



NAEVR

National Alliance For
Eye And Vision Research

Serving as Friends of the National Eye Institute

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NAEVR URGES CONGRESS TO FUND THE FY2021 DEPARTMENT OF DEFENSE “PEER REVIEWED VISION RESEARCH PROGRAM” (VRP) AT \$30 MILLION

The Peer Reviewed Vision Research Program (VRP) in Defense Appropriations funds extramural 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 \$30 million in FY2021, an increase of \$10 million over FY2020. Although the DOD has 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], it has not established “core” funding to address all vision research gaps, so VRP funding is needed. Additionally, the DOD can fund only a fraction of the high-scoring peer reviewed vision research proposals that it receives each year.

- A January 2019 *Military Medicine* journal article based on a 2018 study by the Alliance for Eye and Vision Research that used prior published data from 2000-2017 has estimated that deployment-related eye injuries and blindness have cost the U.S. \$41.5 billion in that timeframe, with \$40.2 billion of that cost reflecting present value of a lifetime 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 in FY2009 and through FY2018, the DOD—with the U. S. Army Medical Research & Materiel Command as the manager—has awarded 96 grants totaling \$98 million to researchers addressing penetrating eye injuries, corneal healing, retinal/corneal protection, TBI-related visual dysfunction, eye blast phenomenon, and vision rehabilitation—all areas addressing DOD-identified research gaps.

Vision, the sense most critical for optimal military performance in battlefield and support positions, is vulnerable to acute and chronic injury. Research to treat military trauma-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 VRP develops the field of vision trauma research, the DOD can fund only a fraction of the grants with both scientific merit and program relevance:

- In the combined FY2015-2016 VRP funding cycle, 99 pre-applications were received and 78 were invited to submit full proposals. 11 projects were funded for a total of \$17.6 million.
- In the FY2017 VRP funding cycle, 176 pre-applications were received and 124 were invited to submit full proposals. 6 projects were funded for a total of \$13.9 million.
- In the FY2018 VRP funding cycle, 158 pre-applications were received and 62 were invited to submit full proposals. 11 projects were funded for a total of \$13.5 million.

VRP FUNDING IS YIELDING DELIVERABLES

In its history, the VRP has funded two types of awards: hypothesis-generating, which investigates the mechanisms of corneal and retinal protection, corneal healing, and visual dysfunction resulting from TBI; and translational/clinical research, which facilitates development of diagnostics, treatments and therapies—especially designed for rapid battlefield application. Research funded by the VRP has produced:

- 15 patents, patent applications, or provisional patents
- 8 clinical trials funded by VRP and/or based on results of VRP-funded projects
- 163 peer-reviewed publications in highly respected scientific journals.

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.

NAEVR REQUESTS FY2021 VRP FUNDING AT \$30 MILLION