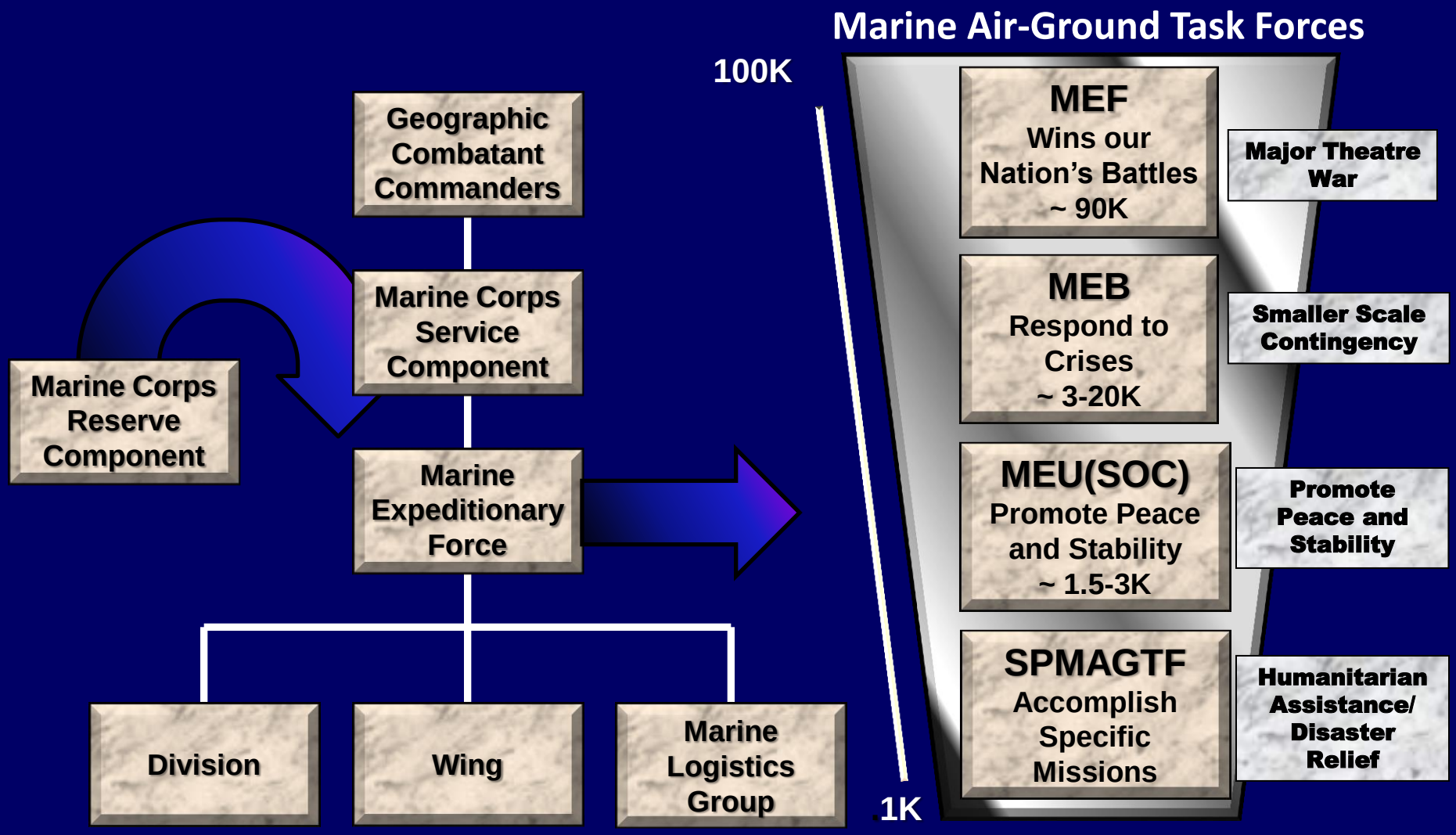
# The United States Marine Corps

*America's Expeditionary Force in Readiness*

# Scalable Marine Forces




*** Forward-deployed MEUs serve as advance echelons of MEBs, which in turn serve as advance echelons of MEFs.*

# Expeditionary Maneuver Warfare
# Operational Maneuver From the Sea

# Marine Corps Priorities

1) **Continue to provide the best trained and equipped Marine units in Afghanistan (**TCCC, OEMS, L.A. Trauma Center, EMT, Mojave Viper, CAX )

