

TOXIC EXPOSURES

POTENTIAL EXPOSURES TO TOXINS
IN COMBAT AND TRAINING



WHAT IS A TOXIC EXPOSURE?

A direct or an indirect contact with any natural or man-made substances or agents that can lead to deleterious changes in body structure or function, including illness or death.

KEY FACTS

Research conducted demonstrates that in the periods between pre-deployment, during deployment, and post-deployment, over **95%** of returning combat veterans suffered chronic medical symptoms affecting every body system.

ROUTES OF EXPOSURES

- Ingested
- Inhaled
- Absorbed

TYPES OF EXPOSURES

- Burn Pits
- Particulate matter
- Exhausts & fumes
- Plastics, Styrofoam
- Fuels, oils, and fluids

TOXIC EXPOSURES WITHIN THE VETERAN COMMUNITY

Military personnel do not deploy unhealthy, but often they return with a multitude of both acute and chronic symptoms, some which only begin to manifest years after deployment.

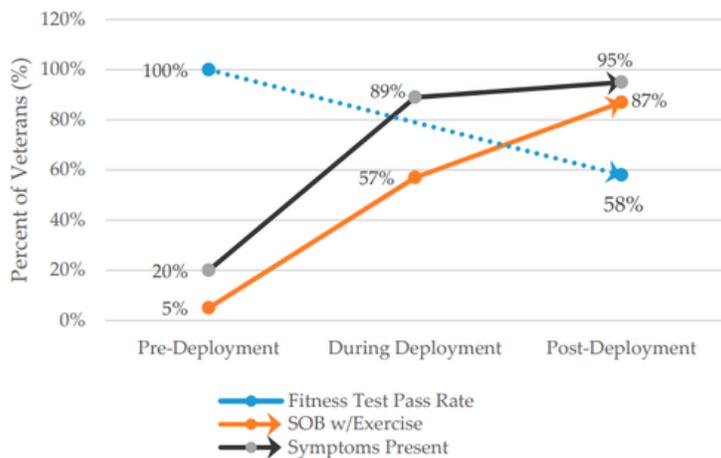
HunterSeven Foundation research findings show that combat veterans who have deployed to conflicts across the Middle East between 2001 to present day report an overall decrease in physical fitness status and increased rates of chronic, clinical symptoms as when compared to pre-deployment periods.

Studies conducted by the Dept. of Veterans Affairs also state that approximately **75-77%** of post-9/11 veterans seek a majority of their care not at Veterans Affairs facilities, but rather at civilian and community care centers. We hypothesize that if we educate civilian healthcare providers to screen for 'veteran status' and follow-up on assessing for veteran-specific health concerns that chronic and potentially terminal illnesses will be identified, which in turn will increase life longevity and survival rates by fifteen times.



TOXIC EXPOSURES

Key Findings



WHAT TO DO NEXT?

- Learn more about your exposures using the HunterSeven Foundation **interactive heat-map**.
- Document **exposures**.
- Document **symptoms**.
- Register your exposures on the Airborne Hazards and Open-Air Burn Pit Registry.

REACH OUT TO SCHEDULE AN APPOINTMENT WITH YOUR PROVIDER, DISCUSS YOUR CONCERNS.
BE PROACTIVE, NOT REACTIVE
IN YOUR HEALTHCARE

RESOURCES

**Evan Hafer, Green Beret
Black Rifle Coffee Company**



"I would take a towel, and I would wet it, and I would put it down under my door and on the top just so I could sleep because the smoke of the burn pit was so bad.. I'd wake up coughing..."

Black Rifle Coffee is a veteran-owned company focused in veteran wellness and philanthropy and has generously funded further research into toxic exposures.

PRE-DEPLOYMENT SYMPTOMS

Chronic headaches: 5%
Memory loss: 2%
White spots in mouth: 0%
Loss of taste: 0%

Burning eyes/throat: 0%
Discolored phlegm: 0%
Shortness of breath (exercise): 4%
Difficulty breathing/wheezing: 0%
Congestion: 0%

Acid Reflux: 6%

"Flu-like" symptoms: 0%
New-onset Allergic reactions: 0%
Metallic taste in mouth: 0%

