



**NAEVR**  
National Alliance For  
Eye And Vision Research  
*Serving as Friends of the National Eye Institute*

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**NAEVR URGES THAT FY2017 DEPARTMENT OF DEFENSE APPROPRIATIONS  
MAINTAIN THE “PEER REVIEWED VISION RESEARCH PROGRAM” (VRP)  
EXTRAMURAL RESEARCH LINE AND FUND IT AT \$15 MILLION**

The Peer Reviewed Vision Research Program (VRP) in Defense Appropriations funds extramural vision research into deployment-related vision trauma which is not conducted by the Department of Veterans Affairs (VA), elsewhere within the Department of Defense (DOD, including the Joint DOD/VA Vision Center of Excellence, VCE), or the National Eye Institute (NEI) within NIH. **NAEVR urges Congress to fund the VRP at \$15 million in FY2017.**

Although former Secretary of Defense Gates identified Restoration of Sight and Eye-Care as one of four top priorities for deployment-related health research funding [with Traumatic Brain Injury (TBI), Post Traumatic Stress Disorder (PTSD), and Prosthetics], DOD has not yet established “core” funding to address all vision research gaps, so VRP funding is needed.

- A 2012 study using published data from 2000-2010 estimated that deployment-related eye injuries and blindness have cost the U.S. \$2.3 billion a year, yielding a total of \$25.1 billion, driven primarily by the present value of long-term benefits, lost wages, and family care.
- Traumatic eye injury from penetrating wounds and TBI-related visual disorders ranks second only to hearing loss as the most common injury among “active” military:
  - Traumatic eye injuries have accounted for upwards of 16 percent of all injuries in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF).
  - Male soldiers ages 20-24 account for 97 percent of visual injuries.
  - Eye-injured soldiers have only a 20 percent return-to-duty rate as compared to an 80 percent rate for other battle trauma injuries.
  - The VCE reports 197,000 OEF/OIF veterans with eye injuries since 2000, as well as that upwards of 75 percent of all TBI patients experience short- or long-term visual disorders (double vision, light sensitivity, inability to read print, and other cognitive impairments).
- Ground soldiers face numerous assaults that potentially impair visual function, including:
  - Eye injuries from chemical, biohazard, laser, and environmental exposure.
  - Corneal (front-of-eye) and retinal (back-of-eye) injuries that are often not evaluated until a soldier’s vital signs are first assessed and which, if not stabilized, lead to vision loss.
  - Direct blast injuries, as well as potential long-term ocular injuries from the blast wave.
- Since Congress first funded the VRP line in FY2009 Defense Appropriations, the DOD, with the U. S. Army Medical Research & Materiel Command as the execution management agency, has awarded 71 grants totaling \$56 million to researchers addressing penetrating eye injuries, corneal healing, retinal/corneal protection, TBI-related visual dysfunction, the eye blast phenomenon, and vision rehabilitation.

**Vision, the sense most critical for optimal military performance in battlefield and support positions, is vulnerable to acute and chronic injury. Research to effectively treat vision trauma and TBI-related visual disorders can have long-term implications for an individual’s vision health, productivity, and quality of life for the remainder of military service and into civilian life.**

## **THE DOD CAN FUND ONLY A FRACTION OF VISION TRAUMA RESEARCH**

In each VRP funding cycle, the DOD reviews grant submissions for programmatic need—that is, addressing specific gaps in vision trauma research—as well as for scientific merit through the peer review process. As the field of vision trauma research grows, the DOD can fund only a fraction of the grants with both scientific merit and program relevance.

- In the combined FY2009-2010 VRP funding cycle—the program’s first year—120 pre-applications were received, 50 were invited to submit full proposals, and 12 projects were funded for a total of \$11 million.
- In the combined FY2011-2012 VRP funding cycle, 151 pre-applications were received, 50 were invited to submit full proposals, and 21 projects were funded for a total of \$13.8 million.
- In the combined FY2013-2014 VRP funding cycle (in process), 275 pre-applications were received and 151 were invited to submit full proposals. 34 projects were funded for a total of \$24.9 million.

## **VRP FUNDING IS YIELDING DELIVERABLES**

The VRP funds two types of awards: hypothesis-generating, which investigate the mechanisms of corneal and retinal protection, corneal healing, and visual dysfunction resulting from TBI; and translational research, which facilitate development of diagnostics, treatments and therapies—especially those that can be employed on the battlefield to save vision.

Research projects funded by the first two VRP funding cycles (2009-2010 and 2011-2012) have resulted in 80 published papers that are advancing knowledge about the diagnosis and treatment of eye trauma injuries.

VRP funding has also supported the development of:

- A portable, hand-held device to analyze the pupil’s reaction to light, enabling rapid diagnosis of TBI-related visual dysfunction.
- An “ocular patch,” which is a nanotechnology-derived reversible glue that seals lacerations and perforations of the eye on the battlefield, protecting it while a soldier is transported to a more robust medical facility where trained ocular surgeons can properly suture the globe.
- A validated computational model of the human eye globe to investigate injury mechanisms of a primary blast wave from an Improvised Explosive Device (IED), which has accounted for 70 percent of the blast injuries in Iraq and Afghanistan. The model determines the stresses on and deformations to the eye globe and surrounding supporting structures to enable the DOD to develop more effective eye protection strategies.
- A vision enhancement system that uses modern mobile computing and wireless technology, coupled with novel computer vision (that is, object recognition programs) and human-computer interfacing strategies, to assist visually impaired veterans undergoing vision rehabilitation to navigate, find objects of interest, and interact with people.