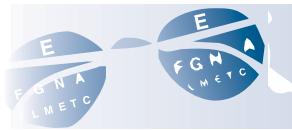




Department of  
Veterans Affairs



## Visual Impairment and Blindness

Independent Study Course  
Released: April 2002

*Sponsored by*  
Department of Veterans Affairs  
Employee Education System



This is a Veterans Health Administration System-wide Training program, sponsored by the Employee Education System and Veterans Health Administration, Blind Rehabilitation Strategic Health Group Patient Care Services. It was produced by the Employee Education System.



DEPARTMENT OF VETERANS  
AFFAIRS  
Veterans Health Administration  
Washington DC 20420

In Reply Refer To:

## Message from the Under Secretary for Health

I commend you for choosing to take advantage of this self-study program, "Blindness and Visual Impairment". Your commitment to continuing professional development benefits veterans who have unique needs, related to their military service, and reflects well on you as a dedicated health care provider.

VA health care providers need to understand the effects of severe vision loss, one of the unique service-related conditions. Veterans from all periods of service suffer from severe visual loss caused by traumatic injury and/or disease progression. The resulting condition significantly impacts their quality of life by restricting their participation in employment, family, social and recreational activities. More importantly, severe vision loss makes it extremely difficult for an individual to monitor their health care needs, especially those that require visual cues to detect. Veterans are also at high risk for vision loss due to aging. Statistics show that as the general population ages, a dramatic increase in the incidence of blindness occurs. Given the fact that the veteran population is an older population, it is likely that vision loss will be dramatically increasing among veteran patients.

The Department of Veterans Affairs is committed to providing all veterans with health problems, especially those related to military service, the highest quality health care. The information in this module will be helpful to you in your daily practice.

Thank you for participating in the Veterans Health Initiative.

A handwritten signature in black ink that reads "Thomas L. Carthwaite".

Thomas L. Carthwaite, M.D.  
Under Secretary for Health



DEPARTMENT OF VETERANS  
AFFAIRS  
Veterans Health Administration  
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In Reply Refer To:

**Message from the Director, Blind Rehabilitation Service**

For the major part of the past century, it has been conceded that blindness is one of the most feared conditions that could come into an individual's life, surpassed only by cancer, and more recently, by AIDS. It is not clear why the loss of eyesight is feared to this extent, since it is not by itself, life threatening as with the other two conditions. In any case, sight loss brings with it unique circumstances which impact the individual's life. The impact can be either positive or negative, depending on the knowledge and understanding of the condition by caregivers.

The objective of this module is to provide primary care practitioners a holistic view of blindness, since it is much more than simply the decrease in, or the loss of, visual function. The impact on an individual can best be illustrated by using the losses described in the Reverend Thomas Carroll's book, "Blindness, What It Is, What It Does, And How To Live With It". The following are the losses he attributes to blindness:

1. Loss of physical integrity.
2. Loss of confidence in the remaining senses.
3. Loss of reality contact with the environment.
4. Loss of visual background.
5. Loss of light security.
6. Loss of mobility.
7. Loss of techniques of daily living.
8. Loss of ease of written communication.
9. Loss of ease of spoken communication.
10. Loss of information progress.
11. Loss of visual perception of the pleasurable.
12. Loss of visual perception of the beautiful.
13. Loss of recreation.
14. Loss of career vocational goal job opportunity.
15. Loss of financial security.
16. Loss of personal independence.
17. Loss of social adequacy.
18. Loss of obscurity.
19. Loss of esteem.
20. Loss of total personality organization.

In addition to these losses, a number of variables contribute to the complexity of the situation such as age of the individual, age at onset of blindness, degree of vision loss, stability of condition and the presence of other medical/psychological factors.

It is anticipated that this module will provide primary care practitioners with a better understanding of blindness, enabling them to recognize many of the subtle nuances associated with the condition which will aid them in providing care to the blinded veterans enrolled in the VA healthcare system.

  
Don E. Garner  
Director, Blind Rehabilitation Service



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## Independent Study Outline

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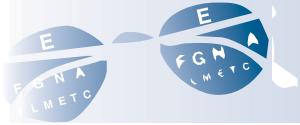
**Background:** On September 20, 1999, the Acting Under Secretary of Health requested that a working group be established to develop the Veterans Health Initiative (VHI). He envisioned this as a comprehensive program to recognize the connection between certain health effects and military service, to allow military history to be better documented, to prepare health care providers to better serve their veteran patients, and to establish a data base for further study. This was first discussed by the Acting Under Secretary in relation to the health of former prisoners of war. Development was really begun by the former Chief Academic Affairs Officer, Dr. David Stevens, with the Military Service History project. This involves a pocket card for medical residents detailing the important components of a military service history targeting the health risks associated with various periods of service and more generic issues of concern and a website containing references relevant to the issues.

Educational modules in the Veterans Health Initiative VHA will assist health care providers in recognizing the connection between certain health effects and military service, prepare health care providers to better serve veteran patients, and will provide a data base for further study.

**Purpose:** This independent study is designed to provide primary care practitioners with an introduction to the pathologies that lead to sight loss, their functional implications, appropriate method of referrals, training programs, and special considerations for interactions with visually impaired individuals.

**Objectives:** After completing this independent study, participants would be able to:

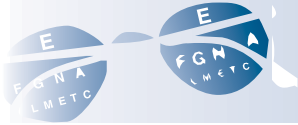
- Define legal blindness;
- Describe the causes of sight loss;
- Delineate the functional implications of vision loss
- Delineate the psycho/social impact of vision loss on the veteran;
- Outline the role of the Visual Impairment Services Team (VIST) in the treatment of legally blind veterans and the referral process;
- Describe the special personal and environmental considerations needed for visually impaired patients;
- Describe the special medical considerations needed for visually impaired patients;
- Describe the primary care practitioner's role in assisting veterans in establishing well-grounded claims for disability related to the loss of vision; and
- Describe compensation and pension benefits provided for veterans with eye disabilities.



**Outcome:** After completing this independent study, you should

1. be able to: state the definition of legal blindness;
2. be able to: associate eye diseases with their visual implications;
3. be able to: demonstrate insight into the functional and Psycho/Social implications of sight-loss;
4. know when referrals to VIST are indicated;
5. understand the process for making appropriate referrals; and
6. understand the importance of training at a VA Blind Rehabilitation facility.

**Target Audience:** This independent study is designed for primary care practitioners.



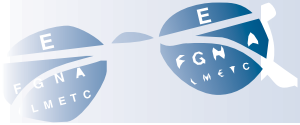
## Program Description

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### Content Materials:

- Personal Histories
- Background
- Trends in the Veteran Population: Visual Impairment
- Dual Sensory Impairment
- Primary Causes and Functional Implications of Blindness
- Psychological Implications
- Social and Family Implications
- Basic Sighted Guide Techniques
- History of Blind Rehabilitation in the VA
- University Affiliations
- Research
- Special Services for Visually Impaired and Blinded Veterans
- Visual Impairment Services Team Coordinator (VIST)
- Blind Rehabilitation Centers
- Blind Rehabilitation Training
- Low Vision
- Orientation and Mobility
- Manual Skills
- Living Skills
- Computer Access Training
- Support Services
- Family Training Program
- Psychology
- Local Eye Clinics of Ophthalmology and Optometry
- Prevention of Vision Loss
- Compensation and Pension Benefits for Eye Disabilities
- Glossary of Terms





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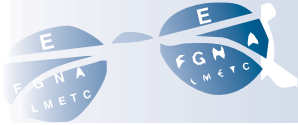
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## VISION LOSS: VETERANS' PERSONAL STORIES

---

### *George H. Sands*

My name is George Sands, and I am currently the Director of the Birmingham VA Blind Rehab Center. In 1977, I was diagnosed with Pseudoxanthoma Elasticum (PXE). PXE is a progressive eye disease that destroys central visual acuity. The patient is left with peripheral vision, but greatly reduced central acuity vision. A year later, I was declared legally blind and began receiving Social Security disability benefits.

In 1979, I applied for VA non-service connected pension benefits. I was scheduled for a Compensation & Pension examination at a large VA Medical Center, where I was examined by a physician and by the ophthalmology clinic. Because PXE is a relatively rare eye disease it was of great interest to the entire medical staff of the clinic. Numerous ophthalmologists and residents were given an opportunity to examine my eyes. In fact, I was there for an entire day, and sadly, not one professional referred me to the VIST program, or mentioned that the VA provided rehabilitation for the blind.

I completed the blind rehabilitation program offered by the state. It wasn't until I completed my college degree and was hired by the Blinded Veterans Association in 1985 at which time I learned about the VIST and VA Blind Rehab program. Although the blind rehab training I received from the state had been good, I found that it was not as comprehensive as the training offered by the VA Blind Rehab Service. Also, prosthetic devices offered by the VA were far superior and more numerous than those offered by the state.

Since 1979, I've often wondered how the quality of my life might have improved if one of those extremely busy, but thoughtful VA staff members had taken a moment to refer me to the VIST program. I hope this VHI learning experience will make you aware of the services offered to legally blind veterans. When you suspect a patient is severely visually impaired, please take a moment to make him/her aware of the blind rehab program. The VA offers the highest quality of blind rehab services in the country. It is a service you can be proud to offer our veterans.



## *Tom Miller*

In 1967, while serving in South Vietnam as a Marine officer, I was wounded by a landmine explosion. In addition to sustaining multiple shrapnel wounds virtually from head to toe, I was left completely blind. Subsequent to being flown out of Vietnam and hospitalized at the Great Lakes Naval Station Hospital north of Chicago, IL, I learned about the VA's Blind Rehabilitation Center (BRC) located at Hines in Illinois.

After undergoing surgery on my remaining eye and learning I would never see again, I was referred to the VA BRC at Hines for comprehensive residential blind rehabilitation training. The referral was initiated by the part-time Visual Impairment Services Team (VIST) Coordinator. Admission to the Hines BRC was very timely, and in less than two months I was beginning training. The rehabilitative training was extremely beneficial in restoring my self-confidence and helping me acquire the necessary adaptive skills to overcome the handicap of blindness. This experience gave me the hope that I needed to believe that I would be able to lead a meaningful and productive life.

Before my admission to Hines and during a brief hospitalization in the VA Hospital in Ann Arbor, MI., I was visited by a veteran contact who obtained all the necessary information to file a claim with VA on my behalf for service-connected disability compensation. The claim was promptly adjudicated and my monthly compensation checks began to arrive, relieving any financial concerns my wife and I might have had. A full paid life insurance policy also arrived early after my claim had been filed. What is now known as the Veterans Benefits Administration (VBA) was very efficient and effective in terms of any claims I filed at that most difficult time.

After completing blind rehabilitation training, I realized the need for additional education to be competitive in the employment market. Before enlisting in the Marine Corps, I had received my B.S. degree. The confidence I gained from blind rehabilitation encouraged me to apply for graduate school and I received a Masters degree in social work. Again, the VA Education Benefits were invaluable in completing the degree program.

After receiving my Masters degree, I obtained employment as a Social Worker in the mental health clinic at the VA Hospital in Allen Park, MI. In that position, I provided individual and group psychotherapy to disabled veterans. After serving six years in that position, I transferred to the VA Medical Center in Waco, TX., as the Chief of the Blind Rehabilitation Center.

Six years later, in 1985, I was selected to be the Director of Governmental Relations for the Blinded Veterans Association (BVA). BVA is a federally chartered national Veterans Service Organization exclusively dedicated to assisting blinded veterans and their families. In December 1994, I was promoted to Executive Director, a position I continue to serve in to this day.



## INTRODUCTION

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*Gregory L. Goodrich, PhD*

### **Background**

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The effects of visual impairment in reducing an individual's ability to read, drive, and travel independently are widely recognized. Life-long hobbies such as stamp collecting, reading, or golfing are often abandoned by individuals who have developed a visual impairment. These individuals also note that they are no longer able to see family photos, or to recognize friends they meet in social situations or pass on the street. It is common for once independent individuals to turn over responsibilities for personal finances, correspondence, and other important activities to others because the visual impairment is, mistakenly, viewed as preventing the individual from performing these tasks. In point of fact, appropriate, timely rehabilitation services can usually allow visually impaired individuals to pursue hobbies, retain control of their personal finances, and remain independent in their own homes.

While visual impairments need not curtail an individual's lifestyle, they often do because visual impairments are pervasive in their effect on the individual's entire life: social, occupational, recreational, and familial. Blindness, of all chronic illnesses and disabilities, is the second leading cause of inability to work (LaPlante, 1988), with visual impairments being historically correlated with underemployment, unemployment, and poverty (Kirchner, 1988). Less dramatic, but no less important, are the difficulties in day-to-day life that accompany sight loss. The simple act of reading a prescription bottle is beyond the capacity of many individuals, particularly the elderly. As a result, medications are either not taken, or are taken in incorrect dosages. Visually impaired diabetics may incorrectly self-administer insulin, or miss early (visual) signs of peripheral disease, with the result that an easily treatable foot infection progresses to conditions necessitating amputation (Kozel, 1995). Visually impaired individuals, because of difficulties in correspondence and mobility, may also become isolated and cut-off from family and friends. Friends and family who are uncomfortable around a visually impaired individual may unwittingly encourage such isolation.

