



# Research Efforts Toward Reducing Suicide Behavior Among Military Servicemembers and Veterans

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# Outline

- What is the Military Operational Medicine Research Program
  - The Role of a Research Area Director
- Active Army Suicide Rates (1980-2009)
- Army Strategic Approach
  - Screening and Surveillance
  - Training (Universal Prevention)
  - Suicide Risk Assessments
  - Evidence-Based Treatment
  - Army's Strategic Suicide Analysis Cell
  - Suicide Research Efforts (led by the U.S. Army Medical Research and Materiel Command and Clinical Investigation Program)
- Suicide Prevention Research Portfolio
- Summary/Conclusions



# Role of a Research Area Director

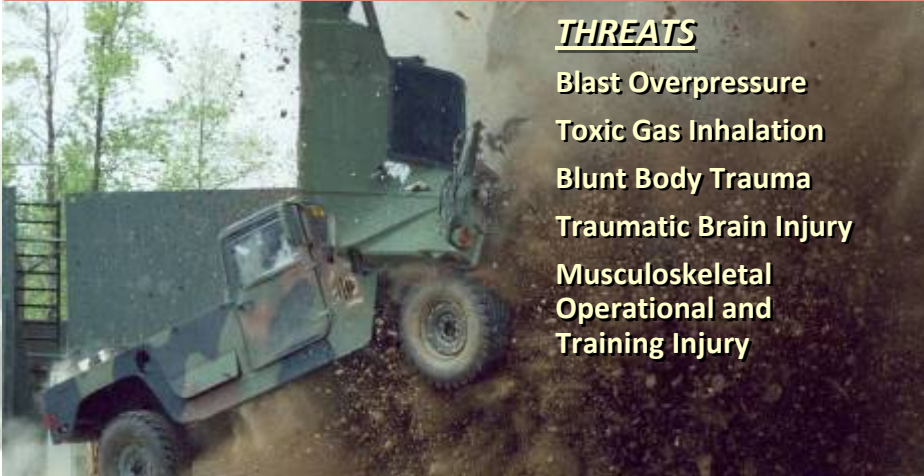
- Medical RDTE Programs are divided into mission areas, each headed by a senior staff coordinator, the Research Area Director (RAD), who is accountable to the CG, USAMRMC and Deputy for Medical Systems, OASA(ALT). RADs are responsible for:
  - Understanding and articulating both problem and solution sets within their assigned mission space
    - Identifying requirements & opportunity based gaps within total RDTE portfolio of relevant projects
    - RADs are RDTE-centric, but actively network with requirements and operational (studies) communities
    - RADs have defined responsibilities for both Army and DHP RDTE programs (including those of the DCOE for PH/TBI)
  - Overseeing the development and execution of a research program that effectively addresses the problem set
    - Conduct PPBES coordinating functions for both Army and DHP RDTE
    - Prepare Program Announcements and Program Solicitations
    - Evaluate and recommend funding for individual projects based upon programmatic merit
    - Review results of individual projects
  - Coordination with medical RDTE Program Managers of other DOD Components and the Inter-Agency
    - Outside of Army Medical and DHP RDTE funded programs, the RAD has no formal influence over investment decisions