2) **Rebalance our Corps and posture it for the future**

- **(**Joint Medical OPS, Enroute Care, Restoration Centers, Agile MTB w/ ½ STP )

# Marine Corps Priorities

3) **Better educate and train our Marines to succeed in complex environments**

- **(**MTB, FRSS/STPs, Next Generation BAS & Corpsman**)**

4) **Keep the faith with our Marines, our Sailors, and our families**

- **(**TBI/PTSD, Wounded Warriors, Garrison Care, Resilience, Reintegration )

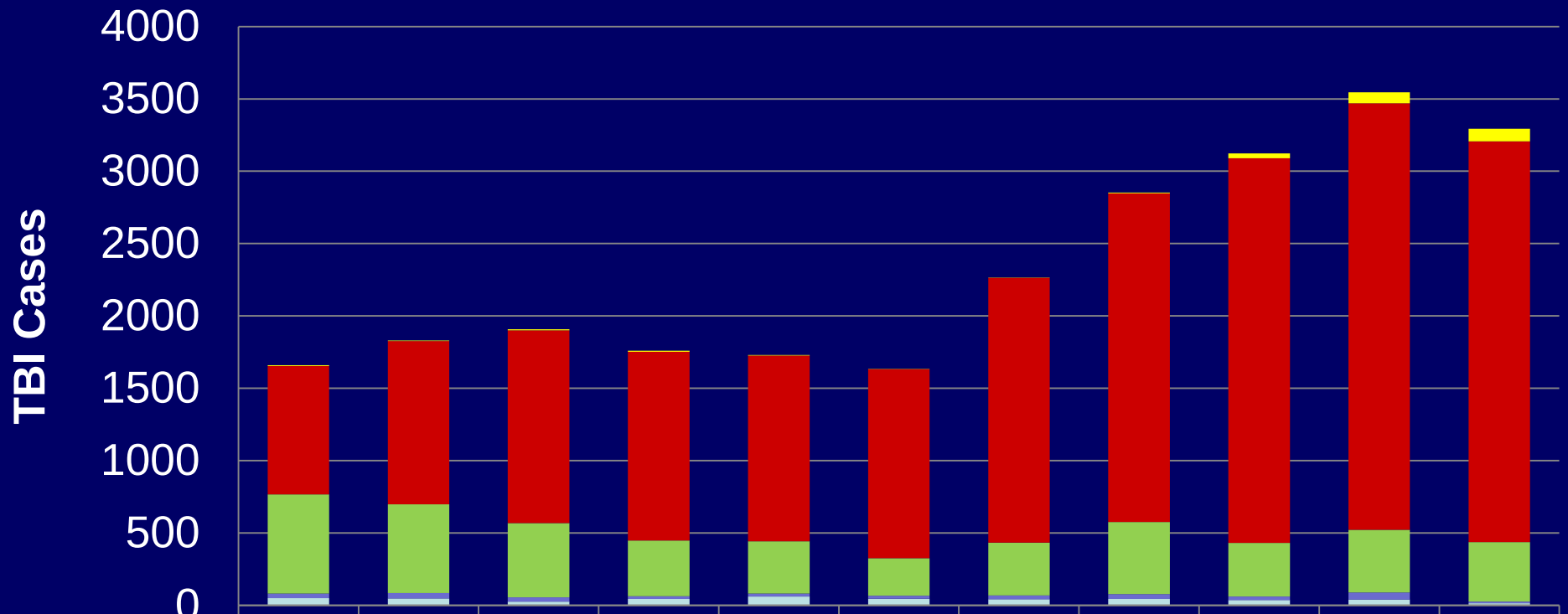
# Marine Corps Health Challenges

- Resiliency
- PTSD
- TBI
- Suicide
- Deployment Health Follow-up
- Mental Health Stigma
- Polytrauma
- Amputation
- Tobacco
- Data
- Evidence-based decisions
- Spice
- Environmental Exposures
- Casualty Care
- Expeditionary Medicine
- Medical Stability Operations