Recent studies have also suggested that sensory impairments increase the risk for mortality among the elderly. Most of these studies suggest that for elderly individuals having either a vision impairment or a hearing impairment, places the individual at increased risk for mortality (Thompson, Gibson, & Jagger, 1989; Ford, et al., 1988; Chamove & Young, 1989). The studies that have examined individuals having impairments to both vision and



hearing indicate that for elderly individuals dual sensory impairments may present more of a risk for mortality than is the case with either impairment alone (Laforge, Spector, & Sternberg, 1992; Appollonio, et al., 1995). It is important to note that the association between decreased vision and aging is not the cause of the increased risk for mortality, in fact, “decreased visual acuity is associated with the largest odds ratio for increased mortality in our cohort, even greater than age” (Taylor, McCarty, & Nanjan, 2000, p 96 - Taylor, H.R., McCarty, C.A., & Nanjan, M.B. (2000). Vision impairment predicts five-year mortality. *Transactions of the American Ophthalmological Society*, 98, 91-9). Laforge and his colleagues have noted that one reason for the increased risk may be the paucity of services available for the partially sighted elderly. The lack of services was also noted by Hersen and his colleagues. Their research led them to conclude that “not only do older visually impaired individuals require a strong social support system to foster rehabilitation and reintegration into the community, but they must learn novel assertive responding strategies that will communicate to sighted peers their specific wants and needs” (Hersen, et al., 1995). Evidence is also mounting that visual impairment is one of the leading risk factors in the elderly for falls resulting in hip fracture (Dargent-Molina, P., Favier, F., Grandjean, H., Baudoin, C., Hausherr, E., Meunier, P.J., & Breart, G. (1996). Fall-related factors and risk of hip fracture: the EPIDOS prospective study. *The Lancet*, 348, 145-9). This is of particular concern, since hip fractures are strongly associated with mortality in the elderly. One in three will not survive beyond 12 months from the fracture. Vision related hip fractures are also medically costly, accounting for over \$2 billion per year in direct medical costs. Further strengthening the relationship between decreased vision and hip fracture was the finding that two thirds of the legally blind veterans entering a rehabilitation center were unable to visually detect a 5 inch high curb at a distance of 3 feet or less, with many unable to see the curb at all (Goodrich, G.L. and R. Ludt. (2000). Quantifying visual detection distances. in *Proceedings of the International Mobility Conference II*. University of Warwick, England: Guide Dogs for the Blind Association). This study also found that a structured treatment program emphasizing the use of tinted lenses and perceptual training could dramatically increase the ability of these veterans to visually detect curbs, so that upon completion of training only 1.5% were unable to perform the task. The increase in visual detection distance can be presumed to improve the individual’s ability to travel safely and avoid at least some hazards associated with falls. Other studies have shown other potential benefits of rehabilitation including the abilities to resume moderate, but healthy, exercise and the preparation of nutritionally adequate meals (Salive, M.E., Guralnik, J., Glynn, R.J., Christen, W., Wallace, R.B. & Ostfeld, A.M. (1994). Association of visual impairment with mobility and physical function. *Journal of the American Geriatric Society*, 42, 287-92).





Visual impairments do have profound consequences for the individual, however effective rehabilitation services can restore independence and therefore ameliorate these consequences and restore the individual's quality of life. Unfortunately, primary care physicians and ophthalmologists do not refer visually impaired veterans for vision rehabilitation services either because they are unaware of VA services or because they have the mistaken belief that "nothing more can be done" beyond medical examination of the eye pathology (Tanton, J.H. (1994). Nothing more can be done ... A fable for our times. *Ophthalmology Clinics of North America*, 7, 2 203-5). As Dr. Tanton notes (p. 204) "Even though it may be true that nothing more can be done for the *eye*, it is *almost never* true that nothing more can be done for the *patient*."

## **Trends in the Veteran Population: Visual Impairment**

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*"Age is the single best predictor of severe visual impairment."*

– Levy and Gordon, 1988

Access to high quality vision rehabilitation services within the Department of Veterans Affairs is particularly timely for today's veteran population as the number of severely visually impaired veterans is expected to grow at a rapid rate. Between 1995 and the year 2010 the number of living veterans is projected to decrease by 30%. In this same time period the percentage of elderly veterans will increase from 10% to 23% of the total veteran population. Since age is the single best predictor of severe visual impairment and legal blindness, it is possible to estimate the impact these trends will have on the veteran population. These trends seem to indicate there will be a dramatic increase in severe visual impairment among the veteran population. In 1995, there were over 663,000 severely visually impaired veterans, but in the year 2010 this number will increase to over 889,000. Equally dramatic will be the increase in the number of legally blind veterans who will increase from approximately 108,000 to over 147,000 veterans. To put this number in perspective, consider that this increase of some 39,000 legally blind veterans exceeds the total number of veterans that have been served by Blind Rehabilitation Service since its inception in 1948.

It is estimated that approximately one-third of all visually impaired veterans will also have a hearing loss. The loss of either vision or hearing places older individuals at increased risk of mortality, and the combined loss of vision and hearing presents an even larger risk factor. Thus, the loss of vision that will affect many older veterans will threaten not only their independence, but their very lives.





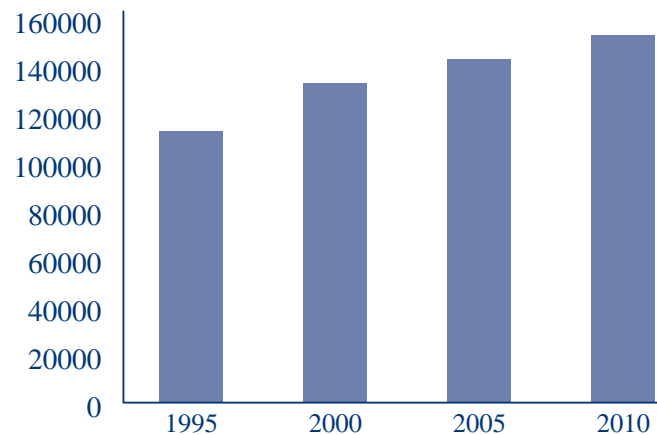
The VA has traditionally placed a high value on blind rehabilitation services. In fact, the VA has pioneered many innovative rehabilitation techniques and devices since its inception in the late 1940s. As these services mature, they will become increasingly challenged to meet the needs of the growing aging population. Indeed, the challenge will also affect the closely allied ophthalmology, optometry, and audiology services. The estimates presented here support the need for blind rehabilitation and related services. While the magnitude of growth is challenging, it may also be seen as an opportunity for the VA to improve the network of services it provides to an aging veteran population.

Table 1 shows the estimated number of legally blind veterans by age group for the years 1995 to 2010. This estimate shows that in 1995 there will be 108,000 legally blind veterans and that by the year 2010 this number will increase to over 147,860 (an increase of more than 39,700 veterans) (Figure 1). The rate of increase will average some 2,650 newly blinded veterans each year.

**TABLE 1**  
**ESTIMATED NUMBER OF LEGALLY BLIND VETERANS BY AGE AND YEAR.**

	Age Group					Total
	0 to 44	45 to 64	65 to 74	75 to 84	85 & Over	
Year						
1995	6,563	28,591	30,865	31,043	11,050	108,112
2000	5,308	25,623	26,512	46,979	20,316	124,738
2005	4,314	23,683	21,616	48,840	40,380	138,833
2010	3,619	20,697	20,028	42,625	60,895	147,864

**Figure 1. Estimated increase in legally blind veterans Yrs. 1995 to 2010.**



## Dual Sensory Impairment

Estimates from Table 2 clearly indicate that both hearing and visual impairments will be disabling conditions for a growing number of veterans over the 15-year period from 1995 to 2010. In the same time period, the percentage of veterans having dual hearing and vision impairments will increase. The increase in these groups will compound the difficulty of providing blind and hearing rehabilitation services to these veterans. Not only does blind rehabilitation require the provision of low vision devices, it also requires the individual to develop the new skills and insights that are necessary to compensate for their sight loss. An added hearing impairment also slows the individual's ability to acquire new information. Fortunately, a comprehensive rehabilitation program which can provide low vision aids, hearing aids, adjustment to sight loss, and psychological support can be an effective intervention to reduce the disabling effects of vision impairment, even in the presence of a hearing impairment. Continuing the development of more effective and efficient vision rehabilitation strategies will be important for the visually impaired veteran population, but it also may be important for our society as a whole. The veteran population averages some 10 to 15 years older than the civilian population, and the VA provides the only national wide rehabilitation service. As the civilian population ages, it too may experience a dramatic increase in the number of visually impaired individuals, and if it does, there is no national, comprehensive service available to meet the needs of this population. Cost effective services with demonstrated efficacy, such as those developed and being developed by VA Blind Rehabilitation Service, might well serve as a valuable model to meet this national need.



**TABLE 2**  
**AGE DISTRIBUTION AND NUMBER OF HEARING IMPAIRED AND**  
**LEGALLY BLIND VETERANS BY AGE GROUP AND YEAR.**

Year	Age Range				Total
	0 to 44	45 to 64	65 to 74	75 & Over	
1995	322	4,231	8,457	16,037	29,047
2000	260	3,792	7,264	25,639	36,956
2005	211	3,505	5,923	33,993	43,632
2010	177	3,063	5,488	39,441	48,169



## VISION LOSS

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### **Primary Causes and Functional Implications of Blindness**

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*Patti Fuhr, OD, PhD and Lyman Norden, OD*

The word “blindness” refers to visual impairment ranging from legal blindness to total blindness. There are vast differences in severity of visual impairment between legal and total blindness, as well as differences in the impact that vision loss has on an individual’s ability to function in his/her environment. VA Blind Rehabilitation Centers serve veterans who have been determined to be legally blind, some of whom are totally blind. The personal adjustment to sight loss program must be individualized to help each veteran achieve maximum functional independence.

### **Important Terminology**

*Objective: Define legal blindness in terms of both visual acuity and visual field*

#### **U.S. definition of legal blindness**

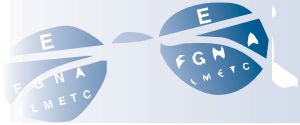
1. Visual Acuity of 20/200 or worse in the better eye (with best eyeglass or contact lens correction)

- or -

2. Visual field restricted to 20 degrees or less in diameter in the better eye

**Visual acuity** is the ability to distinguish details and shapes of objects with good contrast. Also called central vision, visual acuity is recorded as test distance/target size. A visual acuity of 20/20 means that a person can see a letter of five minutes of arc at 20 feet, which is thought of as normal vision. A way to explain visual acuity is by example. For instance, if a person has 20/200 visual acuity, it means that person must be 20 feet from an eye chart to see a letter that a person with normal vision could see at 200 feet. A person with normal vision could walk 180 feet behind that person with 20/200 (low vision) and still see the same target.

**Visual field** is the entire area that the person can see when the eye is looking straight ahead, including central and peripheral vision. Binocular visual fields are perhaps a better indicator of visual function, since we walk around with both eyes open. However, in a clinical setting, visual fields are measured monocularly in order to determine any abnor-



malities. This is essential, since the visual fields overlap in the nasal part of the visual fields of both eyes. A normal monocular visual field is approximately 40 degrees superior, 60 degrees nasal, 65 degrees inferior, and 85 degrees temporal. If you stick your arm straight out to the side, the angle is about 90 degrees. Look straight ahead and bring your arm in toward the front just until you see it. That will demonstrate your temporal visual field, which should be about 85 degrees. If a person has a visual acuity of better than 20/200 in the better eye, the visual field of that eye must be restricted to 20 degrees or less (widest diameter) to meet the US definition of legal blindness.

**Visual impairment** refers to the function of the eye and can be measured with tests such as visual acuity, visual field, color vision, and contrast sensitivity. The *International Classification of Diseases, 9<sup>th</sup> Revision* (ICD-9-CM) classifications for levels of visual impairment include:

Moderate low vision	20/80
Severe low vision	20/200
Profound low vision	20/500
Near blindness	20/1250
Total blindness	no light perception

A **visual disability** denotes how the person functions (rather than the function of the organ) and may be measured in terms of reading performance, performance of activities of daily living skills (ADLs), orientation and mobility, etc. How well can the person get around? Is she able to watch TV? Is he able to drive? Losses in these areas are visual disabilities. They have a profound impact on a person's everyday life and may result in visual handicaps.

A **visual handicap** is a disadvantage the person experiences because of vision loss. It may involve the need for extra effort to perform certain tasks, such as reading, shopping, or preparing meals. A visual handicap may be an economic, social, or physical loss of independence. Major visual handicaps are loss of the ability to drive and loss of a job.

**Low vision** is a more encompassing term, and may be defined as any bilateral loss of vision that cannot be corrected with eyeglasses or contact lenses and interferes with daily living activities.

**Low vision rehabilitation** endeavors to help overcome the visual disabilities and decrease the magnitude of visual handicaps by increasing functional abilities. Low vision rehabilitation can help maintain or improve quality of life.