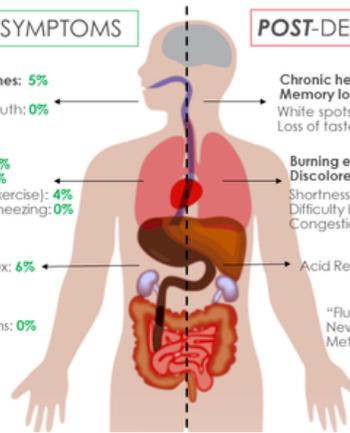
POST-DEPLOYMENT SYMPTOMS

Chronic headaches: ↑ 49%
Memory loss: ↑ 52%
White spots in mouth: ↑ 15%
Loss of taste: ↑ 13%

Burning eyes/throat: ↑ 29%
Discolored phlegm: ↑ 23%
Shortness of breath (exercise): ↑ 75%
Difficulty breathing/wheezing: ↑ 45%
Congestion: ↑ 43%

Acid Reflux: ↑ 47%

"Flu-like" symptoms: 21%
New-onset Allergic reactions: ↑ 22%
Metallic taste in mouth: ↑ 15%



Did You Know?

American forces operated more than **250 burn pits** on Joint-Base Balad in Iraq during the initial invasion to accommodate the accumulating waste of warfighters and support personnel stationed in the region.

An estimated **140 tons of trash** was burned daily, with the typical soldier contributing **10 pounds** per day (Reiss, 2012), which is the equivalent to the weight of (103) mid-size cars a day.

ARTICLES

- *Five Veterans in Five Months: Non-Profit HunterSeven Hopes to Prevent More Deaths from Military Toxic Exposure* - **Breitbart** - February 9, 2021
- *A Pilot Study of Airborne Hazards and Other Toxic Exposures in Iraq War Veterans*- **IJERPH**, May 9, 2020.

PODCASTS

- **Mentors For Military** - #194: *GWOT Deployment. Toxic Exposure. What You Need to Know.*
- **Groundtruth Podcast** - Ep. 1: *Delta Force Operator Mike Glover talks Toxins.*

SLEEP

SLEEP DISORDERS AMONG THE VETERAN COMMUNITY



WHAT IS SLEEP DISORDER?

Sleep disorders are conditions that result in changes in the way that you sleep.

A sleep disorder can affect your overall health, safety, and quality of life. Sleep deprivation can affect your ability to drive safely and increase your risk of other health problems.

KEY FACT

Likelihood of clinical insomnia increased by **50%** in those with mTBI.

SLEEP DISRUPTIONS

- Endocrine Dysfunction
- Chronic Pain
- Post-Traumatic Stress
- Brain Injury history
- Restless Leg Syndrome

MILITARY EXPOSURES

- OPTEMPO
- Chronic Stress
- Brain Injury History
- Post-Traumatic Stress
- Time zone changes

COMMONS SLEEP DISORDERS IN THE VETERAN COMMUNITY

Three out of four (75%) post-9/11 veterans report at least one issue with their sleep. That number increases if the veteran has suffered a brain injury and/or was diagnosed with a mental health condition (anxiety, chronic stress, Post-Traumatic Stress).

For the brain to maintain functioning at the highest level possible, it requires sleep.

A DoD study showed that **56%** of service members reported getting less sleep than required to perform their military duties.

Inadequate sleep negatively impacts the service member's military effectiveness; demonstrating reduced ability to execute complex tasks, communicate effectively, maintain vigilance, and sustain proper alertness required to carry out duties.



SLEEP

SLEEP AND TBI

Sleep deprivation may account for the link between TBI and depression symptoms among service members.

- The number of TBIs an individual has suffered increased the rate of sleep disorders by 50%.
- Blast injuries are more commonly associated with insomnia and anxiety compared to blunt trauma injuries.
- Of those deployed that experienced an mTBI, 77% reported sleep disorders.

SLEEP AND PTS

Sleep deprivation is a core symptom of PTSD and a factor that can exacerbate PTSD daytime symptoms, such as hypervigilance and irritability.

- Service members with insomnia prior to trauma exposure are more likely to develop PTSD following the exposure, indicating that disturbed sleep increases vulnerability to PTSD.
- Studies show that insomnia and recurrent nightmares are independently associated with a number of negative sequelae, including suicidal ideation and behavior, over and above the effects of PTSD and depression.



Did You Know?

During sleep, neurons cease firing at their normal **“awake”** rate and allow the brain to open (approx. 60% more) to allow cerebrospinal fluid (CSF) to enter the **“relaxed brain”** and rid it of its toxins, specifically the amyloid-beta and tau proteins.