# Traumatic Brain Injury

# Traumatic Brain Injury

## Marines-Active Duty



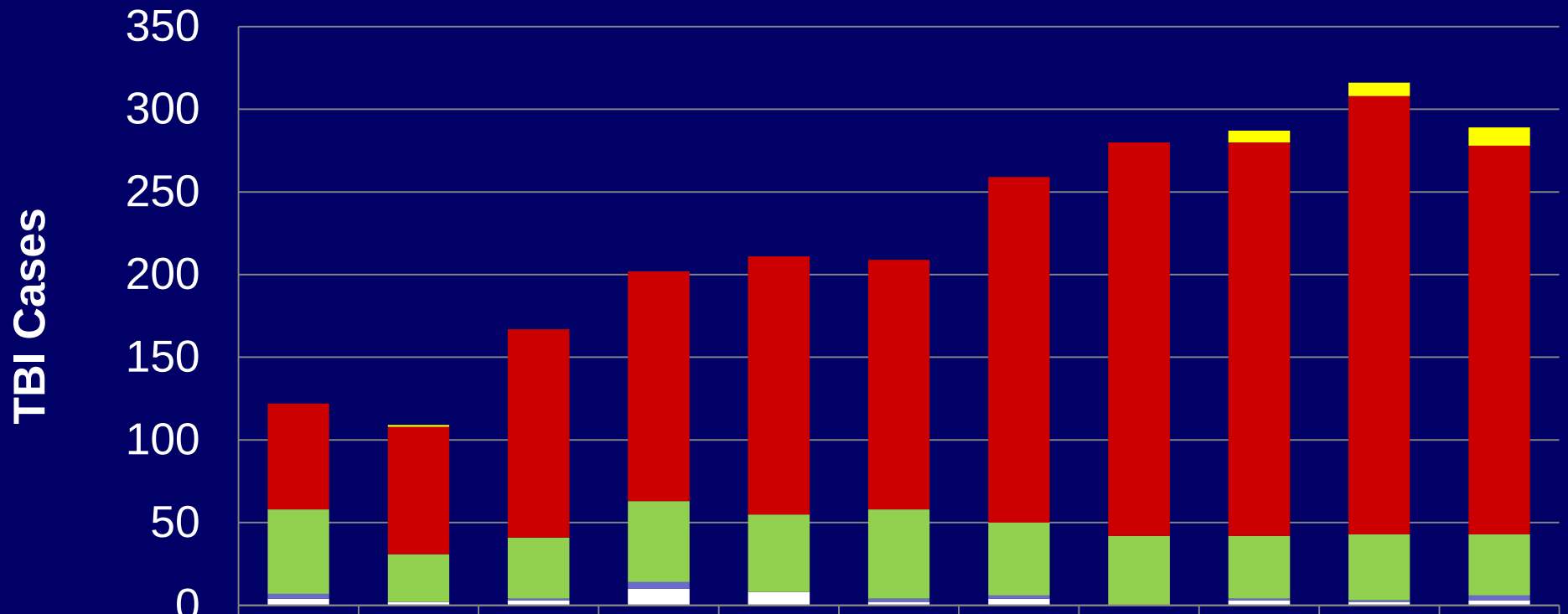

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| UNK | 6 | 4 | 7 | 7 | 4 | 2 | 2 | 4 | 34 | 76 | 87 |
| Mild | 887 | 1127 | 1333 | 1304 | 1283 | 1307 | 1829 | 2273 | 2658 | 2947 | 2770 |
| Moderate | 685 | 615 | 513 | 385 | 362 | 258 | 365 | 498 | 371 | 434 | 412 |
| Severe | 33 | 37 | 30 | 19 | 20 | 21 | 26 | 32 | 24 | 47 | 10 |
| Penetrating | 49 | 47 | 25 | 44 | 61 | 46 | 43 | 45 | 36 | 41 | 15 |