## Priority 1

### Injury Prevention and Reduction

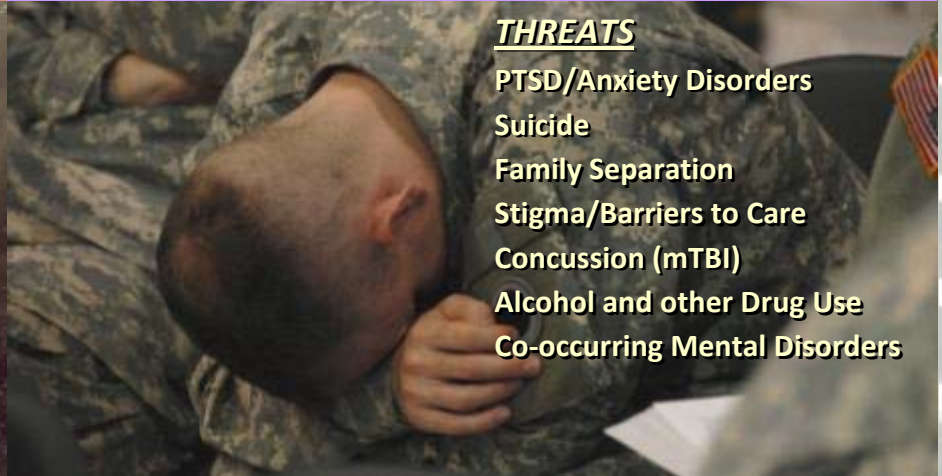


#### THREATS

- Blast Overpressure
- Toxic Gas Inhalation
- Blunt Body Trauma
- Traumatic Brain Injury
- Musculoskeletal
- Operational and Training Injury

## Priority 2

### Psychological Health and Resilience



#### THREATS

- PTSD/Anxiety Disorders
- Suicide
- Family Separation
- Stigma/Barriers to Care
- Concussion (mTBI)
- Alcohol and other Drug Use
- Co-occurring Mental Disorders

## Priority 3

### Physiological Health



#### THREATS

- Sleep Loss/ Disruption
- Fatigue and Burnout
- Inappropriate Nutrition
- Untested Dietary Supplements

