Focus on Health Equity and Action:
National Expert Panel Discussion on TBI & Chronic Traumatic Encephalopathy Morbidity & Mortality among Vulnerable Veterans

Bennet I. Omalu, MD, MBA, MPH, CPE
David X. Cifu, MD
Leonard E. Egede, MD, MS
Uchenna S. Uchendu, MD

June 30, 2016 @ 3PM EST
WHAT YOU CAN EXPECT

• Introductions & Acknowledgement
• Background – Health Equity Action Plan
• Opening comments by expert panelists
• Moderator Questions
• Audience Questions
• Discussant Comments
• Moderator Wrap up
• Veterans - focus of this dialogue and the foundation/reason for VA existence
• Distinguished Panelists and Discussant
• OHE staff - Kenneth T. Jones, PhD
• OHE detail - Clara 'Libby' Dismuke, PhD
• HSR&D - CIDER
• Participants - record registration numbers!
IN THE NEWS...

VA secretary pledges to donate his brain to research

UFC veteran Tom Lawlor taking time off for CTE-related symptoms

In vivo characterization of chronic traumatic encephalopathy using [F-18]FDOPA PET brain imaging

Bubba Smith, the late NFL star and actor, had CTE

VA to Reexamine 24,000 Veterans for TBI

FEDERAL HEALTH MATTERS

CONFUCIUS NEWS ON YAHOO SPORTS: Internet's roost of Stephen Curry's new shoes is relentless

Homeowners Who Have Not Missed A Payment In 3 Years Are In For A Big Surprise

What to read next

Top Headlines

What to read next

Conflicting and confusing guidance documents may have led to missed cases of traumatic brain injuries.

More than 24,000 veterans who received examinations but were not diagnosed with traumatic brain injuries (TBIs) will be eligible for new medical examinations, the VA has announced. Due to confusing guidance documents, the original examinations were not conducted by a psychiatrist, physiatrist, neurosurgeon, or neurologist as mandated by VA policy. The 24,000 veterans may be eligible for additional benefits and service-connected compensation based on the results of the new examinations.

Related: TBI Biomarker Development on the Horizon

"Traumatic Brain Injury is a signature injury in veterans returning from the conflicts in Iraq and Afghanistan, and VA is proud to be an organization that sets the bar high for supporting these, and all veterans," said Secretary of Veterans Affairs Robert McDonald in a statement. "Providing support for veterans suffering from a TBI is a priority and a privilege, and we must make certain they receive a just and fair rating for their disabilities."
SUGGESTED READING


- Supplemental Materials @ [www.va.gov/healthequity](http://www.va.gov/healthequity)
EXPERT PANELISTS

Bennet I. Omalu, MD, MBA, MPH, CPE, Associate Clinical Professor of Pathology, University of California, Davis
http://www.bennetomalau.com/

David X. Cifu, MD
National director of the VA’s Physical Medicine & Rehabilitation Services
https://cenc.rti.org
DISCUSSANT AND MODERATOR

Leonard E. Egede, MD, MS
Director, VA HSR&D Health Equity & Rural Outreach Innovation Center, Charleston, SC.
http://clinicaldepartments.musc.edu/medicine/divisions/gimg/faculty/egede.htm

Uchenna S. Uchendu, MD
Chief Officer, Office of Health Equity
VA Central Office, Washington DC.
http://www.va.gov/HEALTHEQUITY
OHE PROGRAM OFFICE SCOPE

• Role of Program
  – OHE champions the advancement of health equity and reduction of health disparities through 5 key focal areas*:
    1. Leadership
    2. Awareness
    3. Health System and Life Experience
    4. Diversity and Cultural Competency of the Workforce
    5. Data, Research, and Evaluation

  – Strategic Alignments
    o VHA Strategic Plan Objective 1(e)—Quality & Equity: Veterans will receive timely, high quality, personalized, safe, effective and equitable health care, irrespective of geography, gender, race, age, culture or sexual orientation
    o Blueprint for Excellence strategies 2.2a, 3.2a and 7.2b

*VHA Health Equity Action Plan
THANK YOU VETERANS!

