Warfighter Brain Health: Definition

- Warfighter brain health is defined as the physical, psychological, and cognitive status that affects a warfighter’s capacity to function adaptively in any environment and impacts readiness, operational capability, mission effectiveness, and the goal to achieve overmatch or superior lethality. [Source: Deputy Secretary of Defense Memorandum, “Comprehensive Strategy and Action Plan for Warfighter Brain Health,” dated October 1, 2018 and National Defense Strategy, January 2018]
DoD Warfighter Brain Health Initiative (WBHI): Authority and Scope

On 1 October 2018, the Deputy Secretary of Defense provided direction for a Comprehensive Strategy and Action Plan for Warfighter Brain Health

- Develop Department-wide strategy to address:
  - Brain Health to include Cognitive and Physical Performance
  - Brain Exposures
  - Traumatic Brain Injury
  - Late and Long-Term Effects
- To synchronize and prioritize efforts into a single brain health approach to produce more efficient and effective results

DoD WBHI: Purpose

- The Department’s mission to defend the Nation hinges on a warfighters’ ability to make expedient and effective decisions on the battlefield
  - To perform at the highest level, cognitive and physical capabilities must be optimized by addressing brain health, potentially hazardous brain exposures, traumatic brain injury (TBI), and long-term or late effects of TBI
  - Ensure warfighters are performing at optimized capacity and if exposed or injured by a known or emerging brain threat, return our warfighters to full health to include brain health
- To accomplish the above, the Warfighter Brain Health Initiative (WBHI) was established
- Prior to this initiative, there have been successful but disparate brain health efforts within the Department
- DoD senior leaders recognized the need to synchronize and prioritize efforts into a single brain health approach to produce more efficient and effective results
DoD WBHI: Brain Health Priorities and Concerns

- **Disconnect Between Operational and Medical Communities**
  - There is perceived disconnect between the efforts of the operational (those preparing for combat) and medical communities on translating brain health information to the SM in time to help them.

- **The "Warrior Mindset"**
  - SMs have a desire to complete the mission despite brain exposures, injury or illness. SMs often compare themselves to other SMs who may be in a worse condition, therefore downplaying their own struggles or concerns.

- **Concerns for Diminished Training**
  - There were multiple concerns over the new emphasis on blast overpressure exposures and brain health and how safety and training changes may dilute their training opportunities. This may make it difficult to maintain deployment readiness and combat effectiveness.

- **Limited Information on Health Hazards, Adverse Effects, Protection Measures and Mitigation Strategies**
  - SMs want to know what brain exposures are most damaging to them and informed outright if they are at increased risk of exposure or injury while performing a specific training activity. They want brain exposures tracked, monitored and documented into a record that transfers and is visible to the veteran’s hospital, should they require medical care after leaving active service.

- **Lack of Resources for Those Already Affected**
  - SMs want more resources (clinical tools, protocols, research solutions) for those who have been in the military for longer periods of time and may be noticing changes in their functional abilities.

- **In frequent Periodic Health Scans/ Evaluations**
  - SMs would like to have general physical and brain health assessments, scans or tests occur on a more frequent and periodic basis across the career lifecycle along with aggressive follow-up if deficits are identified.

DoD WBHI: Key Partnerships

**Operational**
- Close Combat Lethality Task Force
- Explosive Ordnance Disposal Community
- Resilience and Suicide Prevention Office
- Senior Resiliency Advisor to the Chairman Joint Staff
- Explosive Ordnance Disposal Endurance Office, Army Public Health, Army Global Capabilities Development
- Soldier TAMWG (Service HNIAA Role)
- USASOCOM

**Safety**
- DoD Laser Systems Safety Training Group
- Occupational Health and Safety, Army Public Health, Army Global Capabilities Development
- Soldier TAMWG (Service HNIAA Role)
- USASOCOM

**Outreach/ Training/ Education**
- Council on Recruiting and Basic Training
- Force Education and Training Office
- Military Training Capabilities Group
- Office of the CASSD (Military Community & Family Policy)
- Public Affairs Office
- TBI Center of Excellence (CCE)

**Clinical**
- TBI Advisory Committee (Service, Reps, and Staff)
- Special Operations Forces Reserve Component
- Coast Guard, US Army Medical Research & Development Command
- Uniformed Services University of the Health Sciences
- Defense Health Agency
- National Intrepid Center of Excellence (NICoE)
- TBI Clinic, Air Force

**Research**
- Academia
- Armed Services Biomedical Research Evaluation and Management Community of Interest
- Department of Veterans Affairs
- Industry
- National Institutes of Health
- NICoE
- Office of Naval Research
- Office of the Under Secretary of Defense (Research & Engineering)
- TBI/CDE
- TBI Service Research
- USAF
- USAMRDC
- USAHS
DoD WBHI: Drivers

WBH Initiative Strategy & Action Plan

The Deputy Secretary of Defense provided direction for a Comprehensive Strategy and Action Plan for Warfighter Brain Health

Signed on 8 JUN 22, the Strategy and Action Plan synchronized and prioritized efforts into a single brain health approach to produce more efficient and effective results.