## Priority 4

### Environmental Health and Protection

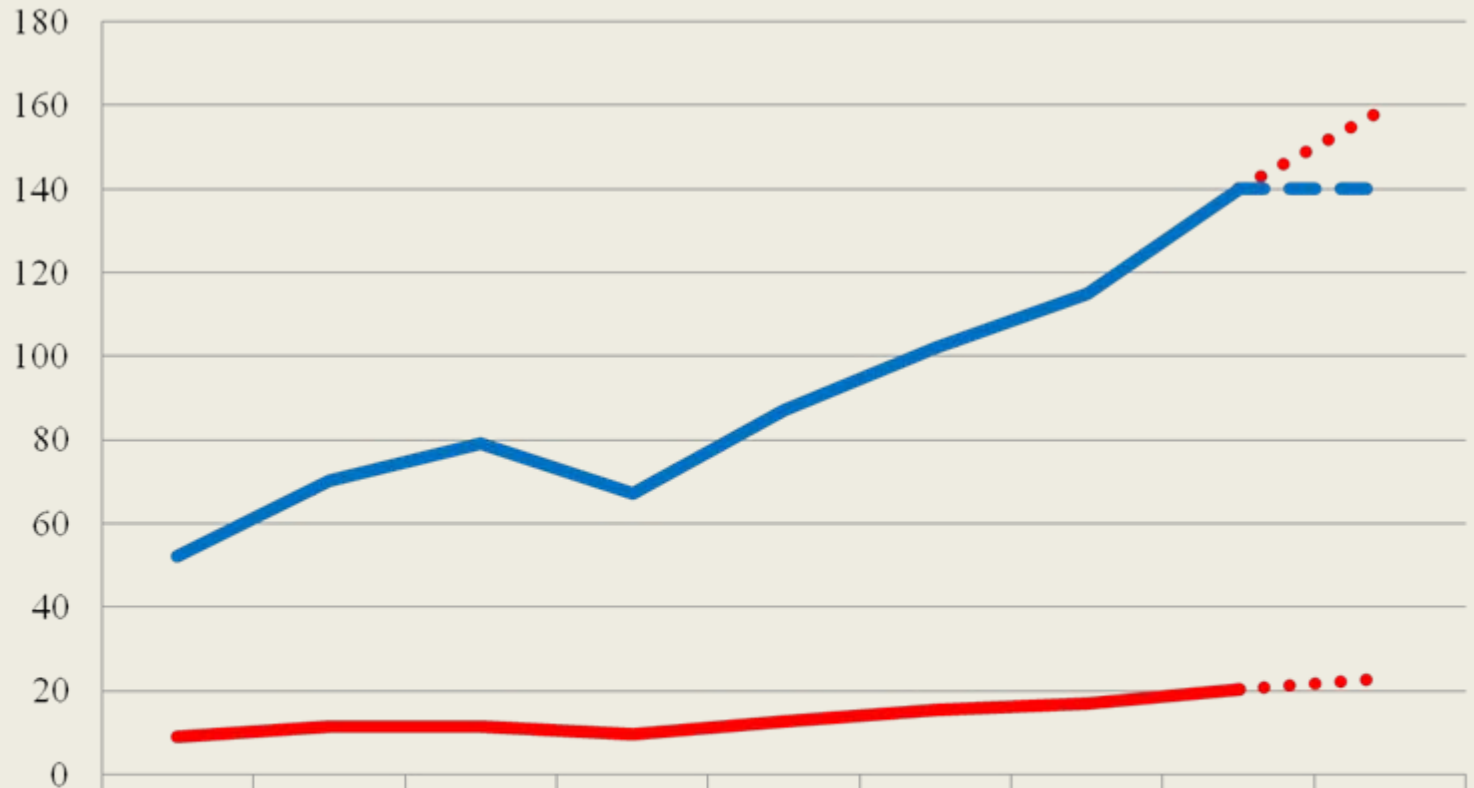


#### THREATS

- Toxic Industrial Chemicals and Materials
- Dust and Air Pollution
- High-Altitude Cold Injury
- High Altitude Hypoxia
- Operational and Training Heat Injury