## Primary Causes of Vision Loss

*Objective: Describe the 3 primary causes of sight loss in the VA population*

*Objective: Delineate the functional implications of 4 different types of vision loss*

### **Primary causes of vision loss in the VA population are age related**

- Age related macular degeneration (ARMD)
- Glaucoma (GLC)
- Diabetic retinopathy (DR)
- Cataract (CAT): the only cause of vision loss that is reversible

### **Less common causes in the VA population**

- Optic nerve disease
  - Multiple sclerosis
- Service related injuries or complications
  - Trauma
  - Long term effects of inhumane treatment of POWs

## Types of Vision Loss

Different eye diseases cause different types of vision loss and require different types of individualized rehabilitation programs. With that in mind, the primary causes of vision loss in the veteran population will be discussed along with associated types of vision loss and functional implications. In the field of blind rehabilitation, a method of estimating functional ability has been in use for many years. This method is based on an individual's type of vision loss and is derived from the definitions of legal blindness. Functional ability may be affected in different ways by significant losses of vision of the following types:

- Visual Acuity Loss (VA)
- Visual Field Loss (VF)
- Combination of Acuity and Field Loss (VA/VF)
- No Useful Vision (NUV)



## Review of the Visual System

Let's begin with a brief review of the visual system. Light enters the eye by passing through the cornea, the anterior chamber, the pupil, the lens, and the vitreous to reach the retina. In the retina, the photoreceptors change the light into nerve signals that pass along the optic nerve, through the brain to the visual cortex, where the image is perceived. The cellular matrix of the cornea, lens, and nerve fiber layers of the retina are arranged in an extremely orderly manner resulting in optical clarity. Any damage to this orderly structural arrangement leads to an opacity. Damage to the protein fibers in the cornea causes corneal scarring. Damage or degeneration of the proteins in the lens result in cataracts.

The clear structures of the eye allow viewing of the ocular fundus and retinal vascular system. The central retinal artery supplies all of the neural retina except the photoreceptors, and major branches run through the nerve fiber layer of the retina where they can be viewed in situ with the ophthalmoscope. Vascular changes that occur throughout the body, such as the ischemic changes of diabetes, are directly visible in the eye.

The macula is the central avascular area of the retina. It receives its blood supply from the choroid and has the highest concentration of cones, which are responsible for color vision. Photoreceptors are packed very tightly at the macula, which leads to fine spatial resolution and sharp central vision. Photoreceptors are packed less densely with increasing eccentricity from the macula to the retinal periphery, and spatial resolution declines accordingly. Therefore, when a person loses macular function, such as in age related macular degeneration, images must be quite large in order for perception to occur, and still, the perception is not as clear, not the same as with a working macula.

## Visual Acuity Loss

### **Common causes of visual acuity loss (central vision loss)**

- ARMD
- Presumed ocular histoplasmosis (POHS)
- Diabetic macular edema
- Macular holes
- Stargardt's macular dystrophy
- Certain types of cataracts



**Age related macular degeneration (ARMD)** is one of the leading causes of vision loss in the US population and in the veteran population. (*Vision Problems in the U.S.* Schaumburg, Illinois: Prevent Blindness America, 1994) Age related macular degeneration is primarily a disease of the macula. It destroys sharp, central vision, but peripheral vision typically remains intact. There are two varieties of macular degeneration; atrophic or “dry” ARMD and exudative (neovascular) or “wet” ARMD. Most patients identify their type of macular degeneration as wet or dry.

**Dry ARMD** accounts for approximately 85-90% of all cases of ARMD. (Department of Health and Human Services. National Institutes of Health. NEI Statements/Reports—Age-Related Macular Degeneration—Status of Research Harold Varmus, M.D., Director, NIH, March, 1997) It usually advances slowly over many years, and is bilateral. In early stages of dry ARMD, with ophthalmoscopy, you may see areas of pigment disruption and mottling in the macula, and drusen, which are accumulations of acellular, amorphous debris. At end-stage, large areas of geographic atrophy are apparent. The earliest symptom in ARMD is blurred vision. A blind spot in central vision occurs as the macula is slowly destroyed. Central vision at end-stage is typically 20/200 to 20/400, and peripheral vision almost always remains intact. There is no medical or surgical treatment for dry ARMD at this time. Vitamin therapy has been touted, but there is little research to prove its effectiveness at this time. An association between longstanding diet rich in carotenoids and a decreased risk of developing ARMD has been demonstrated.

(Seddon, Johanna M., MD, et al., “Dietary Carotenoids, Vitamins A, C, and E, and Advanced Age-Related Macular Degeneration,” JAMA, Vol. 272, No. 18, November 1994, pg. 1413-1420)

**Wet ARMD** accounts for 10 - 15% of all cases of ARMD. Wet ARMD progresses rapidly and often leads to severe monocular or binocular loss of vision. Between 60% to 90% of persons with wet ARMD become legally blind. (Macular Photocoagulation Study Group. Argon laser photocoagulation for neovascular maculopathy: five-year results from randomized clinical trials. Arch Ophthalmol 1991;109:1109-1114) (Macular Photocoagulation Study Group. Laser photocoagulation of subfoveal neovascular lesions of age-related macular degeneration: updated findings from two clinical trials. Arch Ophthalmol 1993;111:1200-1209) (Macular Photocoagulation Study Group. Argon laser photocoagulation for neovascular maculopathy. Three-year results from randomized clinical trials. Arch Ophthalmol 1986;104:694-701) (Macular Photocoagulation Study Group. Laser photocoagulation for juxtafoveal choroidal neovascularization. Five-year results from randomized clinical trials. Arch Ophthalmol 1994;112:500-509) On ophthalmoscopy you may see areas of pigment mottling and drusen in the macula, and/or areas of hemorrhage in the macula. Grey-green areas may indicate sub-retinal neovascularization, and should





be referred immediately if present, as some are treatable with laser. End-stage wet ARMD may be seen as a disciform scar in the macula.

An early symptom of wet ARMD is that straight lines appear crooked. Patients may complain that telephone cables and telephone poles appear crooked. That perception occurs as the leakage of blood vessels elevates the macula and distorts central vision. In later stages, blind spots appear as central vision is destroyed. The two current treatments for wet macular degeneration include thermal laser photocoagulation and photodynamic treatment (PDT) with verteporfin (Visudyne). These treatments are, unfortunately, effective in only a small fraction of eyes with exudative ARMD.

End stage ARMD of both varieties causes loss of central vision, with visual acuities typically between 20/200 and 20/400. Peripheral vision almost always remains intact.

**Functional implications of visual acuity loss** include decreased ability to read, decreased ability to recognize faces, problems with paying bills, writing checks and taking care of personal finances, and difficulty with watching television, cooking, and participating in hobbies or avocational activities. A significant problem for elderly veterans with central vision loss may be the inability to self-medicate because of the inability to read the labels on medicine bottles. Loss of central vision has a devastating effect on many routine activities of daily living, yet persons with central vision loss are normally able to move around the environment and avoid large obstacles. Because of this, family and friends may be confused by their perceived discrepancy between the person's ability to function and vision loss. Though persons with central vision loss typically have intact peripheral vision, images viewed with peripheral retina are not as clear as central retina, the perception is **different**. To demonstrate this, concentrate on looking at the word **different**, above. Now try to read the words on the line directly above it, then two lines above or below it, without moving your fixation. Notice the difference in perception?

### **Techniques for improving interactions with persons with central vision loss**

- Speak to the patient when approaching and leaving
- Ask the patient if he can hear you, and speak in the appropriate volume
- Greet the patient at the door and escort him into your exam room
- Talk *to* the patient (avoid relating information only to a significant other)
- Question your patients on the ability to self-medicate and self-monitor



- Don't be confused by lack of eye contact

Eye contact is a very important part of communication. However, persons with central vision loss must use a different part of their retina in order to see better. This is called eccentric viewing. In rehabilitation, patients are taught eccentric viewing through a variety of techniques. If a person with central vision loss looks directly at you, he will not be able to see your face, but if he looks a little to the side, he can appreciate your features a little better. This type of eye contact (or lack thereof) can be confusing to others. Just remember, he is not avoiding eye contact with you, he is trying to see you better, trying to pay attention to you.

- Refer patients with vision loss for rehabilitation.

Refer to Optometry and your local VIST coordinator for vision rehabilitation. There are many specialized low vision devices that can help the person with central vision loss maximize his visual function. All of the specialized devices require training in their use for the patient to obtain maximum benefit.

## Visual Field Loss

### **Common causes of visual field loss**

- Glaucoma
- Retinitis pigmentosa
- Optic nerve disease
- CVA

**Glaucoma** is the leading cause of irreversible blindness in the world, affecting approximately 6.7 million people worldwide (Quigley HA. Number of people with glaucoma worldwide. Br J Ophthalmol 1996;80:389-93). It is also one of the leading causes of blindness in VA Blind Rehabilitation Centers. Glaucoma is 15 times more likely to cause blindness in African-Americans between the ages of 45-64 than in Caucasians of the same age group. It is primarily a disease of the optic nerve. Axons of the optic nerve die (optic neuropathy) and plates of lamina cribrosa bow and collapse, causing increased cupping of the optic nerve head with loss of optic nerve tissue. Peripheral vision loss occurs along with the axonal loss. There are more than 60 types of glaucoma (Yanoff M, Duker JS. Ophthalmology. Mosby, London. 1999). The three most common types are open angle glaucoma (OAG), angle closure glaucoma, and normal tension glaucoma. (Dreyer, EB; Lipton, SA, New Perspectives on Glaucoma, JAMA Volume 281(4) 27 January 1999 pp 306-308) (Yanoff M, Duker JS. Ophthalmology. Mosby, London. 1999) OAG is the most common type of glaucoma in the U.S. and the type most common in patients in the VA Blind Rehabilitation Centers.



**Functional implications of visual field loss** include a decreased ability to ambulate safely and efficiently in the environment. Persons with significant VF loss may be unaware of large objects in their environment, particularly if coming from the side. They may be particularly vulnerable to objects that hang from above, such as tree branches, and drop-offs and curbs below their line of sight. Severe VF loss can affect many activities of daily living, including driving and watching television. It affects reading because it is difficult to follow lines of text when the field is very small. It may be difficult to cook (especially safely) because the field of view is very limited at arm's length.

## **Techniques for improving interactions with persons with visual field loss**

- Speak to the patient when approaching and leaving
- Ask the patient if he can hear you, and speak in the appropriate volume
- Greet the patient at the door and escort him into your exam room using sighted-guide techniques. (Please see following section on basic sighted-guide techniques for details)  
Extend your arm, touching your arm to his so that he can follow it to your elbow. Allow the person to take you by the elbow. Walk to the side of the patient, one step in front of him at a pace that is comfortable for the patient.
- Give a verbal description of the room and its furnishings  
Many of us have exam chairs and tables that have footrests or steps, or appliances and devices protruding from the side that can be potential hazards to a person with VF loss. It is very helpful for the patient to be told the position of the chair, (“directly in front of you, approximately 3 feet, and it has a protruding foot rest.”) It is also important to remind the patient to be careful of the footrest, and be sure to feel the chair with his hand before sitting down.
- Talk *to* the patient
- Question your patients on the ability to self-medicate and self-monitor
- Refer patients with vision loss for rehabilitation. Particular emphasis may be placed on orientation and mobility training.



## Combination of Visual Acuity Loss and Visual Field Loss

### Common causes of combination loss

- Diabetic retinopathy
- Optic nerve disease
- Multiple eye diseases in same patient (e.g. glaucoma & ARMD)
- Trauma

**Diabetic eye disease** may occur in persons with any type of diabetes, and may affect the retina, the lens, and the optic nerve. Diabetic eye disease may cause loss of visual field, loss of visual acuity, combination of field and acuity loss, or total blindness. Diabetic eye disease includes cataracts, glaucoma, and diabetic retinopathy. The 5 year incidence of cortical cataracts is higher in diabetics than non-diabetics (Klein BE, Klein R, Lee KE. Diabetes, cardiovascular disease, selected cardiovascular disease risk factors, and the 5-year incidence of age-related cataract and progression of lens opacities: the Beaver Dam Eye Study. *American Journal of Ophthalmology*. 126(6):782-90, 1998 Dec. 99075344). Neovascular glaucoma may occur due to neovascularization of the iris or anterior chamber angle, which results from severe retinal hypoxia and retinal capillary nonperfusion. However, the most common diabetic eye disease is diabetic retinopathy.

**Diabetic retinopathy** is the leading cause of new cases of blindness in people ages 20-74, and causes 12,000 to 24,000 cases of new blindness every year. It is one of the leading causes of vision loss in the veteran population. The prevalence in Mexican Americans is 32-40%. It occurs in approximately 18% of Pima Indians and 24.4% of Oklahoma Indians. African-Americans are twice as likely to suffer from diabetes-related blindness than Non-Latino Whites. (Diabetes in America. U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases, Chapter XIII, August 1985) (Klein R, Klein BEK, Moss SE. Visual Impairment in Diabetes. *Ophthalmology* 91:1-9, 1984).

