



Veterans Health Administration  
**Research & Development**

Improving Veterans' Lives [www.research.va.gov](http://www.research.va.gov)

# Traumatic Brain Injury Research

## Washington DC VA Medical Center

### May 2009

*Finding Solutions, Improving Lives*

# Why TBI?

## Military TBI

- **68% wounded in action sustained blast-related injuries**
- **Most are mild TBI**

## Civilian TBI

- **1.4 million per year in US, most are mild TBI (CDC)**
- **Many recover completely within a year, but some have persistent problems**

- Both blast and non-blast-related TBI's most frequently result in MILD injury
- It is currently unknown whether blast-related mild TBI follows the same recovery pattern as non-blast-related mild TBI.

# Why TBI?

- **April 2007: VA initiated TBI screening to identify service members who may have sustained a TBI.**
- **Positive Screen → Referral for Comprehensive Evaluation to determine if patient sustained a TBI.**
- **Diagnosis of mild TBI is based on patient report because there are usually no brain scan findings.**
- **Objective measures are needed for more definitive and rapid diagnosis.**

# Why TBI?

- **Common symptoms following concussion or mild TBI can include:**
  - ✓ **Headache**
  - ✓ **Irritability**
  - ✓ **Concentration or Memory Problems**
  - ✓ **Dizziness**
  - ✓ **Vision and Hearing changes**
- **Many of these symptoms are also present with Posttraumatic Stress, Depression, Chronic Pain**

# Improved Care is Needed for TBI



- **Treatment of our combat wounded service members is challenging and answers are needed to improve:**
  - **Accuracy of Diagnosis**
  - **Treatment**
  - **Outcome**
  - **Knowledge of Co-morbidity Effect**
  - **Health care system planning as this patient population ages**

# Current Research: TBI & Advanced Neuroimaging



## Blast Injury Outcomes: PET, DTI, Exposure & Neurocognitive Measures

**Julie C. Chapman, PsyD – Principal Investigator**

- **Aim I: To identify objective diagnostic markers of blast-related mild TBI using the most advanced neuroimaging and cognitive techniques available.**
- **Aim II: To correlate cognitive data with findings from several different advanced brain imaging modalities (PET, DTI, fMRI)**

# Current Research: TBI and PTSD



## Markers for the Identification, Norming & Differentiation of TBI and PTSD (MIND)

**Multi WRIISC site, Multi-phase study:**

- Han K. Kang DrPH, Principal Investigator**
- Julie C. Chapman PsyD, Lead Investigator**

**Four groups of OEF/OEF & Era Veterans studied:**

- Veterans with TBI
- Veterans with PTSD
- Veterans with TBI and PTSD
- Veterans with neither TBI or PTSD

# Current Research: TBI and PTSD

## Markers for the Identification, Norming & Differentiation of TBI and PTSD (MIND)

**Phase I : Assess prevalence of TBI and PTSD and effectiveness of screening instruments.**

**Phase II & III: Compare groups on the following:**

- Sensorimotor
- Neurologic/Cognitive
- Neuroendocrine
- Advanced Neuroimaging
- Genomic
- Sleep Medicine



# Current Research: TBI and Neuroendocrine Dysfunction



## Neuroendocrine Function in OEF/OIF Veterans with Chronic, Moderate TBI

Marc R. Blackman, MD - Principal Investigator

### Neuroendocrine function:

- is frequently disrupted following severe TBI
- likely contributes to difficulties in cognitive, emotional and general metabolic functioning.

## Neuroendocrine Function in OEF/OIF Veterans with Chronic, Moderate TBI

- Project will utilize state-of-the-art methods to compare anterior and posterior pituitary gland function in male OEF/OIF veterans with and without chronic, moderate TBI.
- Detailed knowledge of neuroendocrine function following moderate TBI will improve diagnosis and suggest new therapies to improve care of these veterans and those with mild TBI.