# Army Suicides: 2001-Present

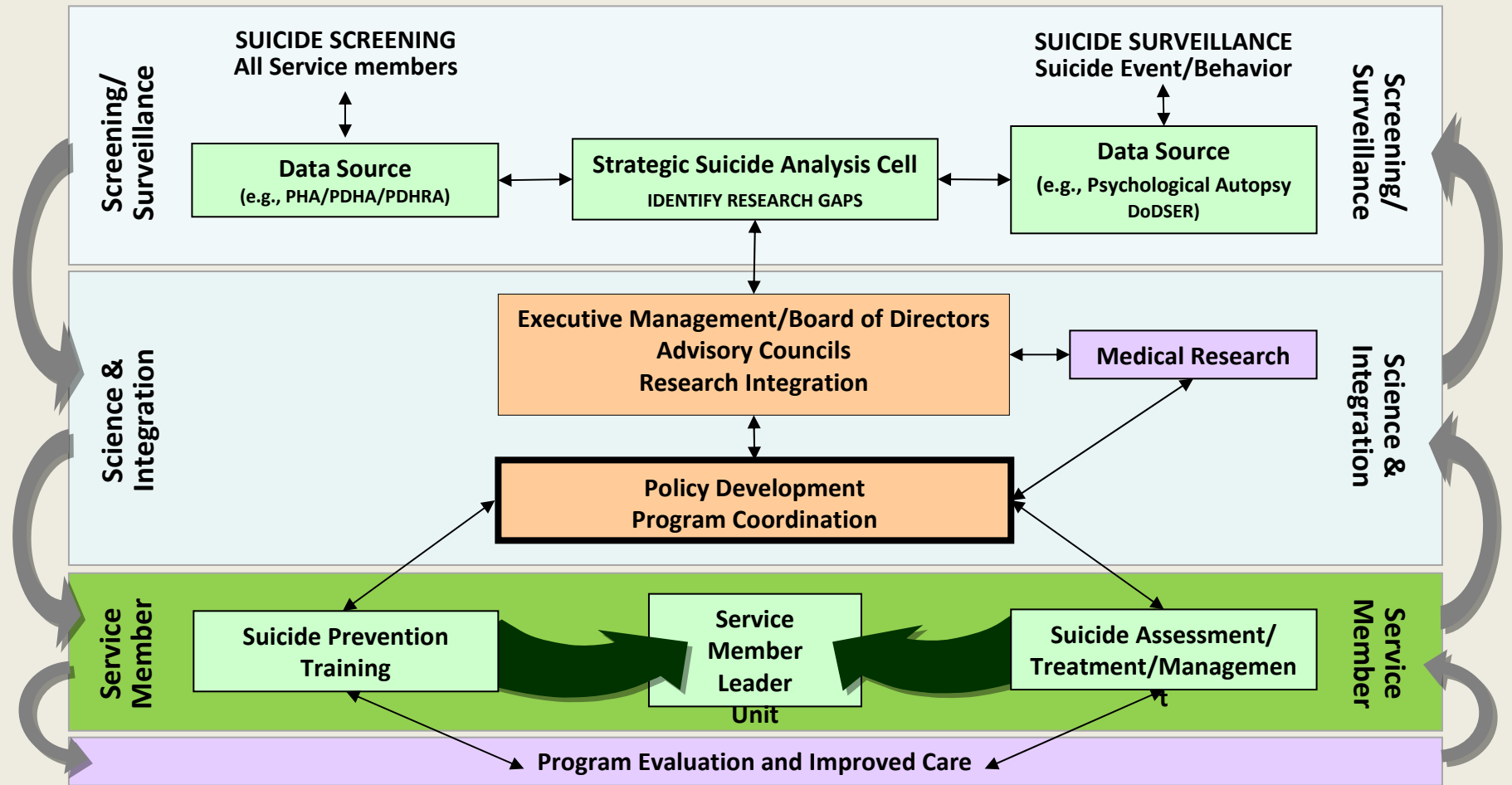


	2001	2002	2003	2004	2005	2006	2007	2008	2009
..... Potential								140	160
— Number	52	70	79	67	87	102	115	140	140
— Rate/100000	9	11.5	11.4	9.6	12.7	15.3	16.8	20.2	23

Prepared by CHPPM-BSHOP 30 NOV 09



# Evidence-based Military Public Health Suicide Prevention Model





# Levels of Scientific Evidence





# Suicide Prevention RDT&E 2007-2009

- **2007**
  - Army-NIMH Memorandum of Agreement established for 5-year study
- **2008**
  - 9 Projects (\$10,957,458) – FY08 War Supplemental appropriations
  - 1 Project (\$50,000,000) – Army Study to Assess Risk and Resilience in Service Members (Army STARRS)
- **2009**
  - MOMRP led a series of workshops with leading suicidologists and military stakeholders
    - Provided research recommendations to MOMRP and eJTCG-5 in 4 focused areas
      - Suicide risk screening and assessment
      - Suicide prevention
      - Indicated interventions to manage suicide behavior
      - Recommendations for revisions to the PDHA and PDHRA





# Suicide Research

Total: \$60,957,458

	Principal Investigator	Organization/ Laboratory	Proposal Title	Amount Awarded
1	Matthew Miller, M.D.	Harvard College	Antidepressants and the Risk of Self-harm and Unintentional Injury Among Younger Veterans	\$656,184 24 months
2	Mark Reger, Ph.D.	Madigan Army Medical Center	The Association between Suicide and OEF/OIF Deployment History	\$1,961,003 36 months
3	David Rudd, Ph.D.	Texas Tech University	Brief Cognitive Behavioral Therapy for Military Populations	\$1,967,035 36 months
4	Marianne Goodman, Ph.D.	James J Peters VAMC	High Risk Suicidal Behavior in Veterans- Assessment of Predictors and Efficacy of Dialectical Behavior Therapy	\$1,279,912 36 months
5	Thomas Joiner, Ph.D.	Florida State University	Optimizing Screening and Risk Assessment for Suicide Risk in the U.S. Military	\$753,159 36 months
6	Peter Gutierrez, Ph.D.	Denver VAMC	Blister Packaging Medication to Increase Treatment Adherence and Clinical Response: Impact on Suicide-related Morbidity and Mortality	\$1,173,408 36 months
7	Marjan Holloway, Ph.D.	USUHS	A Brief Intervention to Reduce Suicide Risk in Military Service Members and Veterans	\$2,666,717 36 months
8	Valerie Stander, Ph.D.	NHRC	Posttraumatic Stress Disorder, Substance Abuse and Self Harm: Mediating Relationships with Respect to Combat Stress	\$218,000 18 months
9	Toby Cooper, BCPS	Darnell Army Medical Center	Drug Related Overdoses Among Military Personnel	\$282,040 18 months
10	Bob Ursano, M.D.	USUHS	Army Study to Assess Risk and Resilience in Service Members (Army STARRS)	\$50,000,000 60 months



# Portfolio Synopsis

- **Five studies (\$53,117K) directed toward epidemiological research**
  - Significant investment dedicated to a better understanding of risk and protective mediating and moderating factors associated with suicide behavior
  - Studies will serve to strengthen policy and prevention efforts across the military and Veterans Administration
  - Studies will strengthen knowledge and practice on integrated surveillance and survey database management systems
  - Although projects purport to target specific factors, there seems to be significant overlap with existing surveillance efforts
- **Four studies (\$10,204,299) directed toward managing suicide behavior**
  - Two are randomized clinical trials evaluating evidence based treatments in military members; Each conducted in a different outpatient care milieu
  - Two studies are relatively novel and seek to establish an evidence base; Studies do not overlap
- **One study (\$753,159) directed toward validating a risk screening instrument to predict suicide related outcomes among Army Recruiters in-training**
  - Universal implications across the military and civilian community