Diabetic retinopathy may present as non-proliferative, proliferative, or macular edema. Non-proliferative diabetic retinopathy (NPDR) is also called background retinopathy (BDR). On ophthalmoscopy you may see dot and blot hemorrhages and cotton-wool spots. Most diabetic patients will have some diabetic retinopathy if they have had diabetes for 15 or more years. Proliferative diabetic retinopathy (PDR) puts the person at significant risk for vision loss as neovascularization occurs. The new blood vessels are fragile and leaky. If they break and leak into the vitreous, sudden loss of vision occurs with the vitreous hemorrhage. Retinal detachment can occur as a sequelae, as the proteins coagulate and pull the retina into the vitreous cavity.



Macular edema can result from diffuse capillary non-perfusion. As intracellular fluid leaks, the macula swells, loses its translucency and scatters light, causing decline in central vision. Macular edema is the leading cause of legal blindness in diabetic patients. (Yanoff M, Duker JS. Ophthalmology. Mosby, London. 1999;8:20.3).

**Functional implications of loss of visual acuity with loss of visual field** include decreased ability to ambulate safely and efficiently in the environment and significant problems with routine activities of daily living. Diabetic retinopathy has been described above, however persons with combination loss due to any cause may be unaware of large objects in their environment, and unable to distinguish details of large or small objects. They have problems with facial recognition and with reading. Reading with low vision devices is more difficult because magnification must be used to help compensate for visual acuity loss, while the visual field is also reduced. These persons may be able to read only

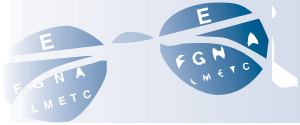
a couple of letters at a time, thus reducing speed and comprehension. Self-medication can become very difficult for these patients, as they may be unable to measure insulin or read medication labels or blood sugars. Patients with central vision loss may be unable to examine their own feet for diabetic complications. Alternative methods of accomplishing these tasks must be learned. These patients often have significant problems with light/dark adaptation, and may have to stop and wait for their vision to get a little better as they go from a lighted to darkened area, and vice versa. This puts them at higher risk for falls.

### **Techniques for improving interactions with persons with combination loss**

- Speak to the patient when approaching and leaving
- Ask the patient if he can hear you, and speak in the appropriate volume
- Greet the patient at the door and escort him into your exam room using sighted-guide techniques

Extend your arm, touching your arm to his so that he can follow it to your elbow. Allow the person to take you by the elbow. Walk to the side of the patient, one step in front of him at a pace that is comfortable for the patient. Monitor the patient's movements to insure he reacts appropriately to your movements.

- Give a verbal description of the room and its furnishings, as outlined above
- Talk *to* the patient
- Question your patients on the ability to self-medicate and self-monitor
- Refer patients with vision loss for rehabilitation





## No Useful Vision

### **Common causes of no useful vision**

- Trauma
- Retinitis pigmentosa
- End-stage uncontrolled glaucoma
- End-stage uncontrolled diabetic retinopathy
- Optic nerve disease
- Multiple eye conditions in same patient
- Retinal detachments

**Functional implications of no useful vision** are profound. Near-total blindness, light perception only, no light perception, and total blindness are terms for no useful vision. Persons with no useful vision require alternative (non-visual) means of gathering information to perform most routine activities of daily living.

### **Techniques for improving interactions with totally blind individuals**

- Speak to the patient when approaching and leaving
- Ask the patient if he can hear you, and speak in the appropriate volume
- Greet the patient at the door and escort him into your exam room using sighted-guide techniques  
Extend your arm, touching your arm to his so that he can follow it to your elbow. Allow the person to take you by the elbow. Walk to the side of the patient, one step in front of him at a pace that is comfortable for the patient. Monitor the patient's movements to insure he reacts appropriately to your movements.
- Give a verbal description of the room and its furnishings, as outlined above
- Talk *to* the patient
- Question your patients on the ability to self-medicate and self-monitor
- Listen to your patient  
It should not be forgotten that a number of elderly veterans who lost their vision very early in their lives are seen for health care on a routine basis in the VA. A recent patient



was an intelligent, articulate retired teacher of the visually impaired. He had survived a bomb that was dropped onto the tank on which he was riding in Germany in 1945. He reported that many of his fellow soldiers were “not as lucky.” He lost his right eye immediately, which has been replaced with a prosthetic eye. The total loss of vision in the left eye occurred later as a result of continued problems related to the penetrating injuries and metallic foreign bodies. Even 56 years later it was very important for this veteran to remember and relate the story of the loss of his vision and the loss of his comrades. Take the time to listen to your patient. Refer patients with vision loss for rehabilitation

The importance of blind rehabilitation for these patients cannot be overemphasized. Many blinded veterans had rehabilitation earlier in their lives. However, veterans may experience changes in their home, work, social environment or physical health that may need to be addressed with further rehabilitation training at this point in their lives.

## Summary

The primary causes of severe vision loss in the veteran population are age related, the three most common being: age related macular degeneration, glaucoma, and diabetic retinopathy. A less common, though very significant cause of vision loss in the veteran population is trauma. Functional implications of vision loss vary by type and severity of vision loss. Techniques for improving interactions with persons with vision loss include improved communications and incorporation of sighted guide techniques. Remember, visually impaired patients often miss visual cues that are used by sighted patients to describe to the physician changes in the body, so ask good questions.

There are no cures for visual impairment or blindness. Research is being conducted on retinal, optic nerve, and cortical implants, but none are viable alternatives at this time. Significant advances in technology now offer such advantages as voice-command computers, head-mounted displays, and electronic travel aids for mobility. All visually impaired veterans should be offered the opportunity to benefit from new technologies and rehabilitation techniques.





## **Psychological Implications**

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### **Psychological Adjustment to Visual Impairment**

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*Chebon A. Porter, PhD*

The onset of a physical disability often comes with a number of assumptions regarding the physically disabled person's phenomenological experience. As is the case with rehabilitation populations in general, psychological responses to physical disability are heterogeneous in nature. Thus, pertaining to visual impairment, there is no particular "psychology of blindness." Rather, the psychology of rehabilitation and visual impairment is one that considers coping and stress dimensions that vary across all individuals, not just the visually impaired (Marinelli & Dell, 1991).

It therefore stands to reason that individuals demonstrate significant variance in their degree of psychological adjustment to vision loss (for review see Jackson & Taylor, 2001). Immediate and long-term adjustment difficulties that have been reported include a range of depressive and anxiety symptoms, somatic complaints, behavioral problems, substance abuse, difficulty in interpersonal relationships, and even subthreshold paranoia. Although evidence suggests that most presentations of depressive symptoms in visually impaired individuals do not reach threshold for a diagnosis of major depressive disorder, many traditional depressive symptoms are observed, such as dysphoric and irritable mood, flat or restricted affect, tearfulness, social isolation and withdrawal from others, and suicidal ideation. Also, stimuli-specific anxiety may be triggered in situations that were not anxiety provoking prior to vision loss. Busy streets, crowded rooms, noisy hallways, and many other situations can provoke remarkable fear responses initially in visually impaired individuals. Furthermore, visually impaired individuals may experience visual hallucinations as a direct symptom of vision loss. In such cases, there is no known psychological correlate. The presence of visual images that range from bizarre to nonbizarre may merely be physiological correlates of vision loss, but nonetheless can be a significant source of distress for visually impaired individuals who have been poorly educated about their visual experiences.

Adjusting to vision loss not only requires the visually disabled person to cope with stress, but adapt to functioning with less stimulus input from their environment. Data suggest that although virtually all senses are used in human learning, in most cases such learning is largely contingent on visual information (Posner et al., 1976). When visual information is restricted to any degree, learning, problem-solving, orientation, memory systems, and even decision making may deteriorate temporarily as the result of adjusting to less sensory awareness and stimulus input. Recent data also suggest that the incidence of visual impair-



ment in the elderly is increasing (Levy & Gordon, 1988). Auditory deficits are also known to be increasing in the elderly and although cognitive functioning is very frequently intact, older individuals with a visual impairment may be functioning on less visual information and with fewer auditory cues, increasing the level of difficulty in accurately interpreting environmental stimuli (Appollonio et al., 1995). Finally, if a depressive response that includes transient cognitive slowing is present, the presentation of visually impaired patients can be further complicated.

Understanding the psychological and social sequelae of visual impairment extends far beyond presumed adjustment responses and diagnostic labels. A plethora of stress and coping models exist that attempt to account for differences in adjustment. Although stress and coping models may vary conceptually, most models place significant emphasis on the availability of social support and perceived control. Visually impaired individuals present with differences in personality style, attributional style, locus of control, family support, interpersonal relationships, and financial availability. Such factors are beyond the control of healthcare professionals providing services to the visually impaired. However, healthcare providers can contribute to overall adjustment by becoming sensitized to the unique needs of the visually impaired, while at the same time being aware that the visually impaired person has just as many individual differences as any other person attempting to adjust to a physical challenge.

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## Social And Family Implications

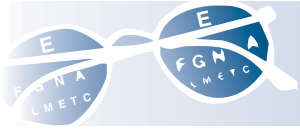
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*Diane Materna-Lee, MSW*

Individuals bring whatever resources and traits they possess to life changing events, including the major life-changing event of sight loss. People generally do not have a broad-based knowledge about sight loss, but may have preconceived attitudes about blindness (Jackson & Taylor, 2001). It is generally accepted that loss of sight creates a number of changes in the individual and his family network. Although attention is appropriately focused on the visually impaired person, there is also a great need to understand the impact on the individual family system. Indeed the inaccuracy is assuming that major psychological distress occurs in all people with a visual impairment and that such distress is isolated from the family network has been documented (Wortman & Silver, 1989). The fact of individual and family uniqueness permits an astounding range of possibilities.

Visual impairment may affect functional independence and compromise psychological security not only in the visually impaired individual, but in the family as well (Carroll, 1961). Experience has shown that many people who enter blind rehabilitation do so at the insistence of their family. Activities of daily living are disrupted. Changes in vision create loss in aesthetic pleasure. It can compromise communication skills, and has the potential to impact social functioning. Many of the visually impaired can no longer identify faces of family and friends. They may be reluctant to attend social functions or go to crowded places for fear of embarrassment. Persons with sight loss may be afraid to leave home because of safe mobility issues. Transportation can be a problem. One could face job and financial insecurity or change in career plans. There may be numerous quality of life changes and changes in life goals that affect the visually impaired as well as the family. Sight loss often occurs in context of other changes and losses, especially in the elderly. They may be coping with health issues, increasing physical limitations, poor hearing, memory loss, loss of friends and family through death, etc.

Many models of stress and coping emphasize the availability and use of family and social support in adjusting to major life events. Sight loss affects everyone in the family and both the visually impaired person and family members can have difficulty adjusting. Not all are equally affected and some have more difficulty than others. Role changes in the family are common and therefore can be stressful for all. Many express feeling of fear, resentment, guilt, and apprehension. They may feel pushed to their own psychological limits (Taylor, 1986). At the same time, they might also be trying to cope with economic and social changes, and whatever special circumstances may apply within the context of a given family.



## References

Carroll, T.J. (1961). Blindness: What It Is, What It Does, and How to Live With It. Boston: Little, Brown, & Company.

Jackson, W.T., & Taylor, R.E. (2001). Visual Impairments. In C. Radnitz (Ed.). *Cognitive-Behavioral*

## Basic Sighted Guide Techniques

*Judy Robinson, MA, Patti Fuhr, OD, PhD, David*



that you are extending your hand, so you



## 2. Offering an arm for sighted-guide.

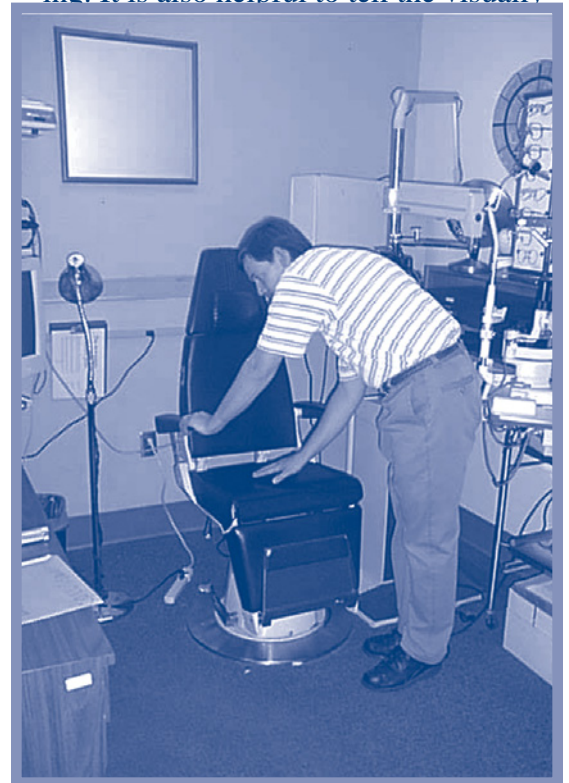
You should ask the veteran which arm he prefers. Veterans using a cane and those with one-sided weakness may have a



**3. Walking sighted guide.** You should be to the side and approximately one-half step in front of the veteran.



**4. Traversing a narrow opening.** Your arm should be extended behind you so that the veteran clears the narrow opening. It is also helpful to tell the visually



- 5. Assisting the veteran to the exam chair.** Guide the veteran's hand to the arm of the chair and request that he touches the seat ("clears the chair") before sitting. Be sure to move the footrest or inform the veteran when the footrest approaches the chair.