WBH Joint DOTmLPF-P Change Recommendation (DCR)/ Initial Capabilities Document (ICD)

The WBH CBA assessed DoD’s ability to monitor, optimize, restore, and support brain health across the warfighter’s lifecycle regarding key threats and exposures such as blast, blunt, directed energy, etc.

Signed on 19 JAN 22 the Final Product: 36 solutions and 74 R&D activities to support optimization of Warfighter brain health.

DoD WBHI: Overview

Mission: Act rapidly to provide products, practices, and policies to directly impact warfighter brain health and performance

End State: Optimize warfighter brain health and performance to maximize Joint Force superiority and lethality in all operating environments
DoD WBHI: Implementation Areas

• Assess cognitive capabilities
• Monitor brain threats
• Capture and analyze patient data
• Understand effects of exposures and injuries
  – Interface Astroglial Scarring (IAS), Chronic Traumatic Encephalopathy (CTE)
• Implement rapid translation of findings
  – 74 Research & Development activities to support optimization of Warfighter brain health

DoD WBHI Implementation Area: Assess Cognitive Capabilities

• Obtain baseline for entire force q 5 years (SOCOM q 3 years)
  – Implement within one year of accession
  – To ensure warfighters are performing at optimized capacity and if exposed or injured by a known or emerging brain threat, return our warfighters to full health to include brain health
• Monitor industry and academia for cognitive enhance/restore
  – WBHI Strategy and Action plan: Objective 1bii
### DoD WBHI: Known and Emerging Brain Threats*

- Ballistic Projectiles
- **Blast overpressure** (include underwater and subterranean exposures)
- Blunt force impact
- Chemical-Biological-Gas toxins
- Directed energy (i.e. pulsed high power microwave)
- High G acceleration/vibration/recoil
- Incoming/Near missed impact (ex. Ballistic Missiles)
- Other environmental hazards
- Pressure fluctuations (i.e. aviators)

* Exposures not prioritized  
**Mandated by National Defense Authorization Act Fiscal Year 2018 Section 734

### DoD WBHI Implementation Area: Monitor Brain Threats: BLAST

- NDAA FY 18, SEC 734: Longitudinal Medical Study of Blast Overpressure Exposure in Members of the Armed Forces
- ASD/Readiness published Interim Guidance for Managing Brain Health Risk from Blast Overpressure (Recommendation: 4 psi as threshold)
- Linkage of Blast Exposure and Health/Performance Effects
- NATO Human Factors Medicine (HFM): 338 to develop military loading exposure guidelines
  - International effort to translate research findings into practical guidelines to facilitate the development of blast exposure monitoring capability and the capture of health and performance information.
DoD WBHI Implementation Area: Monitor Brain Threats: AHI

- Anomalous health incidents (AHI) (formerly known as Unconventionally acquired brain injuries, UBIs)
- SECDEF stood up a Cross Functional Team (CFT) in June 2022 to coordinate all DoD and interagency activities
- DHA Updated Guidance for Evaluation of Anomalous Health Incidents (AHI) with specific AHI Acute Assessment tool on 6 September 2022
- AHI Research exploring Source, Propagation, Coupling and Biological Effects and Clinical Effects

DoD WBHI Implementation Area: Capture and Analyze Patient Data

- Continuous improvement of TBI care with better understanding of
  - Thresholds
  - Relationship between brain exposures and injuries
- Extensive training and education Department-wide and in multiple communities
- Establishment of ICD-10 coding
  - Effective 1 OCT 22: S06.8A Primary blast injury of brain, not elsewhere classified
  - Need AHI code
- Repetitive blast pressure
DoD WBHI Implementation Area: Understand Effects of Exposures and Injuries

- Late effects vs. long term effects: develop a comprehensive understanding of:
  - The etiology and mechanisms of long-term and late effects of brain exposures and TBIs
  - The contributions of co-occurring conditions that influence functional outcomes, including performance
  - The dose-response rate of brain exposures and/or TBIs needed to induce long-term or late effects
- Continued use of brain tissue repository
- Collaboration with other Government Agencies, industry and academia

DoD WBHI Implementation Area: Implement Rapid Translation of Findings

- Department in the process of transitioning from TBI (injury) to a brain health framework (evolving through vision setting, RFIs, and RFPs)
  - Entirety of brain health
- Operational and medical
- Initiated development of WBH research strategy
  - Inclusive across spectrum of WBHI (beyond medical)
  - Prioritize research agenda
DoD WBHI: Assess Cognitive Capabilities
LOE 1- Optimize Cognitive and Physical Performance