# Unfilled Research Gaps

- Universal prevention
- Psychometrically sound, theory-driven screening measure(s)
- Basic science to validate underlying psychological and biopsychological theories of suicide
- Theory-driven evidence-based treatment studies (in patient and out patient) (i.e., CBT, CT, DBT, Interpersonal Therapy [IPT])
- Other evidenced based indicated interventions to prevent and manage suicide behavior (e.g., caring outreach, collaborative assessment and management , safety planning, collaborative care models, etc.)
- Combined psychotherapy and pharmacotherapy treatment studies
- Research to examine the effects of brief interventions to reduce problem drinking on suicide behavior and other outcomes (e.g., accidents, homicide, intimate partner violence, etc.)
- A research approach that integrates a brief evidence-based intervention to reduce problem alcohol or drug use in the primary care setting (e.g., enhanced RESPECT-MIL)
- Evidence-based systems of care



# MRMC Suicide RDT&E Efforts Pending 2009-2015

- **2009**

- Overseas Contingency Operations appropriations
  - Dedicated toward DoD Suicide Research Consortium

- **2010**

- MOMRP research task area in the Program Objective Memorandum (POM)
  - Suicide Prevention Core budget:
    - FY10 – FY11
      - Directed toward validating a suicide risk screening measure
- Suicide Research Integrating Integrated Product Team (IIPT)
- Suicide Research Consortium (ongoing)
- Warrior Resiliency Program Process Improvement Program (3-years)
  - COL Bruce Crow and Dr. Dave Jobes – Process Improvement Assessment/Pilot

- **2010-2015**

- Defense Health Program (DHP)
  - Army STARRS Program
  - 6.1-6.4 research across DoD (includes suicide research consortium)





# Process Improvement Program at Brooke Army Medical Center

- **Aim 1:** Evaluate existing procedures for clinical assessment and treatment of suicidal risk
  - **Aim 2:** Pilot an evidence-based program (i.e., CAMS) at BAMC to enhance clinical assessment / intervention with suicidal military patients
  - **Aim 3:** Evaluate the effectiveness of an enhanced model for standard of practice for possible dissemination to similar Military Treatment Facilities within Southern region
- Goal:** Return soldiers to functional and deployable status as soon as possible



# Quad Charts: Projects Overview



**Antidepressants and the Risk of Self-Harm and Unintentional Injury Among Younger Veterans**

Matthew Miller, MD, MPH, ScD  
 Harvard College

\$656,184

Period of Performance: 24 months

MILESTONES	Months	1-6	7-12	13-18	19-24
Data assembly & creation of retrospective cohorts using VHA and non-VHA resources		[Green bar]			
Analytic evaluation of study hypotheses			[Green bar]		
Dissemination of research findings				[Green bar]	

**Aims**

- To evaluate the association between antidepressant use and risk of suicide, intentional self-harm, and motor vehicle related fatal and non-fatal injuries in a population of veterans aged 50 years and younger.
- To determine whether a particular class of antidepressants (e.g., SSRIs) is associated with a disproportionately high risk of fatal and non-fatal motor vehicle injuries compared to other antidepressant classes (e.g., TCAs, SNRIs).

**Approach**

- The proposed cohort study will use the Department of Veterans Affairs health care utilization database linked to cause specific mortality files and appropriate pharmaco-epidemiologic methods to address the aims as well as many of the limitations of prior observational work.

**Deliverables**

- Scientific evidence as to whether a particular class of antidepressants (e.g., SSRIs) is associated with a disproportionately high risk of completed or attempted suicide compared to other antidepressant classes (e.g., SNRIs).
- The time-varying nature of the risk of suicide associated with antidepressant use.
- Factors that may mitigate or exacerbate the risk of suicide associated with use of particular classes of antidepressants (i.e., interactions, effect modifiers).