**6. Clearing the chair before sitting.** This step is important to insure patient safety and prevent falls.



**7. Veteran is seated** and ready for exam.



## HISTORY OF BLIND REHABILITATION IN VA

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### **Hines Blind Rehabilitation Center and Medical Media Staff**

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*Prepared for the “Blind Rehabilitation Service, 50 Years of Excellence” brochure  
by Department of Veterans Affairs*

The roots of VA Blind Rehabilitation Service can be traced directly to the pioneering military rehabilitation programs for war-blinded servicemen of WWII and events surrounding that armed conflict.

Early in WWII, the United States government was uncertain whether to pass legislation for a unified rehabilitation program for both disabled war-injured and civilians, or to establish separate programs. In 1942, President Franklin Roosevelt delivered a special address to Congress personally advocating a unified plan serving both civilians and veterans. However, pressure from veteran service organizations resulted in legislation supporting programs, and the passing of Public Law 78-16 on March 24, 1943, which authorized VA to provide benefits, including vocational rehabilitation to veterans.

On January 8, 1944, the United States government made an extraordinary commitment to the blinded war-injured with an order under President Roosevelt’s signature declaring, “No blinded servicemen from WWII would be returned to their homes without adequate training to meet the problems of necessity imposed upon them by their blindness.”

In spring of 1947, the Federal Budget Bureau raised the question of whether VA could legally provide any services beyond vocational rehabilitation. President Harry Truman, on May 28, 1947, settled the issue by signing a Presidential Order whereby responsibility for the social adjustment training of blinded service men was transferred from the Army and Navy to VA. In June 1947, the armed services deactivated all wartime rehabilitation programs for blinded servicemen.

On September 15, 1947, VA Administrator Gen. Omar Bradley and VA Chief Medical Director Gen. Paul Hawley appointed Warren C. Bledsoe as VA Coordinator of Blinded Veterans Affairs, charged with the development of a blind rehabilitation program. Hines hospital was selected as the site of the first VA Blind Rehabilitation Center (BRC), due in part to its large and well-functioning Physical Medicine and Rehabilitation Department. On February 20, 1948, Russell C. Williams, a WWII blinded veteran and former counselor at the Valley Forge Military Rehabilitation Program, was appointed as Chief of the new Center. After four months of intensive staff training, the nine-bed unit admitted the first



patient on July 4, 1948.

During the Korean War, Hines was expanded to a 27-bed unit, plus an additional 13 beds in the Ophthalmology Ward. The nature of combat in the Korean War resulted in numerous instances of blindness and multiple handicaps. More than 500 servicemen were blinded, accounting for five percent of all casualties, the highest ratio of any American conflict up to that time. During this period, the blind rehabilitation program at Hines treated a substantial number of unique cases including bilateral hand amputees, unilateral arm amputees, unilateral and bilateral leg amputees, neurologically impaired, and brain injured. Many new techniques were created, as well as adaptation to training and prosthetic devices, which later proved to benefit the general population.

After 18 years with only one VA BRC, nine additional centers were established from 1967 to 2001. BRC's were strategically created within the VA system at:

- Palo Alto (CA) VAMC 1967
- West Haven (CT) VAMC 1969
- American Lake (WA) VAMC 1971
- Waco (TX) VAMC 1974
- Birmingham (AL) VAMC 1982
- San Juan (Puerto Rico) VAMC 1986
- Tucson (AZ) VAMC 1994
- Augusta (GA) VAMC 1996
- West Palm Beach (FL) VAMC 2000.

## University Affiliations

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Beginning in 1960, VA assisted in playing a major role in developing university training programs in blind rehabilitation. In 1961 and 1962, VA approved clinical training affiliations with Western Michigan University to train Orientation and Mobility specialists and Rehabilitation teachers at Hines. The program at WMU soon became an outstanding model for the many university training programs to follow. There are currently affiliations with many major universities involving training programs in blind rehabilitation, rehabilitation teaching, optometry, ophthalmology, psychology, social work, and visual science.



## Research

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*Thomas Kuyk, PhD*

Research in VA Blind Rehabilitation began with follow-up studies of WWII and Korean blinded veterans that demonstrated the long-term value of blind rehabilitation. Similar outcomes research continues today at several BRCs and in a cooperative effort with the Atlanta Rehabilitation Research and Development Center. Present studies focus on development of functional outcomes measures as well as assessment of the impact of blind rehabilitation on quality of life of blinded veterans. However, outcomes research is not the only area that blind rehabilitation researchers have been active in over the past several decades. Research was conducted in fostering advances in electronic travel aids, reading machines, low vision devices and computers.

Other areas where blind rehabilitation research is or has been active, include studies relating visual sensory and/or perceptual functions to performance of activities of daily living, mobility, and reading, driving with novel optical aids, surveys of mobility and low vision aids usage, development of tests for the early detection of glaucoma, and psychological studies of beliefs and attitudes about blindness and the impact of rehabilitation on hope/hopelessness and self-esteem.



## SPECIAL SERVICES FOR VISUALLY IMPAIRED AND BLINDED VETERANS

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If you suspect or know that your patient is visually impaired, please refer the patient for further evaluation and services. Your local and regional Eye Clinics (Ophthalmology, Optometry) are available to evaluate the patient and manage the ophthalmic medical and surgical needs of the patient. Most VA Eye Clinics provide some level of vision rehabilitation care for visually impaired veterans and can serve as an entry level for more extensive services. Ophthalmology and Optometry work with the Visual Impairment Services Team (VIST) and the Visual Impairment Services Team Coordinator to provide integrated coordination of care for visually impaired veterans.

### Visual Impairment Services Team (VIST) Coordinator

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*Bruce Davis, MSW, Paul D'Andrea, MA, Mike Lewis, MA*

The Visual Impairment Services Team (VIST) Coordinator is the front line provider of services at VA medical centers and outpatient clinics for legally blind veterans. All VA hospitals have an employee who is designated as the VIST Coordinator. As the **subject matter expert** in the area of blindness and blind rehabilitation, the VIST Coordinator can be an invaluable tool to the primary care providers as they work with the blinded veteran and their family.

Any veteran who is legally blind and eligible for medical care should be referred to the VIST program for VA blind rehabilitation services.

Any health care provider can refer a veteran to the VIST program. Electronic consults, email messages, phone calls or any other means of referral available are acceptable. A referral should be made even if legal blindness has not yet been determined. If the veteran is not legally blind, but may need assistance, the VIST Coordinator can refer them to the appropriate low vision clinic at the VA or in the community.

The creation of the VIST program can be traced to two studies that addressed the medical and rehabilitation needs of blinded veterans returning from WWII and the Korean conflict. A 1952 study looked into why blinded veterans were not taking advantage of VA health-care and rehabilitation services. Not surprisingly, the study identified several barriers for the blinded veteran when they attempted to obtain care and services from the VA. Those veterans who were able to find transportation to the VA medical center found themselves in a large facility that they were unable to navigate. Finding a medical care provider, prosthetic service representative, veterans benefits officer, pharmacist or a social worker were difficult



tasks due to the vision loss. As a result, many blinded veterans chose to avoid making the trip into the VA medical center rather than face the frustration of dealing with a faceless bureaucracy.

In March 1963, a pilot study was conducted by American Foundation for the Blind (AFB), which was financed by the VA and the Blinded Veterans Association. The VA served as technical consultant. Blinded veterans went to their VA regional office for an evaluation of their social, ophthalmologic, audiological and vocational needs. This is the basis of the VIST program and the results are available in “851 Blinded Veterans: A Success Story.” The results of the AFB study found that when blinded veterans were invited to come in for an annual exam which addressed their medical, ophthalmologic, audio and vocational needs that the blinded veterans re-entered the VA healthcare and rehabilitation system. Due to the success of this study the VA mandated the creation of Visual Impairment Service Teams (VIST) in 1967. These VIS Teams were charged with the responsibility of coordinating outpatient services for eligible blinded veterans and would serve as the VA’s frontline diagnostic and treatment agents for blindness. The VIST program was subsequently strengthened when the Department of Veterans Affairs began establishing full-time VIST Coordinator positions in order to meet the additional demands being created by an aging veteran population. Ultimately, 92 full-time VIST Coordinator positions were created by the VA with the outcome being that the current number of identified blindness cases in the veteran population now exceeds 34,943 as compared to the 5,500 blinded veterans on VIST rosters in 1972.

The Visual Impairment Services Team is a multidisciplinary team comprised of ophthalmologists, optometrists, audiologists, primary care providers, psychologists, blind rehabilitation specialists, social workers, dieticians, medical administration specialists, prosthetic representatives, veteran service officers, nurses, librarians and veteran service organization representatives. Other individuals can be invited to assist the team in organizing and providing care for the blind veterans and their families. The VIST Coordinator is responsible for coordinating the activities of the team.

## **Roles and Function of the Visual Impairment Services Team Coordinator**

- **Identification of Legally Blind Veterans:** One of the primary responsibilities of the VIST Coordinator is to identify legally blind veterans and invite them to participate in VA healthcare and blind rehabilitation programs. This is done by working closely with the VA eye clinic and other VA healthcare professionals. VIST Coordinators work closely with veteran service officers and VA regional office personnel who identify veterans applying for monetary benefits due to their blindness. Other sources of referrals include state and local agencies that work with the blind. VIST Coordinators also conduct



outreach with private sector eye care professionals. We have found that many blind individuals and veterans are unaware of the rehabilitation services that are available. These efforts provide the blinded veterans and their families the opportunity to begin the process of reintegration back into the sighted world.

- **Coordination of Medical Services:** The VIST Coordinator is responsible for inviting all blinded veterans to come into the closest VA medical facility to have an annual physical exam, eye examination and psychosocial assessment. Audiological, dental and other screenings may be provided on an annual basis based on the availability of services. Based on the findings of these exams further followup and/or consults may be made. Efforts are made to schedule as many appointments on the same day in order to accommodate the travel problems that often exist for the blinded veteran.
- **Prosthetic Equipment:** The VIST Coordinator is able to recommend many useful devices that can assist the blind veteran make a successful adjustment to his/her vision loss.
- **Review of Benefits:** Blindness causes many problems which must be overcome if an individual is to be independent. Financial problems often accompany the loss of vision. The VIST Coordinator reviews the blind veterans' benefits to assure that he/she is in receipt of the proper VA, Social Security and state financial benefits. When indicated, the VIST Coordinator works with the appropriate agency to apply for and receive these benefits.
- **Psychosocial Assessment:** Once a year the VIST Coordinator meets with the blind veteran to assess their overall adjustment to blindness. The veterans' emotional, educational, and social domestic adjustments are reviewed. If the veteran has other medical or psychiatric problems they are reviewed in an effort to obtain an overall picture of the veterans abilities and needs. A treatment plan and referrals are made based on the psychosocial assessment. The plan is reviewed and updated on an annual basis as the veteran works toward independence.
- **Referrals for Blind Rehabilitation:** The VIST Coordinator encourages blind veterans to participate in a VA residential blind rehabilitation program. The VIST Coordinator is responsible to assess the veteran's ability to participate in a blind rehabilitation program. He/she obtains medical and psychiatric records and reviews them as part of the assessment. He/she works closely with the regional blind rehabilitation center in providing the information to determine the treatment plan that will best meet the veterans needs. In cases where the veteran is unable to participate in a regional blind rehab program, the VIST Coordinator may refer the veteran to the local Blind Rehabilitation Outpatient Specialist (BROS) for local training. When a BROS is not available, referrals may be made to state and/or local agencies which can provide blind rehabilitation services. Veterans





may also be referred to regional dog guide schools where a veteran is trained to use a dog guide for help with orientation and mobility.

- **Readjustment Counseling:** The VIST Coordinator provides individual, marital and family counseling services. In complex cases the VIST Coordinator may refer a veteran and their family member to an appropriate mental health professional for assistance.
- **Support Groups:** Support groups offer an excellent vehicle for blind veterans and their families to deal with the many problems that come with the loss of vision. Most support groups meet on a monthly basis and can address many issues that are related to the vision loss. Spouses can meet separately to discuss caregiver issues. Groups have been formed for veterans who are waiting to attend a VA blind rehabilitation program or for those who are recent graduates. Computer user's support groups have been formed which allow the veterans to work with one another on line, as well as in person. Referrals to support groups should always be made through the VIST Coordinator, as not all veterans are suitable group participants.
- **Staff Development/Education:** Most people are not aware of the special needs of the visually impaired in the medical setting as well as in the general community. The VIST Coordinator is available to provide in-service training to VA staff and members of the community about blindness, how to work with the visually impaired veteran, how to make referrals for services and about the services available for the visually impaired. These can be accomplished in one-on-one training, or in larger group settings. Instruction on sighted guide, communication skills and other areas can be provided. Medical providers are reminded of the fact that the blind veteran is unable to provide medical reports of what most people see (i.e. blood in the urine, changes in skin condition or sores on the feet). They can also assist in providing training on the techniques that a blind individual can use for medication management.
- **Community Organization/Development:** Many VIST Coordinators are involved in the development of resources that can help the blinded veterans and members of the community. They have participated in developing transportation alternatives, radio reading service programs, local centers for the blind, talking book libraries, local open houses to promote awareness of blindness and other activities. They have been able to help organize blinded veterans into groups, which have led to the organization of local chapters of the Blinded Veterans Association (BVA) and BVA Auxiliary (for spouses). These and other activities promote an improvement in the community in which the veteran population resides.