DVBIC TBI Numbers, http://www.dvbic.org/TBI-Numbers.aspx

2010 thru 3rd Quarter

# Traumatic Brain Injury

## Marines-Reserves

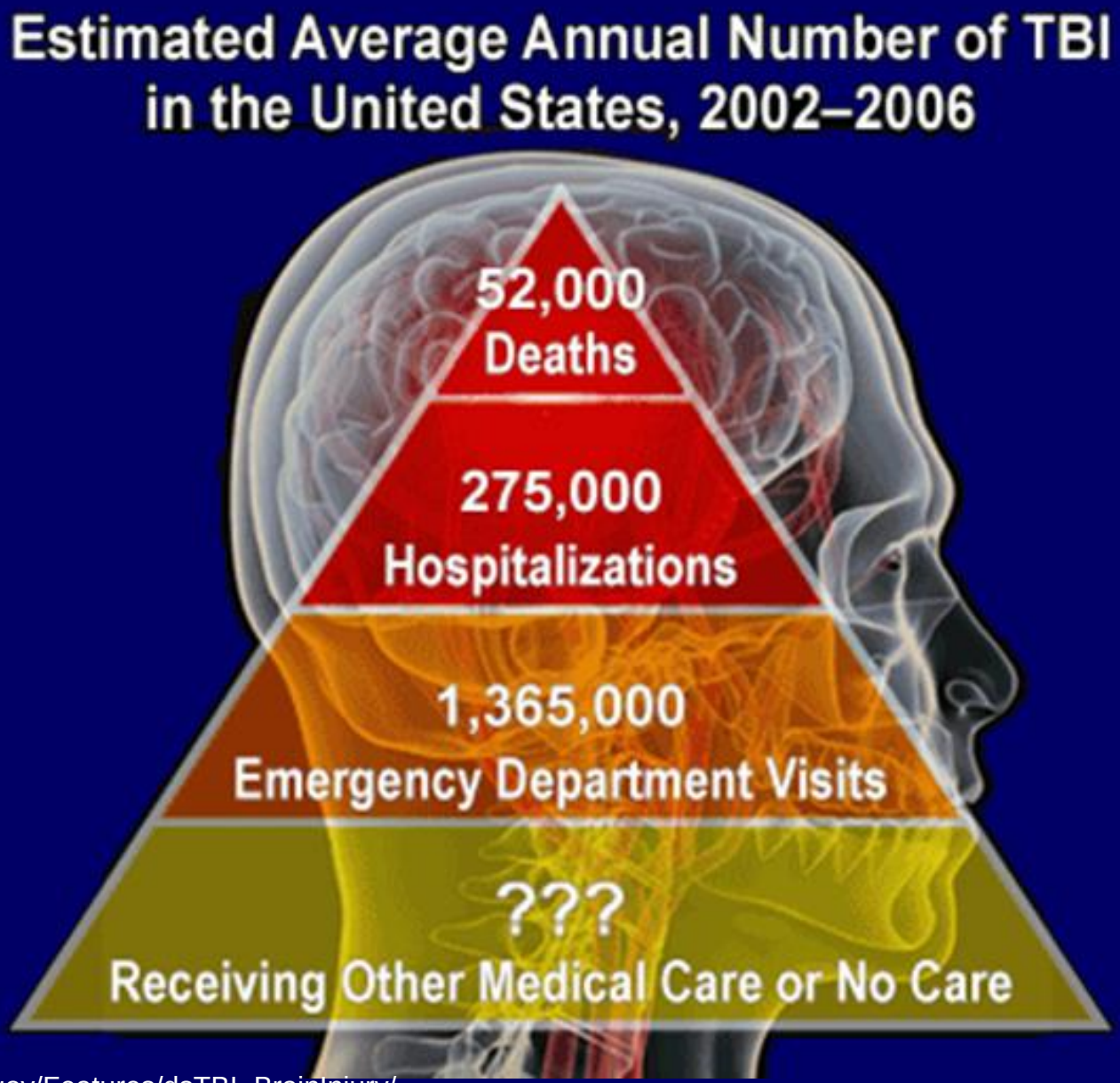



| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| UNK | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 8 | 11 |
| Mild | 64 | 77 | 126 | 139 | 156 | 151 | 209 | 238 | 238 | 265 | 235 |
| Moderate | 51 | 29 | 37 | 49 | 47 | 54 | 44 | 42 | 38 | 40 | 37 |
| Severe | 3 | 0 | 1 | 4 | 0 | 2 | 2 | 0 | 1 | 1 | 3 |
| Penetrating | 4 | 2 | 3 | 10 | 8 | 2 | 4 | 0 | 3 | 2 | 3 |