**Progress (12/16/09)**

- Proposal approved by all required IRBs and R&D committees
- Relevant data assembly and creation of retrospective cohorts in progress; obtaining and cleaning mortality data
- Requested mortality data from 50 states; data on 18 received





**The Association between Suicide and OEF/OIF  
 Deployment History**

Mark Reger, PhD

Madigan Army Medical Center

\$1,961,003

Period of Performance: 36 months

MILESTONES	Months	1-12	13-24	25-36
Database assembly and staffing		█		
Data analysis			█	
Prepare reports and manuscripts			█	
Transition of repository				█

**Aims**

- Compare suicide rates among non-Veterans & Veterans with/without a history of OEF/OIF deployment.
- Determine whether active duty & Veteran National Guardsmen & Reservists with a history of OEF/OIF deployment are at increased risk of suicide compared to non-Veterans & post-deployed service members/Veterans.
- Examine the relationship between suicide rates and rates of deaths of undetermined intent among non-Veterans and Service Members/Veterans with/without a history of OEF/OIF deployment.

**Approach**

- Develop a database in collaboration with other federal agencies to provide population-based estimates of the rates of suicide among service members from the beginning of OIF/OEF forward.

**Deliverables**

- Advanced knowledge about suicide among the OIF/OEF military cohort , vitally important to inform military policy as well as screening and preventive efforts .
- An established enduring means of maintaining a longitudinal database in collaboration with other federal agencies and population-based estimates of the rates of suicide from the beginning of OIF/OEF forward.
- Accurate calculation of suicide rates among active duty and veteran OIF/OEF military populations with the most current data available and permit tracking of OIF/OEF suicide rates across time.

**Progress (10/26/09)**

- Protocol submitted to IRB for approval
- Developing job descriptions
- Coordinating with National Death Index contacts
- Developing Data use Agreements with collaborators





**Brief Cognitive Behavioral Therapy for Military Populations**

David Rudd, PhD  
 Texas Tech University  
 \$1,967,035

Period of Performance: 36 months

MILESTONES	Months	1-12	13-24	25-36
Protocol approval and staffing		█		
Enroll participants and collect data			█	
Data analysis			█	
Prepare reports and manuscripts			█	

**Aims**

- Examine the effectiveness of a Brief Cognitive-Behavior Therapy (B-CBT), a 12-session modification of the previously tested and empirically supported approach to treating suicidality, as a psychotherapeutic treatment of suicidality among military personnel through a randomized clinical trial.

**Approach**

- This study will involve 150 participants who will be randomly assigned to one of two conditions, B-CBT (experimental condition) or treatment as usual (control condition-the existing outpatient treatment currently available at Fort Carson). Participants will be assessed with clinician administered interviews as well as self report scales at intake as well as 1,3,6,12,18, and 24 months.

**Deliverables**

- An effective B-CBT psychotherapeutic treatment for suicidality among military personnel
- A risk management software program for initial risk assessment, ongoing monitoring, and clinical management of high-risk suicidal patients

**Progress (12/3/09)**

- Initiated IRB submissions
- First investigators meeting convened
- Hiring in progress
- Telephone screening deleted from study
- Assessment packets finalized for reproduction
- Weekly communication among project personnel



**High Risk Suicidal Behavior in Veterans- Assessment of Predictors and Efficacy of Dialectical Behavior Therapy**

Marianne Goodman

James J. Peters VA Medical Center

\$1,279,912

Period of Performance: 36 months

MILESTONES	YR	1	2	3	4
90 baseline ; 12 follow up assessments					
120 baseline; 76 follow up assessments					
90 baseline; 102 follow up assessments					
52 follow up assessments					

**Aims**

- Examine efficacy of a 6-month outpatient treatment with standard Dialectical Behavior Therapy (DBT) compared to treatment as usual (TAU) in Veterans recently discharged from an acute psychiatric inpatient stay at high risk for suicidal behavior.
- Compare high- and low-risk suicidal Veterans in interpersonal functioning and resilience to identify intermediate symptoms closely associated with high-risk suicidal behavior.
- Explore DBT effect on the candidate intermediate symptoms of interpersonal functioning and resiliency associated with high- risk suicidal behavior.