This makes sleep an important and necessary regenerative process, especially if you suffer from a brain injury.

RECOMMENDATIONS & RESOURCES

Ways to improve sleep:

- Set a schedule: Sleep/wake at the same time daily.
- Exercise 20-30 min/day.
- Avoid caffeine and nicotine after 4pm.
- Avoid alcohol.
- Create a room for sleep:
 - No cell phones/TV or blue light
 - Cool room, ideal temp. 60-65 degrees
- Below are cell phone applications that assist with sleep:



ARTICLES

- *What's Really Keeping You Up At Night?* - Havok Journal, December 10, 2020
- *The Complete Guide to Optimal Health* - Havok Journal, March 3, 2021

PODCASTS

- **Joe Rogan Experience** - #1109: Matthew Walker, "Why We Sleep: Unlocking the Power of Sleep and Dreams"
- **Groundtruth Podcast** - #4: Delta Operator Chris VanSant, Mastering Sleep

BRAIN INJURY

BRAIN INJURY AMONG THE VETERAN COMMUNITY



WHAT IS A BRAIN INJURY?

The Centers for Disease Control and Prevention (CDC) defines a traumatic brain injury (TBI) as "a disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head, or penetrating head injury."

KEY FACTS

Studies show that individuals with TBI are **4 to 9** times more likely to die by suicide.

SYMPTOMS OF BRAIN INJURY

- Headaches
- Blurred vision
- Confusion
- Light sensitivity
- Dizziness
- Memory loss

MILITARY EXPOSURES

- Shoulder-fired weapons
- Blast waves
- Chronic stress
- Airborne operations
- Diving

BRAIN INJURY IN THE VETERAN COMMUNITY

Traumatic brain injuries are known as the **signature injury** in the veterans who have served in the Global War on Terror due to increased use of improvised explosive devices in urban operating environments.

Recent Department of Defense statistics estimated that between 2000-2020 (Q3) that 430,720 service members received treatments for a diagnosed brain injury at a DoD facility, and of those, **82.4%** were considered "mild" in severity.

Studies show that this number is inaccurate and the number of service members who've experienced any form of brain injury is **drastically higher** because many are not treated or recorded.

Brain injuries can cause underlying physiological dysfunction that extend far beyond the brain, impacting hormone regulation, sleep/wake cycles, sex drive, amongst other life-altering issues.



BRAIN INJURY

TRAINING EXPOSURES

Reports state that as high as 85% of operators experience TBI from training alone.

- DoD found higher rates of concussion and post-concussion associated symptoms among individuals with a history of prolonged exposure to low-level blasts from breaching and shoulder-fired weapons.
- Mild brain injuries can occur from jumps, dives, and other vehicle-related jerk movements.

DEPLOYMENT AND COMBAT EXPOSURES

Blast injuries were associated with insomnia and elevated anxiety, where as blunt-force injuries were more commonly associated with obstructive sleep apnea.

- Of those deployed that experienced mTBI, **77%** reported sleep disorders.
- Soldiers with at least one deployment are 5.2 times more likely to have TBI vs. non-deployed.
- Current evidence supports a strong causal relationship between military-related exposure to specific neurotoxins and the development of serious medical conditions and higher rates of suicide among service members.

RECOMMENDATIONS & RESOURCES

David LeMay, MD
Regenesis Performance Center



"Our brain health is at risk! There is a large brain-body connection and prevention with nutrition is key."

Visit the Defense Health Agency website for more brain injury resources.



Did You Know?

- Service members with a brain injury are more likely to experience a sleep disorder and potentially suffer from **chronic insomnia**.
- TBI increases the incidences of sleep disorders which hinder brain injury healing and can increase symptoms of PTSD.
- Insomnia rates in service members are up **650%** since 2003.
- Sleep disorders increase the risk of suicide ideation by **2.5 times**.
- Cognitive rehabilitation can still work despite the number of concussions.

ARTICLES

- ["Shoulder-Fired Weapons Can Cause Traumatic Brain Injury"](#) - May 1, 2018
- ["Can a Brain Injury Cause a Relationship Breakdown?"](#) - March 10, 2021

PODCASTS

- Groundtruth Podcast - Ep. 4: SFC Ryan Hendrickson "Tip of the Spear"
- Groundtruth Podcast - Ep. 2: "Operator Syndrome"

HORMONES

HORMONE IMBALANCES IN THE VETERAN COMMUNITY



WHAT ARE HORMONES?