# Current research: Social and Cognitive Studies



- Pilot Study – “Investigating the Family Needs of Polytrauma Veterans and their Primary Companions-Caregivers”.
  - **Celeste Campbell PsyD – Principal Investigator**
- Survey study with the purpose of obtaining information to guide development of enhanced services for families of polytrauma veterans.
- *Contingent approval from R&D and awaiting Final Approval from IRB*

# Proposed Research: Social and Cognitive Studies



- **Social Cognition Training for Veterans with TBI and PTSD- Celeste Campbell, PsyD- PI and WRIISC**
  - Group treatment for TBI and PTSD is designed to:
    - enhance accurate perception of stimuli
    - enhance social problem solving skills
    - increase social confidence
    - increase motivation to engage in social interactions

**Hypothesis:** if veterans improve in these areas, there will be a significant impact on global psychosocial functioning.

# Future Research Areas of Emphasis

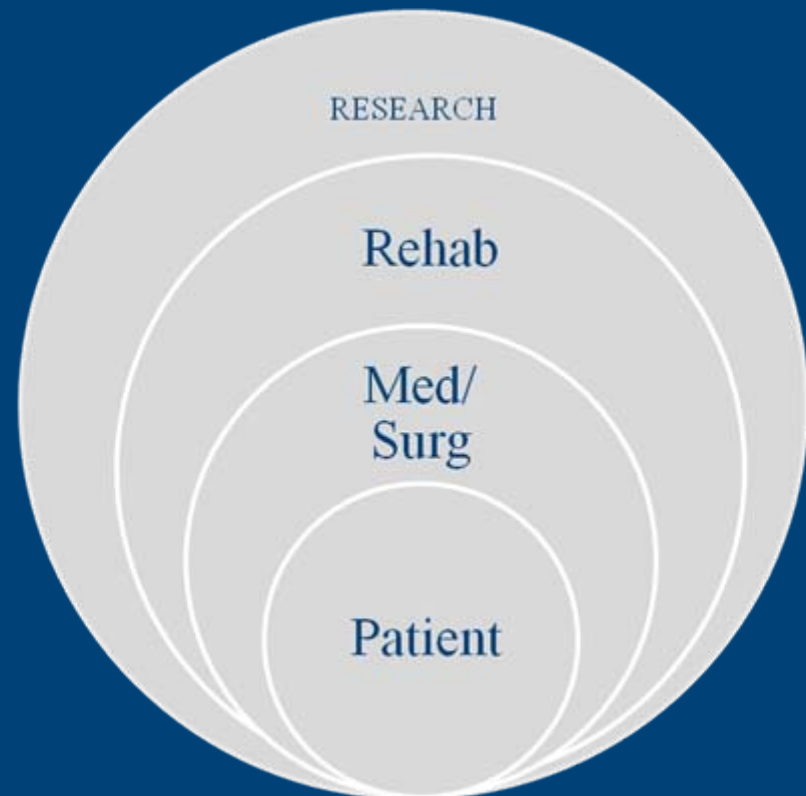
- Evaluate Device to assist in diagnosis of Mild TBI
  - Test coordination, concentration, memory
- Cognitive Devices/Testing & Outcomes
- Mild TBI/PTSD & Effects of Exercise
- Driving Evaluations after TBI

# VA Research: Improving Veterans' Lives

## Prevention, Diagnosis, and Treatment of Brain Injury requires a Team!

### Team Members:


Patient  
Family/Caregivers  
Medical/Surgical Staff  
Rehabilitation Staff  
Research Staff





Veterans Health Administration

# Research & Development

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# Suicide, Veterans, & Epidemiology

Aaron Schneiderman, PhD, MPH, RN

Office of Public Health and Environmental Hazards  
Environmental Epidemiology Service  
National Research Week VAMC-DC  
May 1, 2009





## Epidemiology

The study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to control of health problems.



## Facts: General Population

- >32,000 suicides in U.S. in 2005.
- Suicide was the second leading cause of death for white males, 20-29 years old (n=3,479).
- Firearms are the most commonly used method (51%), followed by suffocation (34%), and poisoning (8%).
- Age, gender, racial/ethnic disparities.
- Risk factors: previous attempt; depression or other mental illness; alcohol/drug abuse; family history; physical illness; feeling alone, etc.