**Approach**

- A RCT of 150 Veterans with high-risk behavior and 150 without. Participants will receive 6 months of TAU vs. DBT, and receive a battery of assessments at months 6, 12, and 18.

**Deliverables**

- An effective treatment strategy for diminishing suicidal behavior in individuals with personality disorder than can be applied to Veterans
- Identification of targets for treatment intervention directions with particular focus on interpersonal functioning

**Progress (9/30/09)**

- Funded September 2009
- Status report pending



**Optimizing Screening and Risk Assessment for Suicide Risk in the U.S. Military**

Thomas Joiner  
 Florida State University

\$753,159

Period of Performance: 36 months

MILESTONES	YR	1	2	3
Baseline data collection		█		
Longitudinal tracking		█		
Data analysis				█
Manuscript and report writing				█

**Aims**

- Compare promising brief and superior risk factor assessment candidates and determine which tool or combination of tools optimally predicts future suicide-related indices

**Approach**

- Participants will be Army Recruiter Course (ARC) attendees. The innovative research battery will be integrated into the existing survey and assessment infrastructure. Data will be used to predict outcomes over time.
- Predictive measures include agitation, insomnia, suicidal ideation, implicit associations, suicide-specific hopelessness, perceived burdensomeness, low-belonging, and fearlessness.
- Dependent variables: suicide attempts, non-suicidal self-injury, episodes of suicidal ideation, episodes of depression, & behavioral health visits.

**Deliverables**

- Knowledge to inform suicide risk assessment
- Identified valid and reliable assessment techniques that can circumvent self-report limitations
- A developed risk assessment that is easily transportable to the full range of operational environments and health care service delivery

**Progress (9/30/09)**

- PI awarded September 2009
- Status report pending



**Blister Packaging Medication to Increase Treatment Adherence and Clinical Response: Impact on Suicide-related Morbidity and Mortality**

Peter Gutierrez

Denver VA Medical Center

\$1,173,408

Period of Performance: 36 months

MILESTONES	YR	1	2	3	4
Project startup and recruitment		█			
Follow-up assessments			█		
Data analyses					█
Prepare final report					█

**Aims**

- Determine whether blister packaging medication significantly increases treatment adherence.
- Determine if blister packaging significantly decreases intentional self-poisoning behavior (i.e., suicide attempts and completions).

**Approach**

- Compare blister packaging to dispensing as usual by tracking former psychiatric patients for 12 months post-discharge and obtain monthly reports (self-report and medical record review) of suicide-related behaviors.

**Deliverables**

- Information as to whether blister packaging results in better adherence to prescription medications.
- A feasible intervention that can be used with any patient population across military treatment facilities.

**Progress (9/30/09)**

- Funded September 2009
- Status report pending





**A Brief Intervention to Reduce Suicide Risk in Military Service Members and Veterans**

Marjan Holloway  
 Uniformed Services University of the Health Sciences  
 \$2,671,337  
 Period of Performance: 36 months

MILESTONES	YR	1	2	3
Adapt and examine feasibility of SAFE-MIL		█		
Conduct RCT			█	
Data analyses			█	
Disseminate study findings				█

**Aims**

- Evaluate efficacy of safety planning intervention on suicide ideation, suicide-related coping, and attitudes toward help seeking for hospitalized military personnel at high suicide risk.
- Evaluate effectiveness of safety planning intervention on suicide attempts, suicide ideation, attendance of outpatient mental health and substance abuse interventions, and suicide-related coping for Veterans at high suicide risk in emergency department (ED) settings.

**Approach**

- Two separate but related projects will compare the study interventions with enhanced usual care conditions on suicide-related outcomes. Project 1 is a RCT investigating safety planning efficacy. Project 2 is a quasi-experimental design to examine the effectiveness of the safety plan intervention at VA ED.