- Veteran/Customer Experience
- Employee Experience
- Support Service Excellence
- Performance Improvement
- Strategic Partnership

Five Priorities

- Access
- Employee Engagement
- Best Practices and Consistency
- Development of a High Performance Network
- Restore Trust and Confidence
VULNERABLE POPULATIONS

- Racial or Ethnic Group
- Gender
- Age
- Geographic Location
- Religion
- Socio-Economic Status
- Sexual Orientation
- Military Era / Period of Service
- Disability – Cognitive, Sensory, Physical
- Mental Health
- Other characteristics historically linked to discrimination or exclusion
SESSION INFO

- http://www.va.gov/HEALTHEQUITY/FHEA_Cyberseminar.asp
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Concussion Expert Opening Comments on Veteran Traumatic Brain Injury Disparities

Bennet I. Omalu, MD, MBA, MPH, CPE, DABP-AP, CP, FP, NP
Associate Clinical Professor of Pathology, University of California, Davis
1. CTE is a progressive neurodegenerative syndrome caused by single, episodic or repetitive blunt force impacts to the head and transfer of acceleration-deceleration forces to the brain.

2. CTE presents clinically after a prolonged latent period as a composite syndrome of mood disorders, neuropsychiatric and cognitive impairment.
3. CTE usually presents with a prolonged latency period, however, some patients with CTE, may not exhibit the classic prolonged latency period before clinical symptoms begin.

4. Definitive CTE diagnosis remains direct brain tissue analysis:
   i. Multifocal or diffuse taupathy [primary proteinopathy]
   ii. Low grade and multifocal white matter rarefaction
   iii. Low grade isomorphic fibrillary astrogliosis
   iv. Neuropil microglial activation and histiocytes
   v. Amyloidopathy, TDP-proteinopathy and other proteinopathies may be present [secondary proteinopathy].
• Clinico-pathologic syndrome induced by focal and/or diffuse, gross and/or microscopic destruction of brain tissue caused by primary or secondary brain trauma
  – Not a neurodegenerative disease
  – Not progressive
  – Most recognized PTE subtype: Post-Traumatic Epilepsy [PTE]

• Committee on Nomenclature of Head Injuries: 1964
  – Dr. Edward Weiford, the President of the Congress of Neurological Surgeons
CTE

- Repetitive MTBI, Concussions, Subconcussions
- DTBI, Axonal Injury
- Normal Appearing Brain, No Focal Encephalopathy
- Neurodegenerative, progressive, primary and secondary proteinopathies

PTE

- Single, Episodic STBI
- FTBI, Cranial Fractures, ICH
- Physical Damage and Necrosis of Tissue: Focal Encephalopathy
- Non-neurodegenerative, non-progressive, no primary or secondary proteinopathy
- Cerebral neurasthenia
- Chronic traumatic brain injury/chronic brain injury
- Compensation hysteria
- Concussion neurosis
- Delayed traumatic apoplexy
- Dementia pugilistica
- Dementia traumatica
- Encephalopathia traumatica
- Litigation neurosis
- Postconcussion neurosis
- Postconcussion syndrome
- Post-traumatic concussion state
- Post-traumatic head syndrome
- Post traumatic stress disorder
- Post-traumatic psychoneurosis
- Punch drunk
- Terror neurosis
- Traumatic constitution
- Traumatic encephalitis
- Traumatic encephalopathy
- Traumatic encephalopathy of boxers
- Traumatic hysterias
- Traumatic insanity
- Traumatic neurosis
- Traumatic psychosis
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VA TBI Expert Opening Comments on Veteran Traumatic Brain Injury Disparities

David X. Cifu, MD
Professor and Chairman
Virginia Commonwealth University

Senior Traumatic Brain Injury Expert
U.S. Department of Veterans Services

Concussion Consultant
Florida Panthers - NHL
• There is scientific evidence that single concussions are associated with long-term risks.
• One week of rest after a concussion is usually sufficient to allow for return to sports.
• Newer neuroimaging techniques allow us to diagnose concussion accurately.
• There are emerging biomarkers to detect concussion.
• There are no evidence based treatments for symptoms of concussion.
• Most concussions from war are blast related and have poor outcomes.
MILD TRAUMATIC BRAIN INJURY – DR. CIFU