## **Blind Rehabilitation Centers**

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The VA operates 10 Blind Rehabilitation Centers (BRCs), with 234 beds, whose mission is to improve the quality of life of blinded veterans. This is accomplished through teaching new skills, new ways of thinking, new ways to make better use of remaining vision, and in some cases, how to do things non-visually. Exposure to other veterans with the same kind of problems and visual status is a tremendous benefit. Veterans learn from each other as well as from the staff. These are inpatient residential facilities, ranging in size from 15 to 34 beds, that offer a comprehensive training program in adjustment to sight loss. Although there are differences between facilities, these programs generally operate much like a school with veterans attending six or seven classes a day, five days a week.

Vocational rehabilitation is an appropriate goal of some veterans. Vocational rehabilitation is not part of Blind Rehabilitation Center training. It is addressed by Vocational Rehabilitation Services of the Veterans Benefit Administration at the veteran's local Regional Office. If vocational rehabilitation is a goal for a particular veteran, Vocational Rehabilitation Service would generally require the veteran to attend a Blind Rehabilitation Center to develop the underlying skills necessary for successful vocational rehabilitation.

## **Blind Rehabilitation Training**

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Veterans receive training in the five sub-specialties areas of blind rehabilitation which include Low Vision, Orientation & Mobility, Manual Skills, Living Skills and Computer Access Training. Each of these disciplines has a particular role to play in helping a veteran make an adjustment to sight loss. Training in these classes is usually one-on-one, with the instruction generally provided by a Master's level blind rehabilitation specialist. This allows for a highly individualized training program that is tailored to meet the specific needs of each veteran. Veterans are generally in the training program from 4-8 weeks.



## Low Vision

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*Patti Fuhr, OD, PhD, R. Dee Quillman, MA,  
Dennis Brooks, MA, Lee Berdinski, MA, Kara Gagnon, OD*

The Low Vision section (Visual Skills) concentrates on helping the veteran develop the skills, techniques, and insights necessary to optimize the use of residual vision. The vast majority of veterans entering BRCs have residual vision, thus the need for low vision rehabilitation is considerable. Low vision rehabilitation in VA Blind Rehabilitation Centers is accomplished through the teamwork of the BRC Staff Optometrist, Optometry residents and interns, Low Vision Specialists, and the low vision patient. The BRC staff optometrist has typically completed advanced education and training in low vision rehabilitation, usually through an accredited residency program, and has years of experience in working with patients with all types and levels of vision loss. Low Vision Specialists typically have a Masters degree in an area of blind rehabilitation, and are accredited by the Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP).

All veterans who have some vision are scheduled in Low Vision for at least one hour per day. Initially, the Low Vision Specialist administers a functional low vision evaluation. This evaluation includes, tests for color vision, figure-ground, visual fields, near and distance visual acuities, and glare and light sensitivity problems. Delineation of difficulties due to vision loss, as well as goal setting are also done at this time.

**Optometry:** Concurrent with the functional low vision evaluation by the specialist, and usually a few days after admission to the BRC, is the first examination by the BRC optometrist. During this examination, ocular, medical, and family history are elicited, visual acuities and visual fields are tested, external and internal ocular examination is performed, and patient counseling and education about their specific visual condition and prognosis is presented. Patients are encouraged to ask questions and voice concerns. The patient is also encouraged to think about the things he has had to give up because of his vision loss, and goals for vision rehabilitation. Those concerns will be addressed on the next visit to the optometrist, which is the optometric low vision evaluation.

During the optometric low vision evaluation, the optometrist first determines the best spectacle correction for the patient, for distance and near. A tint evaluation for indoor and outdoor wear is often conducted prior to ordering spectacles. The optometrist introduces the patient to low vision devices to help in achieving his goals. Problem areas that may be addressed by vision rehabilitation include decreased distance vision, decreased near vision, central vision loss requiring eccentric viewing training, peripheral vision loss

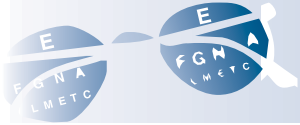


requiring field enhancement techniques and training, reduced contrast sensitivity, and problems with photophobia, glare, and lighting. The optometrist determines magnification ranges and specific types of devices that may help the veteran meet his goals. As the devices are introduced in the optometric examination, the veteran receives initial instruction in how to use the devices, and the advantages and limitations of the devices are explained. Low vision devices may include specialized lens designs and prescriptions, illuminated and non-illuminated stand, pocket and hand held magnifiers, prismatic eyeglasses, telescopes, special lighting, tints and filters, non-optical devices, and electronic devices such as Closed Circuit Television (CCTV) and head-mounted displays. Information from the optometric low vision evaluation is conveyed to the Low Vision Specialist, who formulates a training program taking into account the veteran's goals, results of functional evaluations, and recommendations from the optometrist.

The optometrist continues to follow the veteran as he/she progresses through the program, typically seeing the patient for a midterm evaluation and to determine appropriate eyeglasses for use with specific devices and specific working distances. Special prescriptions may be necessary for comfortable use of the closed circuit TV (CCTV) or computer monitor, or for intermediate tasks such as reading sheet music. The optometrist is available for unforeseen ocular health problems or concerns, and follows each patient on an as needed basis. The optometrist arranges any referrals to ophthalmology for special medical or surgical interventions. The optometrist counsels the patient on necessity of follow-up, and attends to future appointments with the patient's primary eyecare provider.

**Low Vision Training Program:** The training program is the longest part of each veteran's low vision rehabilitation program, and is rather intensive. The veteran learns how to make better use of his remaining vision and how to use each device that will help him to achieve a goal. Device usage is reinforced in other areas of the program, such as use of the monocular telescope to read street signs on mobility lessons, and use of a pocket magnifier to read ingredients on food labels while in the ADL kitchen. Multiple prosthetic devices are prescribed for and issued to veterans, as it may take a different low vision device to achieve each goal.

Training is generally divided into two groups: (1) that which is done without optical devices, and (2) that which is done with optical devices. Training without optical devices consists of eccentric viewing, scanning, tracking, and tracing. These skills need to be explored for both distance and near vision tasks. Environmental modifications, such as contrast enhancement, lighting optimization, increasing the size of the object, getting close to the object, and/or using color cues are also covered.



Optical device training includes all of the above skills in conjunction with using a magnifier, telescope, microscopic lens, or an electronic reading machine. For example, veterans with a central blind spot must learn to look off center (use eccentric viewing), and gaze through a magnifier to see phone numbers. This takes time, training, and practice. The same is true for reading the newspaper, writing a check, watching television, doing needlepoint, working on a stamp or coin collection, or any other visual task.

Low Vision teaches veterans new and different ways of gathering visual information. Patience and time allow the veteran to become comfortable with, and appreciate this new way of functioning. On completion of the program, prosthetic devices are prescribed and dispensed to the patient so he has immediate access to transfer the skills he has learned to his home environment.

## **Orientation and Mobility**

*David Hedrick, MA, Judy Robinson, MA, Kathryn Morgan, MA*

### **What is Orientation and Mobility (O&M)?**

“Being oriented implies that one knows where one is, where one wishes to go, and how to get there. Mobility refers to the act of movement within the physical environment.” (*Orientation and Mobility: Techniques for Independence*, LaGrow and Weessies, 1994) When vision problems occur, orientation and mobility can be adversely effected because of acuity loss, field loss, or a combination of both. Specific travel problems can be associated with each type of loss, although every person may function differently.

The general goal of O&M training in VA Blind Rehabilitation Centers is to teach visually impaired veterans the techniques and strategies required for independent travel, so that they will be as safe, efficient, and confident as possible. These techniques can range from using a human guide to reach a destination, to using a variety of mobility aids in order to travel complex environments alone.

### **Evaluation and Program Plan**

It is important to evaluate the visually impaired veteran’s travel strengths and weaknesses at the onset of the O&M program. This is accomplished through a review of preliminary written reports, the veteran’s self-report, and objective walking evaluations conducted by the mobility instructor. Problems are then documented and could include difficulty with: detecting curbs and uneven surfaces; avoiding objects; crossing streets; reading signs;



dealing with glare and lighting changes; scanning effectively; traveling through congested areas; maintaining orientation indoors/outdoors; and moving with confidence.

Once evaluations are completed, the mobility instructor and veteran can then develop an individualized Program Plan together. A Program Plan will consider the veteran's personal goals, any medical and psychological complications, cognitive abilities, plus, type and degree of vision loss. Though these considerations affect the outcome of the Plan, a person's motivation and willingness to learn also contribute to success.

## **O&M Instruction and the Long Cane**

Individualized O&M instruction is designed to develop travel skills so that an individual can move about safely and confidently in any environment. Such instruction helps an individual develop his abilities, understand his limitations, recognize unsafe situations, and solicit assistance when needed.

Much of O&M instruction involves the use of the long cane, which is typically as tall as a person's chest and most often white in color with a red tip. It is prescribed based on an individual's height, length of stride, and walking speed (*Orientation and Mobility: Techniques for Independence*, LaGrow and Weessies, 1994). Using the long cane, or a white support cane, identifies a person as visually impaired. The long cane is different from a support cane in that it is meant to provide advance information about the surface and any obstacles in front of the user; it is not meant for support or balance. For general travel, the tip of the long cane is always on or near the ground, moving from side to side. For more specific uses, such as walking up/down stairs, techniques may vary. Also, depending on the type of vision loss, cane technique and the use of other skills may vary.

## **O&M For Those With No Useful Vision**

A veteran experiencing no useful vision for travel purposes will need an extensive O&M program to develop alternative ways of obtaining information about the environment. Improving auditory awareness, tactual perception, and visualization strategies in combination with the proper use of a long cane are very important. The constant contact technique (the cane tip slides on the floor when moving) would provide maximum tactual information about surfaces. This means that steps, curbs, and uneven ground would no longer be a surprise or a danger. The two-point touch technique (the cane tip taps from side to side) is similar, but provides less information about the walking surface.





## **O&M For Those With Low Vision**

A Program Plan for a low vision veteran will focus on helping him/her maximize his/her usable vision, but also to understand his visual limitations. Many low vision persons have difficulty with depth perception, which can cause stumbling problems, or they may lose their ability to see in dark or shady areas. Many tend to look down most of the time, trying to monitor where they are stepping, and in turn, miss much of what is going on in the environment around them. A low vision person exhibiting this behavior will also benefit from using a long cane. When used correctly, the long cane will tell him what is underfoot, so he can keep his head up, pay attention to the environment, and therefore make more efficient use of his residual vision. The O&M instructor works closely with the Low Vision Department to incorporate prescribed low vision devices into every person's program. That may mean that an individual can once again read a street sign from across the street, or read a price tag in a store.

## **Sequence and Areas of Instruction**

A Program Plan is designed to achieve success in a step by step progression of training, whether an individual has no useful vision or is low vision. Instruction usually begins in controlled indoor environments, and as skills are refined, advances to more complex residential, rural, and business areas in order to develop a person's maximum travel potential. Training may involve learning to cross streets safely, traveling by bus, shopping effectively at grocery stores and malls, and walking at night. Instruction is also conducted in a person's home area whenever possible. Techniques for using landmarks and clues, problem solving, route planning, sequencing, improving spatial awareness, self-familiarization to new environments, and dealing with the public are covered. Electronic Travel Aid training is also offered to those with very limited travel vision.

## **Incorporation of Other Developing Skills**

Skills learned in other classes are incorporated into O&M instruction on a regular basis. This may include writing a grocery list for a shopping trip (Communications), counting out the right amount of money when purchasing an item (ADL), using telephone recording techniques when calling the bus company for route information (Communications), and reading street signs to remain oriented (Low Vision).

Modifications are routinely made for those with health problems, such as those using support canes, those in wheelchairs or motorized carts, and those with cognitive or auditory problems. Referrals are frequently made to other services. Physical Therapy and Rehabilitation Medicine Service, as well as Audiology Service, are often consulted by



the O&M instructor.

## **Follow-up Recommendations**

Most of the O&M skills which are taught at a VA Blind Rehabilitation Center are designed to be transferable across a variety of environments, including the veteran's home area. At the time of discharge, it is sometimes concluded that transference of skills would be problematic. Follow-up recommendations can then be made to continue O&M instruction in the person's home area. The original mobility instructor may accomplish this if the person resides locally. If not, recommendations are forwarded to the VIST Coordinator so that the Blind Rehabilitation Outpatient Specialist (BROS), or state/private agencies can be contacted for service.

## **Manual Skills**

*James L. Palmer, MPH*

In Manual Skills training, blinded veterans are taught a new way to learn, a way that does not rely on vision. This is not learning about math or history, but learning about the environment, the things that are in it, and how to interact with them.