**Deliverables**

- Knowledge about efficacy of safety planning in reducing suicide ideation, suicide-related coping, and negative attitudes toward help seeking

**Progress (9/30/09)**

- Funded September 2009
- Status report pending



**Posttraumatic Stress Disorder, Substance Abuse and Self Harm: Mediating Relationships with Respect to Combat Stress**

Valerie Stander, PhD

NHRC

\$218,000

Period of Performance: 18 months

MILESTONES	Months	1-6	7-12	13-18
Analysis of missing data		██████████		
Descriptive analysis		██████████		
Measurement characteristics of key variables		██████████		
Analysis of bivariate associations			██████████	
Develop structural equation model			██████████	
Analyses of structural equation model testing study hypotheses				██████████
Written literature review completed			██████████	
Final research report completed				██████████

**Aims**

- Investigate the possibility that the development of PTSD and substance use problems may mediate the effects of combat trauma on suicidality and general self-harm behaviors among Marine Corps and Navy Service members

**Approach**

- A multivariate structural equation modeling approach applied to existing Combat Stress and Substance Use survey data, to assess a mediated model of the effects of combat stress on suicidality, self-harm behaviors, and relationships among both demographics and primary research variables

**Deliverables**

- Knowledge to further DoD understanding of the most potent risk factors for the development of PTSD and in identifying other maladaptive conditions likely to coexist with PTSD
- Advanced understanding of the needs of military personnel under high operational stress
- Knowledge to guide prevention and treatment strategies

**Progress (09/15/09)**

- Initial evaluation of utility of lifetime self-harm behavior data for use in multivariate modeling of meditational and moderational effects
- Initial analyses of associations among lifetime self-harm behaviors, demographics, deployment, and deployment status



### Drug Related Overdoses Among a Military Population

Toby Cooper, PharmD, BCPS, RPh

DRDAMC

\$282,040

Period of Performance: 18 months

MILESTONES	Months	1-6	7-12	13-18
IRB Protocol development & approval				
Database programming & project start up completion				
Data extraction & database input				
Data analysis and review				
Completion of analysis, final report development, and manuscript prep				

#### Aims

- Quantify socio-demographic and clinical diagnostic correlates of medication abuse and demographics characteristics of patients, contrasting post-deployed OEF/OIF Soldiers and non-deployed personnel
- Determine factors associated with deployment status among patients with medication overdose

#### Approach

- Longitudinal, retrospective epidemiological multivariable approach and regression of OEF/OIF deployment status on socio-demographic and clinical variables

#### Deliverables

- Epidemiological socio-demographic and clinical data related to medication overdose events among a high risk cohort during combat time
- Knowledge to inform planning for adverse post-deployment events and for mental health needs of post-deployment personnel
- Informed hypotheses to test potential strategies to reduce the risk of future military personnel self-poisoning

#### Progress (12/30/09)

- Hiring contract personnel
- Coordinating data collection and developing database management processes
- Approval to cross check data with DMDC



## Army Study to Assess Risk and Resilience in Service Members (Army STARRS)

Bob Ursano

USUHS

\$50,000,000

Period of Performance: 72 months

### Aims

- Conduct a multi-phase epidemiological study that considers diverse psychosocial and neurobiological risk and protective factors for suicidal behaviors and secondary outcomes in order to make evidence-based recommendations for implementation of Army suicide prevention interventions; Use data from the ongoing Pre- and Post-Deployment Health Reassessment Program (PDHRP) surveys as secondary outcomes.

### Approach

- The case-control survey will study soldiers who made nonfatal attempts and relatives of soldiers who committed suicide in a psychological autopsy framework. Parallel data will be collected from carefully matched controls.
- Blood samples and, in the case of nonfatal attempters and their controls, saliva samples will be collected to allow neurobiological risk and protective factors to be studied.
- The survey component will include active duty personnel across all phases of Army service. Survey reports will be link to subsequent ASER records and PDHRP reports to study prospective associations of predictors with suicidal behaviors and secondary outcomes.
- A number of innovative measurement, design and analysis features will be used to increase chances of discovering effective intervention possibilities.

### Deliverables

- An enriched version of the Army Suicide Event Report (ASER) system will be developed to define the primary outcomes incorporating information from the DoD Medical Mortality Registry (MMR) and Total Army Injury and Health Outcomes Database (TAIHOD). Our study design will include both a retrospective case-control component for quick efficient hypothesis testing and a prospective survey component to predict subsequent suicidal behaviors and secondary outcomes (onset, persistence, worsening of DSM-IV disorders, suicide ideation, suicide plans).

### Status (10/30/09)

- First year funding received May 2009
- Development of infrastructure underway
- Periodic meetings among collaborators underway
- Development of milestones underway





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