Many visual dysfunctions can be improved through these commonly recommended treatments:

- Prescription glasses or contact lenses
- Prisms
- Oculomotor rehabilitation
- Pharmacotherapy *(medication management)*
- Surgery

CONCLUSION

Eye/head trauma or exposure to a blast can result in immediate and/or longer-term vision loss and visual dysfunction that can be difficult to initially detect. If you have been exposed to a blast and/or suspect you may have sustained a TBI, it is important to closely monitor your vision and eye health. If you have experienced any change in vision, visit an eye care provider (optometrist or ophthalmologist).

OTHER RESOURCES

- **Defense and Veterans Brain Injury Center**
  http://dvbic.dcoe.mil
- **BrainLine Military**
  www.BrainLineMilitary.org

VISION CENTER OF EXCELLENCE

Walter Reed National Military Medical Center
8901 Rockville Pike, Suite 1403-A
Bethesda, Maryland 20889
301-400-1130

Administrative Office
5113 Leesburg Pike
Skyline Four, Suite 602
Falls Church, VA 22041

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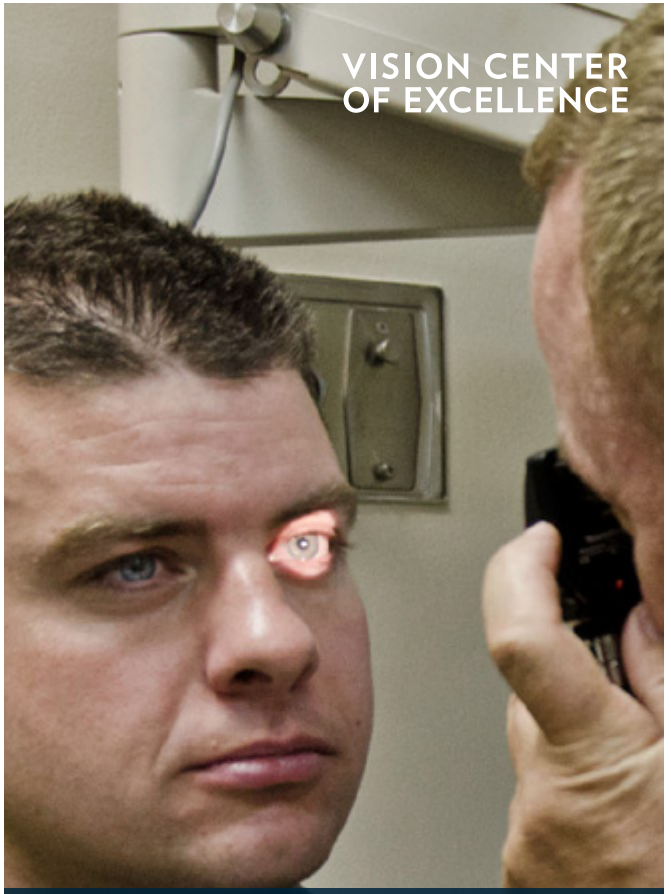

VISION PROBLEMS ASSOCIATED WITH TRAUMATIC BRAIN INJURY

INTRODUCTION

Changes in vision can occur following blast exposure, eye injury, concussion or a traumatic brain injury (TBI). People affected by these problems may not be immediately aware of the impact on their vision, because some injuries are subtle or may be overlooked in the presence of other more obvious combat trauma to other parts of the body. Being aware of the symptoms and changes in the eye and vision is crucial to maximizing recovery from vision problems of all causes.

Did you know?

- According to the National Institute of Neurological Disorders and Stroke, approximately 1.4 million people experience a TBI annually.
- An estimated 23.3% of people with TBI are thought to experience vision impairments and/or visual dysfunctions that can hinder success in school or at work.*
- Research shows more than half of the human brain is devoted directly or indirectly to vision, making brain injury a common cause of vision impairment.†

*Alveraz T, et al. (2012). Concurrent Vision Dysfunctions in Convergence Insufficiency With Traumatic Brain Injury. *Optometry and Vision Science, 89*(12), 1740–51.

†MIT Research - Brain Processing of Visual Information. (1996, December). http://newsoffice.mit.edu/1996/visualprocessing

COMMON CAUSES OF EYE INJURY & TBI-RELATED VISION PROBLEMS

Common causes include:

- Blast exposure
- Blunt force
- Car accidents
- Falls
- Assaults

Goodrich and Martinsen* developed a list of recommended questions to obtain a detailed ocular history for a Service member or Veteran who has been exposed to a blast or sustained an eye or head injury, including:

- Have you noticed a change in your vision since your injury?
- Do you bump into objects and walls more now than before your injury?
- Have you had any double vision since your injury?
- Have you noticed a change in your ability to read since your injury?

*Goodrich G., Martinsen, G. (2013). Development of a mild traumatic brain injury-specific vision screening protocol: a Delphi study. *Journal of Rehabilitation Research & Development, 50*(6), 757–768.

SIGNS AND SYMPTOMS OF TBI-RELATED VISION PROBLEMS

Some visual disturbances may indicate a sight-or life-threatening condition. These **urgent** medical symptoms indicating possible ocular, cranial nerve, or structural brain injury requiring immediate evaluation and management by an eye care provider (optometrist or ophthalmologist):

- Sudden loss of vision
- Blood in the eye
- Sudden appearance of flashes and/or floaters in vision
- Double vision
- Feeling that the eye is scratched or has something in it
- Unremitting headaches

Non-urgent symptoms may indicate a chronic eye or vision condition for which management by an eye care provider or referral to specialized care may be addressed over a course of time. Examples include:

- Cataract
- Nystagmus *(involuntary eye movements)*
- Dry eye syndrome
- Low vision
- Trouble focusing
- Blurred vision
- Eye strain
- More frequent headaches
- Difficulty reading
- Sensitivity to light
- Night blindness