Blinded veterans, like everyone else who grew up and went into their adult lives with normal vision, came to rely on vision as their most dependable means of gathering information about the objects and events in their environment. The perspective from which they had learned to understand their changing world is visual. If they are now to become independent in their blindness, they must develop new ways to gather and understand information. In Manual Skills, they learn that by paying attention to what they hear and feel, they can understand what is going on around them. This applies just as well to legally blinded veterans who retain significant levels of residual vision. By definition, an individual who has become legally blind, no longer has access to the quantity or quality of visual information they once had. They must therefore learn to supplement the visual information with tactile or auditory information that may well be more reliable.

In Manual Skills training, blinded veterans are taught to:

1. Reach out and explore the objects & events in their environment using their remaining sensorium;
2. Gather information; and





3. Incorporate that information into the solution of problems.



To the casual observer it might appear that the veterans are learning to use a variety of tools and construct a series of projects. In reality, they are developing the ability to gather information from a wide variety of senses and incorporate this information into the solution of complex problems.

In the course of Manual Skills training, blinded veterans are guided through a series of tasks which have been designed to develop the manipulative and cognitive skills they will need in order to understand their environment using their remaining sensory assets. These tasks are graduated in difficulty beginning with simple arts and crafts in the Basic Clinic, and progressing through more complex activities in the Advanced Clinics, where veterans routinely operate power, wood, and metal working machinery, under the close supervision of their individual instructor.

Manual Skills instruction starts in the Basic Clinic where instructors will usually work with groups of 2 to 3 veterans. In the Basic Shop, the blinded veteran will complete a series of arts and crafts activities that are designed to develop the basics of tactual perception, dexterity and bi-manual coordination. After completing the Basic Phase of instruction, generally two to three weeks, the client will progress into the Advanced Phase. Advanced Manual Skills instruction begins in a large woodshop that is completely equipped with a full range of power woodworking equipment. Blinded veterans learn to operate the power woodworking equipment as they plan and build a series of complex projects. As they progress through this training, blinded veterans develop, practice, and gain confidence in a new way to learn, a way that does not rely solely on vision. An important collateral benefit of this training is the self-confidence and self-esteem that is restored to veterans as they demonstrate to themselves the ability to function safely and effectively in alien and potentially hazardous surroundings. Additional options for continued advanced training may include; small engine repair, home mechanics, and metalworking. Emphasis is usually placed

on activities that involve power tool operation, as these are the most likely to help clients re-establish self-esteem and self-confidence. The skills, insights and self-confidence developed in this process form a broad series of underlying skills that can be generalized or translated into any activity or life style the blinded veteran may wish to pursue.

After successfully completing this training, the veterans will possess the skills, insights, and self-confidence necessary to reach out and explore the objects in their environment, and gather non-visual information about the things going on around them. Then using this information, blinded veterans will be able to develop a new kind of understanding about the objects and events in their environment – a new way to learn.



## Living Skills

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*Gina Palmer, MA*

The function of the Living Skills section in the Blind Rehabilitation Centers is to provide instruction to the visually impaired veteran in skill areas that will help them resume their everyday activities in and around the home in order to remain independent. In conjunction with these skills, the instructor continually strives to help the veteran to maximize their level of self-confidence and self-sufficiency. The instructors in this department are known as “Rehabilitation Teachers” (RTs). All are Master’s level professionals who attended an established University training program.

In our veteran population, it is obvious that the instruction is geared towards individuals who are adventitiously blinded. As such, the role of the RT strives to help the veteran regain the level of self-confidence they experienced prior to becoming visually impaired. Regaining the ability to function independently and effectively in daily life leads to a sense of control, self-determination, and power, which, in turn, helps the individual’s self-image return to its pre-impairment level (Carroll, 1961; Tuttle, 1984).

Before the RT meets with the veteran, the case file is reviewed. At that time, the instructor is interested in the eye condition, medical information which might impact training, social and family history, as well as prior rehabilitation training. Reviewing records ahead of time provides valuable information for planning, although not until the actual interview and functional assessments are completed, can a formal treatment plan begin to take shape. Together, the patient and instructor set goals and objectives that are agreed upon, knowing that they may be modified along the way. Once the instructor and the client begin the first lessons, on-going direct observational assessments of the client’s performance continues to yield a great deal of useful information. On rare occasions, a client will have a misconception of his/her skills and may not be capable of functioning at the levels he/she reports during the assessment interview (Ponchillia & Ponchillia, 1996). More often than not however, the client is unaware of how far they can actually go with training, as it is beyond what they thought they were capable of achieving. It is important to note that the BRCs offer one-on-one instruction to the veterans. This ratio helps to maximize the individualization of training provided and is the standard of care the VA affords its veterans.

The Living Skills curriculum is divided into three main skill areas. **Activities of Daily Living** (ADL) encompasses both home and personal management skills. Through adapted techniques, the veterans are taught skills necessary to help them manage time, money,



personal hygiene, laundering, labeling and food preparation. The **Written Communications** class focuses on adapted skills used to improve handwriting, store and retrieve information, manage finances and oftentimes keyboarding skills. For those veterans with no useful vision, **Braille** is offered. In the aging veteran population, Braille is often used as a labeling tool rather than a communication tool; although, for those veterans who show the aptitude and the interest, a full course in Braille instruction is provided. Teaching alternative methods of accomplishing these essential tasks is at the core of the rehabilitation teacher's efforts (Bussen-Smith, 1996). Maintaining the functional abilities to remain independent in one's home is an important goal for older adults.

Perhaps two of the most important areas of instruction for the RT are in medication management and record keeping. Both of these skill areas are very important for maintaining one's autonomy. When a person is told they are visually impaired, many things run through their minds regarding what they should and should not be capable of doing. These are often misconceptions based on a person's own experiences or beliefs about visually impaired people. Record keeping and financial management are areas of great concern. Many newly blinded adults feel almost compelled to give this responsibility to someone else, worried that they will be unable to correctly manage their bank accounts and pay their bills. The RT works closely with the veterans in the BRCs encouraging them to resume this responsibility. Although today, banking is made easier by the use of ATM machines, automatic bank drafts, and telephone and Internet banking, many older adults are hesitant about using these methods. The RT discusses these options with the veterans, but are most successful when instructing them on more conventional techniques involving the use of talking calculators, large print checks and check registers, check templates and incorporating the use of magnification devices when paying bills.

Being able to organize, manage and administer medications can often times make the difference between living independently and a nursing home placement. The veterans are taught how to label their medicines by tactual markings, large print, colors, and sometimes incorporating the use of tape recorders to assist in this process. Talking glucometers are sometimes used for severe diabetics with little or no useful vision. The instructors work closely with the nursing staff to increase the veteran's independence in this area.

Teaching the older adult who is visually impaired calls for some specific strategies. Communication is very important. The use of other sensory cues (i.e. auditory, olfactory, and analogies) help the veteran to visualize the task at hand. For example, one can generally "hear" water boiling and "smell" something burning. Breaking down instruction into smaller steps and providing repetition is some times necessary to enhance learning. Having the veteran repeat back a series of instructions in their own words can help validate the learning process. While in most Living Skills activities, the instructor encourages the use



of residual vision, by enhancing contrast or incorporating the use of magnification devices, there are times when visual techniques can be less effective and even dangerous. Typically a person will want to use a hand-held magnifier to reach across a hot burner and read the dials to set the stove. Rather than encourage this behavior, the instructor would reinforce the use of non-visual techniques to accomplish this same task. Certainly a much safer and often times quicker solution to the problem.

In conclusion, the LS Department at the VA BRCs is a vital part of the overall process of any successful rehabilitation program. After completion of the training program, most veterans feel more confident and self-assured. They are satisfied that the degree of participation in the management of their home is a decision they make, not one that is made for them. At the time of discharge, they are equipped with the necessary skills and insights to achieve their maximum potential.

## **Computer Access Training**

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*Gina Palmer, MA*

The Department of Veterans Affairs research efforts in the area of sensory aids for the visually impaired extends back to the 1950's and has included a wide range of devices from electronic mobility aids to computer access technology. In the late 1960's, this research supported the development of the Stereotoner and Optacon. Both of these devices provided the ability to read printed material to blind individuals. Later research supported the development of the Kurzweil Reading Machine (KRM), which was one of the first commercially available optical character reading machines for the blind. The support of the KRM was one of the first VA projects directly relating to computer technology for the visually impaired.

As the years progressed, the rapid increase in the number of jobs requiring access to computers resulted in the growing need for visually impaired veterans in their 30's through 50's to gain the knowledge and expertise to use these adapted computers on the job. In more recent years, those veterans enjoying retirement years are interested in learning how to use email and access the Internet. In order to meet customer demands, the VA has made a commitment to these veterans by initiating Computer Access Training (CAT) programs in all of its BRCs.

The instructors in these CAT departments are typically blind rehabilitation specialists who are either users themselves or who have been "cross-trained" into the department by other instructors. The training that is provided focuses on the use of adapted technology, such as large print or voice output software that allows the user access to the common Windows environment. Most instruction gears itself to the use of word processing and Internet access.



For those veterans with a documented loss of hand function, instruction is provided on voice input systems as well.

## **Support Services**

### **Family Training Program**

*Diane Materna-Lee, MSW*

The rehabilitation services in the VA Blind Rehabilitation Centers are only the beginning of the process of re-establishing one's life. Blindness impacts on the family as a whole. Rehabilitation services would not be complete if effort were not made to include the family or significant other in the training. The Family Training Program (FTP) is an opportunity for the family to meet with the social worker, the staff optometrist, and the instructors in all of the skill areas both individually and with the veteran. The psychologist, nursing service, a dietitian, and the physician are included based on the individual needs of the veteran. The FTP provides a forum in which the veteran and his/her family can discuss family dynamics following sight loss. The FTP provides information and training to the family members related to adjustment and management of sight loss. They are educated on the cause of the visual impairment and how their veteran's vision is effected. Discussions with the family include, but are not limited to the veteran's attitude toward adjustment, capabilities, limitations, and functional skills. The FTP enhances the veteran's ability to transfer blind rehabilitation skills back to his or her home environment. The FTP is an elective part of VA Blind Rehabilitation and FTP policy varies throughout the Blind Rehabilitation Centers.

### **Psychology**

*Chebon Porter, PhD*

Larger facilities include a full-time clinical psychologist who coordinates psychological services for veterans in the rehabilitation program.

The psychologist provides consultation services to assess mood and cognitive functioning, as well as specific behaviors that may need to be addressed during the veteran's rehabilitation stay.



The psychologist provides individual treatment for a wide range of psychiatric disorders, including major mood and anxiety disorders, adjustment disorders, substance abuse, and personality disorders. In most cases, rehabilitation stays are limited and individual treatment primarily consists of brief, cognitive-behavioral therapy. In cases of cognitive dysfunction, treatment often involves identifying specific strategies to enhance the veteran's ability to learn and implement new information on a consistent basis.

The psychologist provides group services that may address a wide range of topics, including motivation issues, medication management and compliance, sleep hygiene, stress and coping, and issues specifically related to visual impairment and social functioning.

## **Eye Care Providers**

*James C. Orcutt, MD, PhD*

Eye care providers (optometrists and ophthalmologists) function as an important component of the rehabilitation team for:

1. Provision of low vision evaluation and training recommendations to assist with the rehabilitation and treatment process.
2. Periodic eye examinations for continuing management of eye disease conditions to prevent further loss of vision for those veterans who are visually impaired, but have remaining useful vision. The leading causes of significant visual impairment and legal blindness in the US population are:
  - a. Age related macular degeneration
  - b. Glaucoma
  - c. Diabetic eye disease
  - d. Cataracts
3. Clinical support for patients with no useful vision (e.g. management of the blind painful eye, restorative management of traumatized eyes or enucleated sockets).
4. Provision of medical, surgical and optical options to enhance peripheral vision (e.g. cataract extraction in patients with macular degeneration rarely improves visual acuity, but may markedly improve peripheral vision, thus improving residual vision; field enhancing optical and non-optical devices).
5. Provision of emotional support and patient education about eye disease conditions and



information about the latest research in the areas of vision loss and rehabilitation options.





## PREVENTION OF VISION LOSS

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*James C. Orcutt, MD, PhD*

This VHI program is intended to increase your knowledge of the identification and management of visually impaired and blind veterans. However, as a primary care provider, it is also essential you are aware of the common causes of blinding eye disease and refer patients to eye care providers appropriately before they become visually impaired. There is not a low vision or blind rehabilitation provider that would not be delighted to lose their job because there are no longer any visually impaired patients.

### Age Related Macular Degeneration (ARMD)

Unfortunately, ARMD is generally not treatable as previously discussed. However, there is new treatment to stabilize vision in some patients with wet ARMD (Treatment of age-related macular degeneration with photodynamic therapy (TAP) study group: Verteporfin (Visudyne,) therapy of subfoveal choroidal neovascularization in age-related macular degeneration. Arch Ophthalmol 1999, 117:1329-45.). Research is very active in the area of ARMD; thus veterans will be well served to continue follow-up in an eye clinic.