- Ability to monitor a warfighter’s cognition and
- Determine if need to enhance or restore, especially if there has been a decrement through a hazardous brain exposure

DoD WBHI: Assess Cognitive Capabilities
(Strategy and Action Plan)
DoD WBHI: Assess Cognitive Capabilities
(Strategy and Action Plan)

OBJECTIVES

1a. Establish Baselines
   i. Establish Cognitive Surveillance Program
   ii. Develop Lethality Metric
   iii. Develop Additional Indices/Factors/Modalities

1b. Enhance Performance
   i. Develop or Refine Training & Sustainment Programs
   ii. Monitor Academia & Industry for Applicability
   iii. Identify Evidence-Based Solutions

1c. Restore Performance
   i. Identify Evidence-Based Treatments
   ii. Expand Access To and Use of Treatment Programs
   iii. Discover New Evidence-Based Strategies

1d. Awareness & Best Practices
   i. Develop and Implement Strategic Communication Plans
   ii. Establish Repository to Share Best Practices

DoD WBHI: Cognitive monitoring (Background)

- A cognitive monitoring program supports:
  - The warfighter’s ability to make expedient, effective decisions on the battlefield
  - The Department’s pursuit of superior lethality (National Defense Strategy, 2018)

- Department lacks the ability to monitor and optimize warfighter cognitive performance in order to maximize operational readiness

- Identifying a decrease in cognitive performance over time supports SM-level intervention to improve operational readiness

- To achieve a Department-wide cognitive monitoring program, the current neurocognitive assessment program would need to be expanded
  - DoDI 6490.13, “Comprehensive Policy on Traumatic Brain Injury-Related Neurocognitive Assessments by the Military Services”
DoD WBHI: DoD Neurocognitive Assessment Program (Background)

  - Requires all SMs to undergo computerized neurocognitive assessment testing within 12 months prior to deployment
  - Utilizes the Automated Neuropsychological Assessment Metrics (ANAM) computerized tool
    - Assess 7-10 cognitive areas in 15-20 minutes
  - Army is the Program Lead
  - FY19 DoD completed 220K ANAM assessments at 420 military testing sites (CONUS and OCONUS)
  - $6M annual budget; Defense Health Program Operations & Maintenance funded
- TBI medical community accepts ANAM as a surrogate for cognition until a better tool emerges

DoD WBHI: DoD Neurocognitive Assessment Program (Background)

- ANAM Cog Domains (7 – 10 )
DoD WBHI: Assess Cognitive Capabilities Implementation (Monitor)

- Deputy’s Workforce Council (DWC) discussion on May 18, 2021, endorsed baseline neurocognitive of all Service members every 5 years
- Obtain baseline for entire force q 5 years (SOCOM q 3 years)
  - Implement within one year of accession
  - To ensure warfighters are performing at optimized capacity and if exposed or injured by a known or emerging brain threat, return our warfighters to full health to include brain health
- Updated policy (DoDI 6490.13) began informal coordination on 1 October 2022 with the TBI Advisory Committee (TAC)

DoD WBHI: Updates to Policy
DoDI 6490.13

- Expanded requirement for a WBH Neurocognitive Monitoring Program
  - Establishment of a Program Management Program
    - Informatics and Interoperability
    - Operations and Administration
    - Compliance
    - Training and Education
    - Referrals and Follow Up
  - Transition from a deployment-centric, TBI-driven program, to a new framework addressing WBH throughout Service members’ careers
DoD WBHI: Assess Cognitive Capabilities Congressional Interest

FY 21 Report to Congress: A cost analysis plan for implementing cognitive baseline testing for all new military recruits using the ANAM

DoD WBHI: Assess Cognitive Capabilities Implementation

Memo sent on 31 OCT 22 from ASD/HA to Army Surgeon General requesting Army’s intention to continue to serve as Lead Service in light of expanding requirements beyond pre-deployment testing
DoD WBHI: Cognitive Enhancement and Restoration

• Enhancement
  – Cognitive Readiness
  – Brain Fitness Centers
  – Research: Software (e.g. Brain HQ)

• Restoration
  – CPG’s on Cognitive Rehabilitation (DoD/VA)
  – National Intrepid Center of Excellence and Intrepid Spirit Network

DoD WBHI: Way Forward

• Full implementation phase
• Priorities:
  – Policy Revisions to 6490.11 and 6490.13
  – Cognitive Monitoring program
  – Matrix the WBH Strategy and Action Plan with the JROCOM to identify gaps and organizational alignment

• Continued Senior Leader Engagement- Updating Health Services Workgroup (HSWG) every 6 months; Logistics Functional Capability Board (LOG FCB) every year; Deputy’s Workforce Council (DWC) every 6 months (briefing)
Questions?