DVBIC TBI Numbers, http://www.dvbic.org/TBI-Numbers.aspx

2010 thru 3rd Quarter

# Traumatic Brain Injury




CDC, http://www.cdc.gov/Features/dsTBI_BrainInjury/

# Traumatic Brain Injury

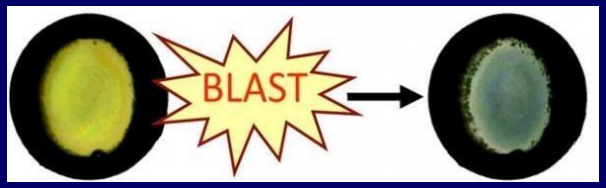
## Prevention

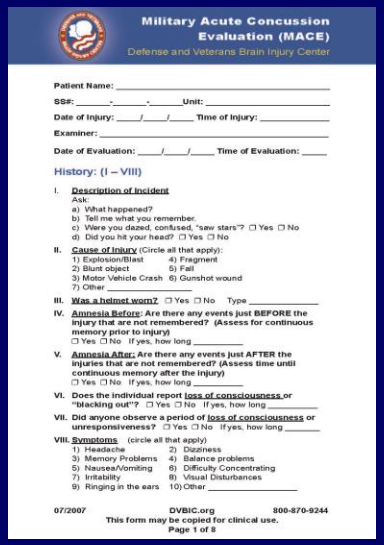
- IED strategies
- Military Equipment
- Personal Protective Equipment
- Mandatory time-out
- Tactics, Techniques, Procedures

# Traumatic Brain Injury

## Recognition

- 50 meter blast exposure?
- MACE
- DTM
- Personal Dosimetry
- Biomarkers
- Neuroimaging
- NCAT



Military Acute Concussion Evaluation (MACE)
Defense and Veterans Brain Injury Center

Patient Name: _____
SS#: _____-_____-_____ Unit: _____
Date of Injury: ____/____/____ Time of Injury: _____
Examiner: _____
Date of Evaluation: ____/____/____ Time of Evaluation: _____

History: (I – VIII)

I. Description of incident
Ask:
a) What happened?
b) Tell me what you remember.
c) Were you dazed, confused, "saw stars"? ☐ Yes ☐ No
d) Did you hit your head? ☐ Yes ☐ No

II. Cause of Injury (Circle all that apply):
1) Explosion/Blast 4) Fragment
2) Blunt object 5) Fall
3) Motor Vehicle Crash 6) Gunshot wound
7) Other _____

III. Was a helmet worn? ☐ Yes ☐ No Type _____

IV. Amnesia Before: Are there any events just BEFORE the injury that are not remembered? (Assess for continuous memory prior to injury)
☐ Yes ☐ No If yes, how long _____

V. Amnesia After: Are there any events just AFTER the injuries that are not remembered? (Assess time until continuous memory after the injury)
☐ Yes ☐ No If yes, how long _____

VI. Does the individual report loss of consciousness or "blacking out"? ☐ Yes ☐ No If yes, how long _____

VII. Did anyone observe a period of loss of consciousness or unresponsiveness? ☐ Yes ☐ No If yes, how long _____

VIII. Symptoms (circle all that apply)
1) Headache 2) Dizziness
3) Memory Problems 4) Balance problems
5) Nausea/Vomiting 6) Difficulty Concentrating
7) Irritability 8) Visual Disturbances
9) Ringing in the ears 10) Other _____