## Facts: Veteran & Military Population

- Research among Vietnam-era Veterans
  - Health Warrior Effect
  - Risk estimates below general population  
(Watanabe & Kang: *Ann Epi* 1995)
  - PTSD, Hospitalization, Injury increase risk  
(Bullman & Kang: *J Nerv Ment Dis* 1994, *AJPH* 1996)
  - Gender a risk factor (but not statistically significant)  
(Thomas, et al: *AJE* 1991, Cypel & Kang: *Ann Epi*, 2008)
  - Time to event (not statistically significant)  
(Boehmer, et al: *Arch Inter Med*, 2004)



## Facts: Veteran & Military Population (cont.)

- Research among Gulf War-era Veterans
  - One year follow-up both
    - No excess risk of suicide for deployed
    - Females compared by deployment status had elevated risk (not statistically signif.)
    - Risk estimate lower than general population  
(Kang & Bullman: *NEJM* 1996)
  - Five year follow-up
    - Same relationship by gender
    - Higher rate of suicide for males, regardless of deployment status  
(Kang & Bullman: *AJE* 2001)



## Facts: Veteran & Military Population (cont.)

- Research among Active Duty Military
- Lower risk estimates when compared to
  - US population as a whole (Rothberg, et al: *JAMA* 1990)
  - US population sub-groups (Helmkamp: *Mil Med* 1995)
- Change in rates noted
  - Decreased over time, until 2003 –increase noted (Allen, et al: *Mil Med* 2005)
  - Rates rising between 2003-2007  
(US Army Surgeon General, 2008)



## Facts: Veteran & Military Population (cont.)

- Research among OEF/ OIF Veterans
- Increased risk for Active duty component
- Increased risk for selected mental health diagnoses
  - Affective psychoses (ICD-9, 296)
  - Neurotic disorders (ICD-9, 300)
  - Alcohol/drug dependence (ICD-9, 302-304)
  - Acute reactions to stress (ICD-9, 308)
  - Adjustment disorders, including PTSD (ICD-9, 309)
  - Depressive disorders NEC (ICD-9, 311)

(Kang & Bullman: *JAMA*, 2008)



**These answers come from epidemiological research – and have led to:**

- Policy change
- Prevention efforts
- Education campaigns
- Intervention research



## Known Risk Factors for Veterans and Others:

- Mood disorder/PTSD symptoms
- History of injury and hospitalization
- Firearm ownership
- Hopelessness
- Rage
- Talk of wanting to harm oneself or of dying/suicide
- Reckless or risky behavior



# VA Research: Improving Veterans' Lives



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# Thank You

# Veterans Health Administration

## Suicide Prevention Outreach Strategy

Dr. Victor S. Wahby

May 1, 2009



**It takes the courage  
and strength  
of a warrior  
to ask for help...**

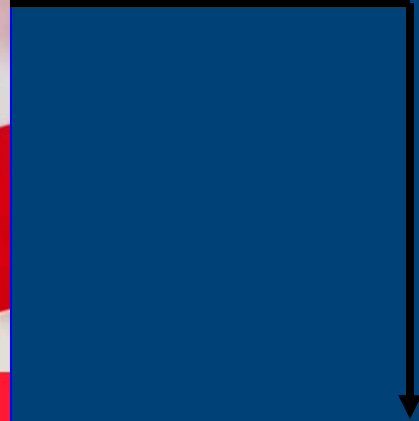
**If you or someone you know is in an emotional crisis  
call 1-800-273-TALK Press 1 for Veterans**

[www.suicidepreventionlifeline.org](http://www.suicidepreventionlifeline.org)

**SUICIDE PREVENTION**  
1-800-273-TALK

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Substance Abuse and Mental Health Services Administration  
[www.samhsa.gov](http://www.samhsa.gov)