Hormones are natural substances that control and coordinate your body's internal mechanics and metabolism (or homeostasis), impacting energy levels, sex drive/function, muscle growth and, recovery and mitigate the body's response to injury, stress, and environmental factors.

KEY FACTS

78% of post-9/11 veterans report dealing daily with chronic stress. Chronic stress has a direct correlation with increased cortisol production and subsequent fatigue.

HORMONE DISRUPTORS

- Stress
- Plastic (BPA & PCB)
- Vaccines
- DDT
- PFAS

MILITARY EXPOSURES

- TBI
- Chronic stress
- Radiation exposures
- Burn pits

HORMONE IMBALANCES IN THE VETERAN COMMUNITY

The number of post-9/11 veterans who received treatments at a VA Healthcare facility for a "disease of endocrine system" between 2002 to 2015 was **39.1%** (476,922 post-9/11 veterans), which was **4th** highest disease complaint/category at the VHA behind mental health, musculoskeletal, and nervous system disorders.

Endocrine dysfunction may be understood as the natural consequences of an extraordinarily high allostatic load, the accumulation of physiological and neural responses resulting from **prolonged chronic stress, physical demands, and potentially toxic exposures**, a clear problem in post-9/11 veterans.

Hormone imbalances are known to cause low libido (sex drive), chronic fatigue, excessive weight gain/loss, depression, anxiety, impaired concentration, and mood instability. Additionally, hormone imbalances can cause **long-term insomnia, infertility, diabetes, hypertension, and exacerbate mental health conditions.**



HORMONES

TESTOSTERONE

Approximately 7.2 out of 10 post-9/11 veterans suffer from mild-to-severely low testosterone.

- High-tempo, high-stress occupational specialties increase low testosterone levels.
- 53,970 post-9/11 male veterans were treated between FY 2002-2020 for low-testosterone levels.
- 2 out of 100 American males have low testosterone, making post 9/11 veterans nearly 70 times more likely to experience this issue when compared to non-veterans.
- Studies show those only receiving 5 hours of sleep nightly had a 10-15% decrease in testosterone levels.

CORTISOL

78% of post 9/11 veterans report dealing daily with chronic stress.

- Chronic stress has a direct correlation with increased cortisol production and subsequent fatigue.
- Increased levels of circulating cortisol in the body cause declines in cognitive function and performance.
- Heightened levels of cortisol cause a decrease in other essential body chemicals (serotonin, dopamine, GABA)
- An example of cortisol function is the “fight-or-flight” startle response.
- Low cortisol levels can also result from chronic stress, causing adrenal fatigue and cause thyroid dysfunction and insulin resistance.

RECOMMENDATIONS & RESOURCES

DR. ALEC WEIR, MD-BC
Emergency Medicine,
Functional Medicine Provider – SteadyMD
Michigan, Tele-health



“Being proactive about the problem is always more beneficial than just waiting for it to pop up and hoping you can handle it... Low testosterone can cause similar symptoms to depression, and unfortunately sometimes the jump to an SSRI [anti-depressants] occurs without evaluating testosterone... you won't know what's wrong if you don't check. It is a simple blood test. If it is normal- great! You are good. But if it is not, then jump on it. I never understood the resistance to checking for disease amongst doctors...”



Did you Know?

Consuming an adequate amount of protein is extremely important in balancing hormones.

Dietary protein provides essential amino acids that your body can't make on its own and must be consumed every day in order to maintain muscle, bone, and skin health. In addition, protein influences the release of hormones that control appetite and food intake.

ARTICLES

- “Killing You Softly” - January 21, 2021
- The ‘Signature Injury’ of the War on Terror is not PTSD. It’s Low-T -”August 6, 2020
- [“Hormone Imbalances following Traumatic Brain Injury”](#)

PODCASTS

- Groundtruth Podcast – EP-3 | Green Beret SFC Doug Kiesewetter and Dr. Kate Pate, PhD Neurophysiologist – Feb 12, 2021
- Mentors for Military Podcast – EP-255 | Dr. Alec Weir, MD and Nikki Selby, BSN-RN – Oct 20, 2020
- SOFLETE - The Truth about Steroids