psychiatry*.

Research on civilian disasters includes the impact of disaster and rescue work on first responders as well as its long-term effects on healthcare providers. The CDC engaged CSTS to conduct an organizational assessment of its deployment operations, policy and practices in an effort to identify factors to sustain resilience in emergency responders. The CSTS completed its work and Drs. Benedek and Ursano presented the Center's report to the senior leadership of CDC.

### Disaster Psychiatry Education

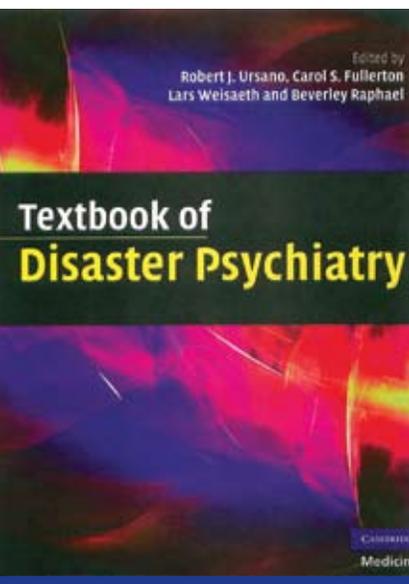
In 2007, the Center published with Cambridge University Press, a landmark book, *Textbook of Disaster Psychiatry* (Eds., Ursano, Fullerton, Weisaeth, Raphael), the first book to focus specifically on disaster psychiatry. The Center's involvement brought together international experts to provide a comprehensive review of the psychological, biological and social responses to disaster. Chapters address the epidemiology of disaster response, the neurobiology of disaster exposure, socio-cultural issues, the role of non-governmental organizations, workplace policies and implications for public health planning at the level of the individual and the community.

Disaster psychiatry ensures that principles of behavioral health and mental health care are in the medical arsenal supporting the public health response to disaster management. To advance this, Center scientists continually

educate medical leadership and medical professional organizations. Dr. Ursano delivered the Distinguished Scientist Lecture at the American Psychiatric Association meeting to psychiatric clinicians and scientists. Drs. Benedek and Ursano also presented a clinical symposium on treatment of PTSD. This distinguished panel, chaired by Dr. Ursano, included Dr. Doug Zatzick from the University of Washington and Dr. Patti Resick, Ph.D. from Boston University and the National Center for PTSD of the VA.

In advancing the integration of disaster mental health, preparedness and public health, the Center's work also has an impact on national security. Dr. Ursano was appointed a member of the Institute of Medicine Committee on Nuclear Preparedness. In addition, Drs. Flynn and Ursano were appointed to the National Biodefense Science Board subcommittee on Mental Health for the Department of United States Department of Health and Human Services (HHS). The subcommittee was established by Homeland Security Presidential Directed Activity (HSPD 21), and reports to the Secretary of HHS. Dr. Ursano received several important appointments representing his and the Center's expertise and contributions in disaster psychiatry. Dr. Ursano was appointed to the first major scientific advisory board of CDC for terrorism response and preparedness. As the only federal employee member of this Board, this appointment required a Secretarial waiver. Dr. Ursano was also asked to be part of a committee that will oversee the formation of a USUHS Center for Disaster Medicine and Preparedness. The Center through Drs. Flynn and Gifford, represented USUHS in meetings with HHS on HSPD 21 planning for disaster education needs.

Drs. Benedek and Ursano headed up a review of the present American Psychiatric Association treatment guidelines for PTSD and ASD. Drs. Benedek and Fullerton also had critical publica-



tions on the now established early intervention of Psychological First Aid. Dr. Ursano, as a collaborator with Dr. Ron Kessler of Harvard's Department of Health Care Policy, published the follow up of the Hurricane Katrina disaster region, showing that the rates of mental illness have remained high 18 months after the disaster. A follow up article has proposed methodological needs for future disaster population assessments.

The Center also develops disaster education resources in real time and in response to organization needs that are national and international. In response to the 2008 earthquakes in China, the Center translated a health assessment inventory and four critically important disaster response fact sheets into Chinese for

use by the WHO, APA and disaster responders. Cambridge University is translating the *Textbook of Disaster Psychiatry* into Chinese to meet the needs of health care responders in China. The Center's fact sheets are in continual demand by government leaders, industry, academia and the media (see CSTS Educational Materials, p. 23).

The Center created and runs the nation's first and only Fellowship in Disaster Psychiatry and Public Health. CSTS graduated its second Preventive/Disaster Psychiatry Fellow, Major Art Therakopian, M.D. Major Therakopian also served as an appointed fellow to the APA Disaster Psychiatry Committee and published an important article on measurement of PTSD in the *Journal of Traumatic Stress*.



# SELECTED PUBLICATIONS



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# CSTS EDUCATIONAL MATERIALS (2007–2008)

Center scientists advance trauma knowledge and trauma-informed care to a wide variety of audiences, military and civilian, on timely and relevant topics using diverse media:

the Center's website, electronic fact sheets, e-communications, newsletters, briefings and academic papers and publications. Here are some examples of the Center's work.



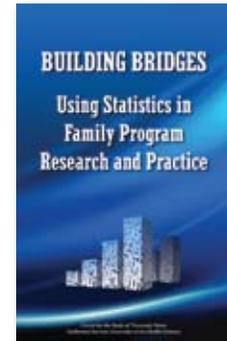
Courage to Care, a health communication campaign for military providers and families to improve and sustain our military's health and resilience.



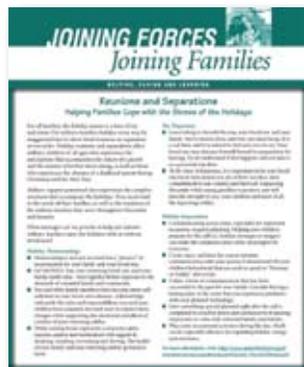
A newsletter for Army Family Advocacy Program and family outreach professionals to advance research knowledge and evidence-informed practice in family violence, child neglect and maltreatment.



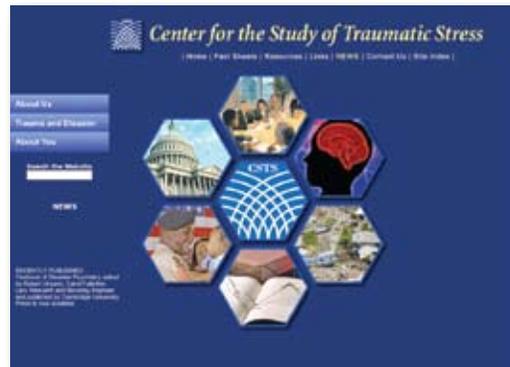
Leadership document resulting from *Workgroup on Intervention with Combat Injured Families* setting forth guidelines of care for families and children of our nation's wounded soldiers.



A book, marking 13 years of continuous publication of *Joining Forces Joining Families* newsletter, which advances knowledge of statistics for family program research in military and civilian communities.



An e-communication campaign to educate and reinforce knowledge within the Army Community Support network on the stressors experienced by military families due to deployment and redeployment.



The Center's website, which provides information and resources on a wide range of trauma and disaster subjects for research scientists, health care providers, government leaders, educators, industry and the general public.

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