07/2007 DVBIC.org 800-870-9244
This form may be copied for clinical use.
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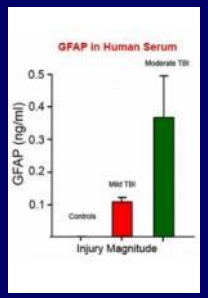
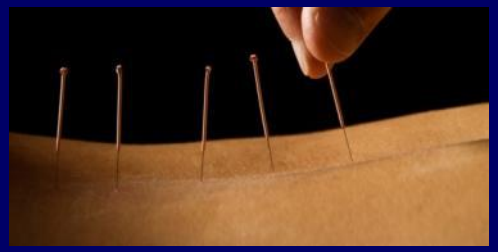
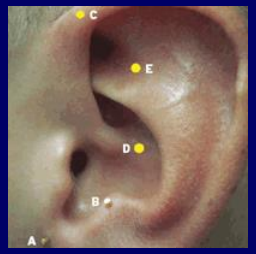


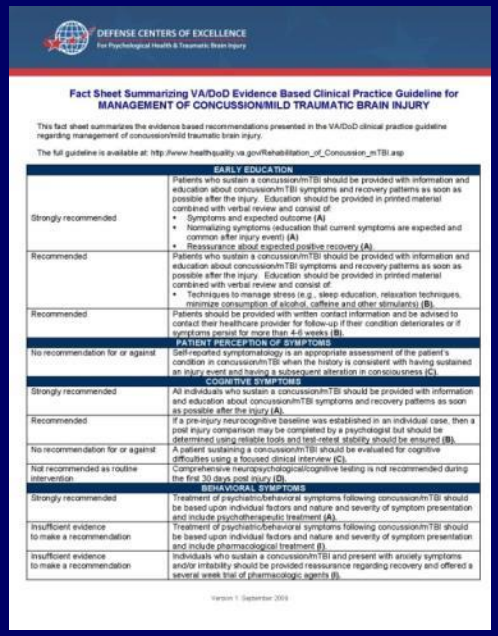
# Traumatic Brain Injury



## Treatment

- Evidence Based
- CPG
- Restoration Centers
- Medications
- Complementary Medicine
- Return to duty



DEFENSE CENTERS OF EXCELLENCE
For Psychological Health & Traumatic Brain Injury

**Fact Sheet Summarizing VA/DoD Evidence Based Clinical Practice Guideline for MANAGEMENT OF CONCUSSION/MILD TRAUMATIC BRAIN INJURY**

This fact sheet summarizes the evidence based recommendations presented in the VA/DoD clinical practice guideline regarding management of concussion/mild traumatic brain injury.

The full guideline is available at: http://www.healthquality.va.gov/Rehabilitation_of_Concussion_mTBI.asp