**Department of  
Veterans Affairs**



# Dioramas



**It takes the courage and strength  
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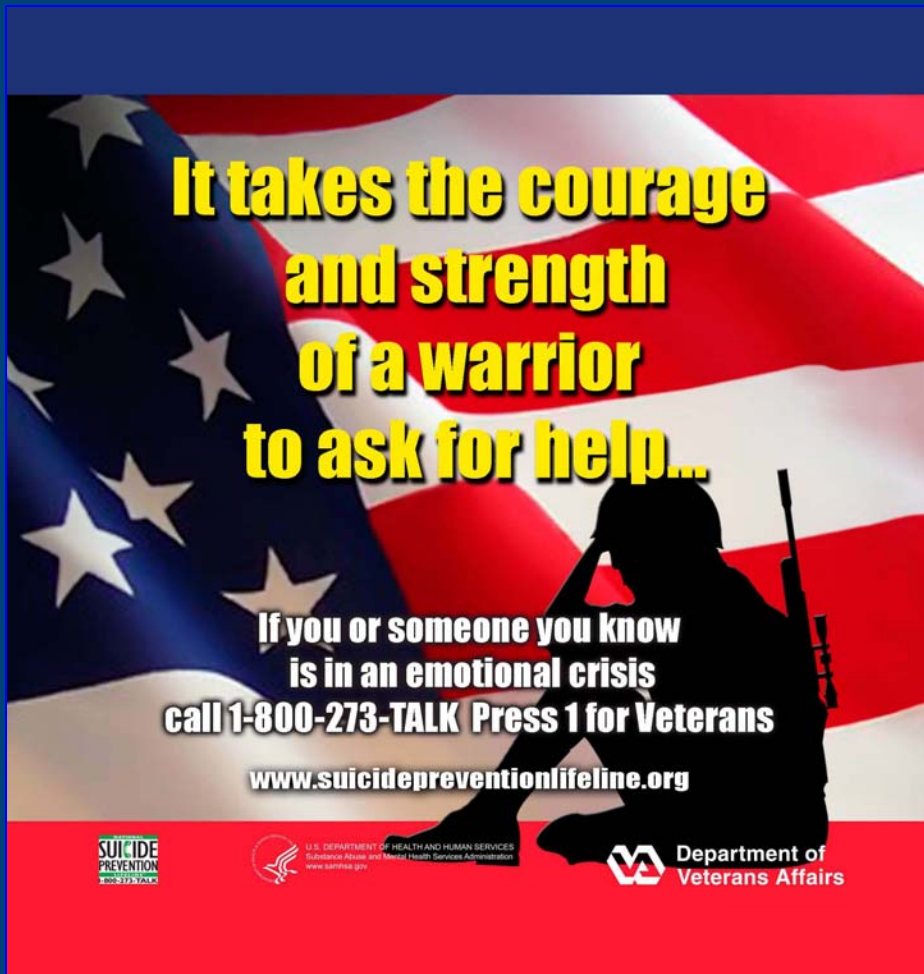


Bus Tail Lights



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## Metro Car Cards





**It takes the courage and strength of a warrior to ask for help**  
**If you or someone you know is in an emotional crisis**  
**call 1-800-273-TALK Press 1 for Veterans**

   Department of Veterans Affairs

# Bumper Magnets



# Patient Poster

IT  
TAKES  
THE  
COURAGE AND STRENGTH  
OF A WARRIOR  
TO ASK FOR HELP.....

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# Patient Poster



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 NATIONAL  
**SUICIDE  
PREVENTION**  
LIFELINE™

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Veterans Affairs





# Suicide Prevention is Everyone's Business



Recognize some warning signs:

**Hopelessness**  
**Anger**  
**Withdrawal**  
**Talk about death**



[www.suicidepreventionlifeline.org](http://www.suicidepreventionlifeline.org)

 Department of  
Veterans Affairs

Refer veterans to your facility Suicide Prevention Coordinator - They will help!

Name: \_\_\_\_\_

Location: \_\_\_\_\_

## Employee Poster



# Sugar-Free Candy



# Key Ring



# Stress Ball



3-Panel  
Exhibit  
8' x 10'



# Vertical Window Shade