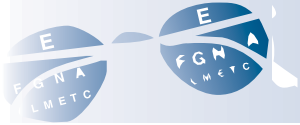
### Glaucoma

Risk factors for the development of glaucoma are well documented:

- Increasing age (over 65 unless African-American over 40)
- African-American heritage
- First degree family relative with glaucoma

The VA has published evidenced-based guidelines entitled “Screening for glaucoma in the primary care setting”. These guidelines provide an algorithm for referral of patients based upon the number of risk factors present. The information is summarized below:

# Risk Factors	No Prior Eye Exam	Previous Eye Exam
1	12 months	Every 2 years
2	6 months	Every year
3	3 months	Every year



## Diabetic Eye Disease

The VA has written evidence-based clinical guidelines entitled, “Management of Diabetes Mellitus in the primary care setting”. One chapter within these guidelines provides guidance in appropriate referral of veterans with diabetes for eye examinations.

Most veteran diabetics have Type II diabetes. Type II diabetics should have an annual eye examination. The eye examination should be provided by an optometrist or ophthalmologist. Retinal photographs may be done to assist with patient screening and management; however, it is not intended to replace the need for a comprehensive eye exam. The exception to this rule is a Type II diabetic with a normal eye examination completed, no renal disease and HbA1C <8%. These veterans need an eye examination only every other year.

## Cataracts

Cataracts can be treated. If cataracts are suspected, the veteran should be referred to the Eye clinic (Ophthalmology, Optometry) for further evaluation.

Further information on the latest clinical trials in eye and vision care research activities is available from the National Eye Institute, National Institutes for Health website at:

[www.nih/nei.gov](http://www.nih/nei.gov)



## COMPENSATION AND PENSION BENEFITS FOR EYE DISABILITIES

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*Caroll McBrine, MD*

### Compensation

Compensation is a monthly payment made to veterans with a disability due to disease or injury that is related to military service (service-connected disability). It is meant to compensate veterans for the average loss of income due to that disability. The amount of compensation is given as a percentage between zero and 100 percent, depending on the severity of the disability. The regulations in 38 CFR 4.74 through 4.84a contain specific requirements for eye examinations, directions for rating eye disabilities, and evaluation criteria for rating eye disabilities.

### Service Connection

A disability may be service-connected in one of several ways:

- 1) if it was incurred or aggravated during active service (for example, an eye injury with visual impairment was incurred in service).
- 2) if it is secondary to a condition that is already service-connected (for example, visual impairment due to diabetic retinopathy in a veteran who is service-connected for diabetes that began in service).
- 3) by presumption, if it falls into certain categories of disability and was incurred during timeframes established by legislation. The regulations for presumptive conditions are contained in 38 CFR 3.307 through 3.309. These conditions may not have been shown in service or, in some cases, for many years after service (for example, non-Hodgkin's lymphoma (associated with herbicide exposure) in Vietnam veterans).
- 4) if it is not related to service but is made worse by a service-connected condition (for example, visual impairment due to eye injury that is not related to service is aggravated by service-connected diabetic retinopathy).

### Combined Evaluation

If there are two or more service-connected disabilities, the percentage evaluations for each are combined, but not added, under a combined rating table in 38 CFR 4.25 to determine the overall percent of evaluation.



## Pension

Pension is a monthly payment made to veterans who are permanently and totally disabled by one or more conditions not related to service (non-service-connected conditions), or to a combination of non-service-connected and service-connected disabilities. To qualify for pension, a veteran must show financial need and must have at least 90 days of active military service, one day of which was during a wartime period.

## Wartime Service

**(Persian) Gulf War:** August 2, 1990 to present

**Vietnam Era :** August 5, 1964 - May 7, 1975

**Korean Conflict:** July 27, 1950 - January 31, 1955

**World War II:** December 7, 1941 - December 31, 1946

**World War I:** April 6, 1917 - November 11, 1918 (with some extension of time to 1921 for those serving in Russia)

**Mexican Border Period:** May 9, 1916 - April 5, 1917

## Special Monthly Compensation

Additional monthly monetary benefits called special monthly compensation may be paid at various levels to veterans receiving pension or compensation (and to surviving spouses or parents in certain cases) if they meet certain requirements. The regulations for special monthly compensation are complex, particularly in the case of veterans receiving disability compensation, and are given in 38 CFR 3.350 through 3.352. In general, veterans who have vision of 5/200 or worse (or concentric contraction of the visual field to 5 degrees or less) in both eyes, or light perception only, or worse in one eye, will receive some level of special monthly compensation.

For veterans receiving pension, an aid and attendance special monthly compensation benefit is paid when:

- 1) the aid and attendance of another person is needed to assist with activities of daily living,
- 2) there is corrected visual acuity of 5/200 or less in both eyes, or there is concentric contraction of the visual field to 5 degrees or less in both eyes, or
- 3) the veteran is a patient in a nursing home because of mental or physical incapacity.



For veterans receiving either compensation or pension, a housebound special monthly compensation is paid when:

- 1) there is a single disability rated at 100 percent and a second completely separate disability rated at 60 percent, or
- 2) the individual is substantially confined to his or her home and immediate surroundings.



## GLOSSARY OF TERMS

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**ACTIVITIES OF DAILY LIVING (ADLs):** The instructional area that addresses the daily tasks that are necessary to get along in life. It encompasses a broad range of activities including personal hygiene, preparing a meal and managing household chores, etc.

**BLIND REHABILITATION:** Comprehensive personal adjustment to sight loss program.

**BLIND REHABILITATION OUT PATIENT SPECIALIST (BROS):** A multi-skilled and experienced blind rehabilitation instructor who has advanced technical knowledge and competencies in at least two of the following disciplines at the journeyman level: orientation and mobility; living skills; manual skills; and visual skills. The BROS has been cross trained to acquire broadly based knowledge in each of these BRC disciplines, plus computer access training.

**BLIND REHABILITATION SERVICE:** Blind Rehabilitation Service provides programs to enhance the quality of life for eligible blinded veterans through identification, treatment, rehabilitation, education and research programs. This is accomplished through Visual Impairment Services Team (VIST) Coordinators, Blind Rehabilitation Centers (BRC) and Blind Rehabilitation Outpatient Specialists (BROS).

**BLIND REHABILITATION CENTER (BRC):** A residential inpatient program that provides comprehensive adjustment to blindness training and serves as a resource to a catchment area, usually comprised of multiple Veterans Integrated Service Networks (VISN's).

**BLIND VETERANS ASSOCIATION (BVA):** The BVA, a nonprofit and tax-exempt organization, was founded in 1945 by a group of veterans blinded during World War II. The Association was incorporated in 1947, and in 1958 was chartered by the United States Congress to represent all blinded veterans.

**COMPENSATION:** Financial help paid according to rated percentages to eligible veterans who have loss of earning capacity resulting from service-connected (SC) disability.

**CONSTANT CONTACT TECHNIQUE:** "The constant-contact technique is a variant of the touch technique. The procedures are the same except that the cane is not lifted from the ground at any point in its arc." (*Orientation and Mobility: Techniques for Independence*, LaGrow and Weessies, 1994)







**ECCENTRIC VIEWING:** Use of a different part of the retina outside a central scotoma for better viewing. A technique taught to persons with central vision loss.

**ELECTRONIC TRAVEL AIDS (ETA):** “ETAs are used to provide supplementary information to the traveler, rather than provide protection from the environment. These devices ‘detect and locate objects, provide information that allows the user to determine range, direction, dimension and height of objects’ (Farmer, 1980, p. 372).” (*Orientation and Mobility: Techniques for Independence*, LaGrow and Weessies, 1994)

**FIELD OF ORIENTATION AND MOBILITY:** The instructional area that addresses the use of the remaining senses in combination with skill training, utilizing protective techniques and assertive devices in order to independently travel in a safe, efficient, and confident manner in both familiar and unfamiliar environments.

**LEGAL BLINDNESS: U.S. CODE 41 — PUBLIC CONTRACTS 48B:** “The term “blind” refers to an individual or class of individuals whose central visual acuity does not exceed 20/200 in the better eye with correcting lenses or whose visual acuity, if better than 20/200, is accompanied by a limit to the field of vision in the better eye to such a degree that its widest diameter subtends an angle of no greater than 20 degrees.”

**LONG CANE:** “The long cane is the most effective and efficient mobility aid yet devised for safe, independent travel for the majority of visually impaired people (Farmer, 1980). If used properly, the long cane will provide the traveler with approximately one meter of warning of obstacles or drop-offs in the path of travel. The long cane also provides adequate lower-body protection while transmitting information regarding the walking surface (i.e., texture and quality). The cane does not, however, afford protection above the waist.” (*Orientation and Mobility: Techniques for Independence*, LaGrow and Weessies, 1994)

**LOW VISION:** Any bilateral loss of vision that cannot be corrected with eyeglasses or contact lenses and interferes with daily living activities.

**MOBILITY:** “Mobility refers to the act of movement within the physical environment.” (*Orientation and Mobility: Techniques for Independence*, LaGrow and Weessies, 1994)

**OPHTHALMOLOGIST:** An Ophthalmologist is a physician who specializes in the comprehensive care of the eyes and visual system. An ophthalmologist is medically trained and qualified to diagnose and treat all eye and visual system problems. An ophthalmologist can deliver total eye care as well as diagnose general diseases of the body. An ophthalmologist has completed 4 years of college premedical training, 4 or more years of medical school, 1 year of internship, and 3 years or more of specialized medical training



and experience in eye care. An additional 1 to 3 years may be spent in subspecialty training. (The professions of Ophthalmology and Optometry submitted the included definitions; therefore, the definitions are representative of the groups' self-perceptions.)

**OPTOMETRIST:** Doctors of Optometry are independent primary health care providers who examine, diagnose, treat, and manage diseases and disorders of the visual system, the eye, and associated structures, as well as diagnose related systemic conditions. An optometrist typically completes 4 years of baccalaureate training and 4 years of optometry training. Residency training is 1 year beyond attainment of the optometry degree. (The professions of Ophthalmology and Optometry submitted the included definitions; therefore, the definitions are representative of the groups' self-perceptions.)

**ORIENTATION:** "Orientation refers to the process involved in monitoring one's position in space through the use of the senses and in relation to the known patterns of environments to facilitate purposeful movement. Being oriented implies that one knows where one is, where one wishes to go, and how to get there." (*Orientation and Mobility: Techniques for Independence*, LaGrow and Weessies, 1994)

**PENSION:** A financial needs program for eligible veterans.

**RESIDUAL VISION:** Remaining vision.

**SUPPORT CANE:** "An ambulatory aid, made of wood or aluminum, that consists of a single vertical post with a handgrip at hip height. The cane may have a single point of contact on the ground or may have a base consisting of three or four small legs." (*Foundations of Orientation and Mobility, 2<sup>nd</sup> Ed.*, Blasch, Wiener, Welsh, 1997)

**TOUCH TECHNIQUE (TWO-POINT TOUCH TECHNIQUE):** "Specific cane technique used by travelers with visual impairments in outdoor and unfamiliar indoor areas. The cane is swung from side to side, low to the ground, touching down at each end of the arc." (*Foundations of Orientation and Mobility, 2<sup>nd</sup> Ed.*, Blasch, Wiener, Welsh, 1997) "This technique protects both sides of the body equally and picks up drop-offs. The touch technique provides about a one-meter warning of drop-offs and will contact anything within its arc from the waist down." (*Orientation and Mobility: Techniques for Independence*, LaGrow and Weessies, 1994)

**VISUAL IMPAIRMENT SERVICES TEAM (VIST):** A team comprised of health care and allied health care professionals charged with the responsibility for determining the comprehensive services required by a visually impaired veteran. Representatives may



include, but are not limited to: ophthalmology, optometry, medicine, audiology and speech pathology, prosthetics, social work, nursing, administration, vocational rehabilitation, adjudication and veterans benefits. (Note: The VIST may include a representative from the local Blinded Veterans Association as well as a representative from a local agency for the blind.)

**VIST COORDINATOR:** The VIST Coordinator is a case manager who has major responsibility for the coordination of all services for visually impaired veterans and their families. Duties include providing and/or arranging for the provision of appropriate treatment modalities (e.g., referrals to BRC's and or BROS) in order to enhance a blinded veteran's functioning level. Other duties include identifying new cases of blindness, providing professional counseling, resolving problems, meeting specific objectives established by the VIST, arranging VIST Reviews, and conducting education programs relating to VIST and blindness.

**VISUAL ACUITY:** "Acuteness or clearness of vision (especially form vision) which is dependent on the sharpness of the retinal focus, the sensitivity of the nervous elements, and the interpretative faculty of the brain." (Dictionary of Visual Science)

**VISUAL DISABILITY:** How the person functions, measured in terms of reading performance, activities of daily living skills (ADLs), O&M, etc. (World Health Organization (WHO)).

**VISUAL FIELD:** The entire area that the person can see when the eye is looking straight ahead, including central and peripheral vision.

**VISUAL HANDICAP:** The disadvantages the person experiences, need for extra effort, loss of independence (economic, social, physical). (WHO)

**VISUAL IMPAIRMENT:** The function of the eye, as measured in terms of visual acuity, visual field, color vision, etc. (WHO)