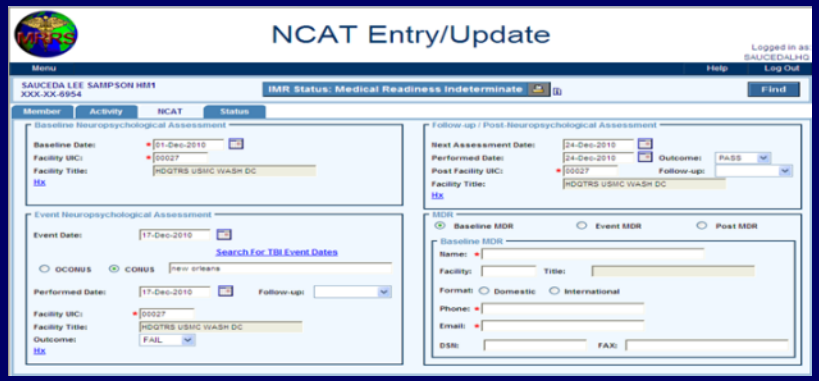
| | |
|---|---|
| **EARLY EDUCATION** | |
| Strongly recommended | Patients who sustain a concussion/mTBI should be provided with information and education about concussion/mTBI symptoms and recovery patterns as soon as possible after the injury. Education should be provided in printed material combined with verbal review and consist of:<br>• Symptoms and expected outcome **(A)**<br>• Normalizing symptoms (education that current symptoms are expected and common after injury event) **(A)**<br>• Reassurance about expected positive recovery **(A)** |
| Recommended | Patients who sustain a concussion/mTBI should be provided with information and education about concussion/mTBI symptoms and recovery patterns as soon as possible after the injury. Education should be provided in printed material combined with verbal review and consist of:<br>• Techniques to manage stress (e.g., sleep education, relaxation techniques, minimize consumption of alcohol, caffeine and other stimulants) **(B)** |
| Recommended | Patients should be provided with written contact information and be advised to contact their healthcare provider for follow-up if their condition deteriorates or if symptoms persist for more than 4-6 weeks **(B)** |
| **PATIENT PERCEPTION OF SYMPTOMS** | |
| No recommendation for or against | Self-reported symptomatology is an appropriate assessment of the patient's condition in concussion/mTBI when the history is consistent with having sustained an injury event and having a subsequent alteration in consciousness **(C)** |
| **COGNITIVE SYMPTOMS** | |
| Strongly recommended | All individuals who sustain a concussion/mTBI should be provided with information and education about concussion/mTBI symptoms and recovery patterns as soon as possible after the injury **(A)** |
| Recommended | If a pre-injury neurocognitive baseline was established in an individual case, then a post injury comparison may be completed by a psychologist but should be determined using reliable tools and test-retest stability should be ensured **(B)** |
| No recommendation for or against | A patient sustaining a concussion/mTBI should be evaluated for cognitive difficulties using a focused clinical interview **(C)** |
| Not recommended as routine intervention | Comprehensive neuropsychological/cognitive testing is not recommended during the first 30 days post injury **(D)** |
| **BEHAVIORAL SYMPTOMS** | |
| Strongly recommended | Treatment of psychiatric/behavioral symptoms following concussion/mTBI should be based upon individual factors and nature and severity of symptom presentation and include psychotherapeutic treatment **(A)** |
| Insufficient evidence to make a recommendation | Treatment of psychiatric/behavioral symptoms following concussion/mTBI should be based upon individual factors and nature and severity of symptom presentation and include pharmacological treatment **(I)** |
| Insufficient evidence to make a recommendation | Individuals who sustain a concussion/mTBI and present with anxiety symptoms and/or irritability should be provided reassurance regarding recovery and offered a several week trial of pharmacologic agents **(I)** |

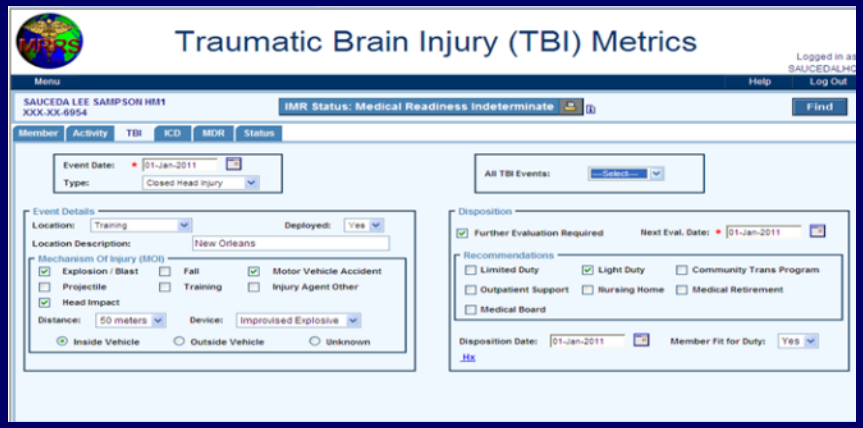
Version 1 September 2009

# Traumatic Brain Injury

## Data

- CIDNE/BECIR
- MRRS
- AHLTA
- VA
- Sharing
- Analysis



# Traumatic Brain Injury

Research

- Blast Patch
- Functional MRI
- Biomarkers
- Accelerometer
- Treatment
- Outcomes

# Traumatic Brain Injury

Longer Term Consequences

- Chronic Traumatic Encephalopathy
- Disability Evaluation System
- VA care
- Comorbid

# Traumatic Brain Injury

Way Forward

- Continue close coordination with DCOE/Navy Medicine
- Emphasize Prevention
- Immediate recognition and care
- Collect and analyze the data
- Research
- Develop evidence-based scientifically supported solutions
- Support the service member through all phases

# Questions?