Injury caused by rotation not direct skull trauma

mTBI = Concussion

Concussion = mTBI

Helmets prevent skull fractures not concussions
• 7-12% of OEF-OIF-OND Veterans who received VA medical care have confirmed TBI
  – ~75,000 total (>800,000 screened) in VA
    • 95% mild
    • <5% moderate-severe (2,500-3,000)
• >50% combat concussions due to MVC
• 73% of Veterans with symptomatic mild TBI also have mental health diagnosis, most commonly Post Traumatic Stress Disorder (PTSD)
• >90% also have either PTSD or chronic pain disorder
• Vascular Health (Modifiable)
  – Obesity
  – Hyperlipidemia
  – Smoking

• Mental Health (Modifiable, Treatable)
  – Stress
  – Mental Illness (Depression, GAD)

• Activity (Modifiable)
  – Physical
  – Mental (work, social interaction)

• Other Neurologic Disease (Treatable)
  – Parkinson’s disease

• Trauma (Preventable)
  – TBI
  – ?Subconcussive Injury
• >4 million concussions in US annually.
• Management of acute concussions and preventable factors of dementia is poor.
• While Service member/Veterans are at risk for concussions, their bigger risks are vascular, mental health and activity deficits.
• CENC is working on establishing long-term prospective cohorts to study chronic effects of combat concussions.
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Current Evidence of Racial/Ethnic Disparities in Traumatic Brain Injury

Leonard E. Egede MD, MS
Allen H. Johnson Endowed Chair & Professor of Medicine
Director, Charleston VA COIN
Director, MUSC Center for Health Disparities Research
• National cohort of 14,690 Veterans seen at VA medical centers in 2006 with clinically diagnosed TBI.
• Obtained date of death from vital status file for deaths between 2006-2009.
• Mortality rates significantly differed by race (6.69% Hispanics vs. 2.93% non-Hispanic).

• In regression models, Hispanic ethnicity was significantly and positively associated with higher risk of mortality (HR=1.61) compared to non-Hispanic whites after adjusting for comorbidities and socio-demographics.

Egede et al. AJPH, 2011
• Using the same cohort, utilization was shown to partially mediate the relationship between Hispanic race and mortality (HR=2.35 decreased to 1.58 and lost significance after mediation).

• Hispanic ethnicity was associated with lower likelihood of having TBI clinic, neurology, rehabilitation, and other types of clinic visits.

• Systematic review showed additional disparities in cost and utilization by race in general public.

• Non-white race associated with lower likelihood of placement for rehabilitation post-discharge.

• American Indians/Alaskan Natives had highest age adjusted rates of hospitalization for TBI.

Dismuke et al, 2015; Dismuke et al., 2016
• Cohort of Veterans seen in VA between 2004 - 2010 with clinically diagnosed TBI
• TBI classified as mild, moderate or severe
• Although non-Hispanic whites had overall higher odds of mild TBI, odds of mild TBI associated with combat exposure was significantly higher in Hispanics (OR= 3.42) and non-Hispanic blacks (OR= 2.48)
• Contrary to patterns in mild TBI, Hispanics (OR=1.47) and non-Hispanic blacks (1.44) had higher odds of moderate to severe TBI, but there was no differential moderating effect by combat exposure

Dismuke et al, AJPH 2015
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VA TBI Expert and Concussion Expert Discuss Veteran TBI Disparities

Questions – Moderated Session
• What is TBI?
• What is CTE?
• What is the connection between TBI & CTE?
• What are the implications for Veterans?
• What should the VA and Community at large know and do about TBI & CTE?
• What/where are the known disparities in TBI & CTE?
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VA TBI Expert and Concussion Expert Discuss Veteran TBI Disparities

Audience Questions
• Take home/away points

• Dr. Omalu
• Dr. Cifu
• Dr. Egede
• Dr. Uchendu
• Repeated concussions:
Time to spur action among vulnerable Veterans

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GET INVOLVED!

- The pursuit of Health Equity should be everyone’s business.

- It is a journey that takes time and sustained effort.

- What can you do today in your area of influence to improve health equity?

- At a minimum - in all your actions - do not increase the disparity.

- Thank you!
Uchenna S. Uchendu, MD

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OHE website - http://www.va.gov/healthequity/

Sign up for our Listserv and continue the dialogue

Supplemental information available on OHE website

THANK YOU!
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VA TBI Expert and Concussion Expert Discuss Veteran TBI Disparities

Supplemental Slides
Normal White Matter  

CTE White Matter

LUXOL FAST BLUE-CRESYL VIOLET [LFB-CV] HISTOCHEMICAL STAIN
1. DIFFUSE LOW GRADE NEUROPIIL ISOMORPHIC FIBRILLARY ASTROGLIOSIS, WHITE MATTER
2. PERIVASCULAR AND NEUROPIIL HISTIOCYTES WITH NEUROPIIL MICROGLIAL ACTIVATION
3. SPARSE AND MULTIFOCAL PERIVASCULAR LYMPHOCYTIC SEEDING, VIRCHOW ROBIN SPACES
subject 24013 (retired NFL player)

Logan graphical analysis with cerebellar grey matter as reference region

[F-18]FDDNP DVR parametric images
DVR: 0.8 [---] 1.5 [---]
subject 24012 (retired NFL player T.D.)

Logan graphical analysis with cerebellar grey matter as reference region

[F-18]FDDNP DVR parametric images

DVR: 0.8
STAGING OF CTE: T-NUMBER STAGING CRITERIA
- DR. OMALU

T-0 = Negative
T-1 = Mild subcortical involvement;
T-2 = Subcortical, including mid brain + amygdala and medial temporal lobe;
T-3 = T2 + partial involvement of other cortical structures;
T-4 = T2 + extensive cortical involvement with Alzheimer’s or frontal lobe dementia patterns.
Chronic traumatic encephalopathy in an Iraqi war veteran with posttraumatic stress disorder who committed suicide

Bennet Omalu, M.D., M.B.A., M.P.H., C.P.E.,1,2 Jennifer L. Hammers, D.O.,1,3 Julian Bailes, M.D.,1,4 Ronald L. Hamilton, M.D.,5 M. Ilyas Kamboh, Ph.D.,6 Garrett Webster,1,2 and Robert P. Fitzsimmons, J.D.1,7

1Brain Injury Research Institute, Morgantown, West Virginia; 2Department of Pathology, University of California, Davis, California; 3Office of the Chief Medical Examiner, Boston, Massachusetts; 4Department of Neurosurgery, West Virginia University, Morgantown, West Virginia; 5Department of Pathology, University of Pittsburgh, Pennsylvania; 6Department of Human Genetics, University of Pittsburgh, Pennsylvania; and 7Fitzsimmons Law Offices, Wheeling, West Virginia

Following his discovery of chronic traumatic encephalopathy (CTE) in football players in 2002, Dr. Bennet...
• Departments of Defense and Veterans Affairs-funded nationwide research consortium to study the short- and long-term effects of repeated concussions in combat injured servicemembers and Veterans.

• Five year, $62.2 million award begun October 2013.

• CENC partners with NIH, NINDS, NCAA and NFL research groups to jointly study civilian, sports and combat concussions.
• Mission:
  • TBI research network for VA and DoD made up of federal, academic and private collaborators with rapid translation to public arena

• Research Goals:
  • Identify and characterize anatomic, molecular and physiologic mechanisms of mild TBI and potential neurodegeneration
  • Evaluate how co-morbidities (sensory, endocrine, psychologic) are associated with and exacerbated by mTBI and are related to potential neurodegeneration
  • Assess efficacy of novel treatments and rehabilitative strategies for persistent symptoms of mild TBI and potential neurodegeneration

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Thank you!

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