



**Low Vision**

**R. Tracy Williams, OD  
Spectrios Institute for Low Vision**

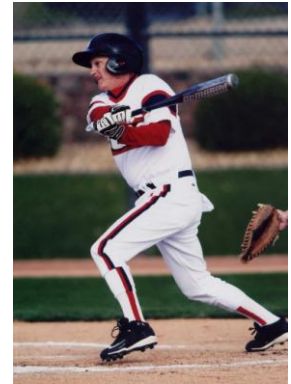
# LOW VISION

**R. Tracy Williams, O.D., F.A.A.O**

**Executive Director  
Spectrios Institute for Low Vision  
Wheaton, IL**

**[rtw\\_od320@spectrios.org](mailto:rtw_od320@spectrios.org)**

**Clinical Associate Professor of Ophthalmology  
and Director of Low Vision Rehabilitation Services  
Loyola University, Department of Ophthalmology  
Adjunct Professor, Illinois College of Optometry**



**FOCUS ON EYE HEALTH:  
A National Summit**

 **Prevent  
Blindness  
America**  
Our Vision Is Vision®

# WHAT IS LOW VISION?

- **NEI/NEHEP**
  - Low vision affects more than 2 million Americans and ranks behind only arthritis and heart disease as the reason for impaired daily functioning in Americans over the age of 70 <sup>(1)</sup>. Low vision is defined as a visual impairment that is not corrected by standard eyeglasses, contact lenses, medication, or surgery and **that interferes with the ability to perform everyday activities**. It is most commonly described in terms of remaining visual acuity (central vision) and visual field, peripheral, or side vision. <sup>(2)</sup> Loss in central vision causes difficulty in detail discrimination (e.g., reading and discriminating fine detail and color). Peripheral vision loss causes orientation and mobility problems, such as difficulty seeing curbs/steps or difficulty seeing in lowlight conditions.
  - Baseline data from the 2002 National Health Interview Survey (NHIS) indicate that **approximately 14 per 1,000 Americans aged 18 and older with a visual impairment use vision rehabilitation services. According to the same study 22% of people aged 18 and older with visual impairments use visual and adaptive devices**
  - The World Health Organization estimates that over 135 million people are visually disabled, and nearly 45 million people are blind. <sup>(3)</sup>
1. Swagerty, D.L. Jr. (1995) . The Impact of Age-related Visual Impairment on Functional Independence in the Elderly. Kansas Medicine: A journal of the Kansas Medical Society 96.1 24-26
  2. American Academy of Ophthalmology Vision Rehabilitation Committee. (2001) Preferred Practice Pattern: Visual Rehabilitation For Adults. San Francisco: American Academy of Ophthalmology.
  3. Cunningham, E.T. Jr., World Blindness – No End In Sight. Br J Ophthalmology. 2001; 85:253-4

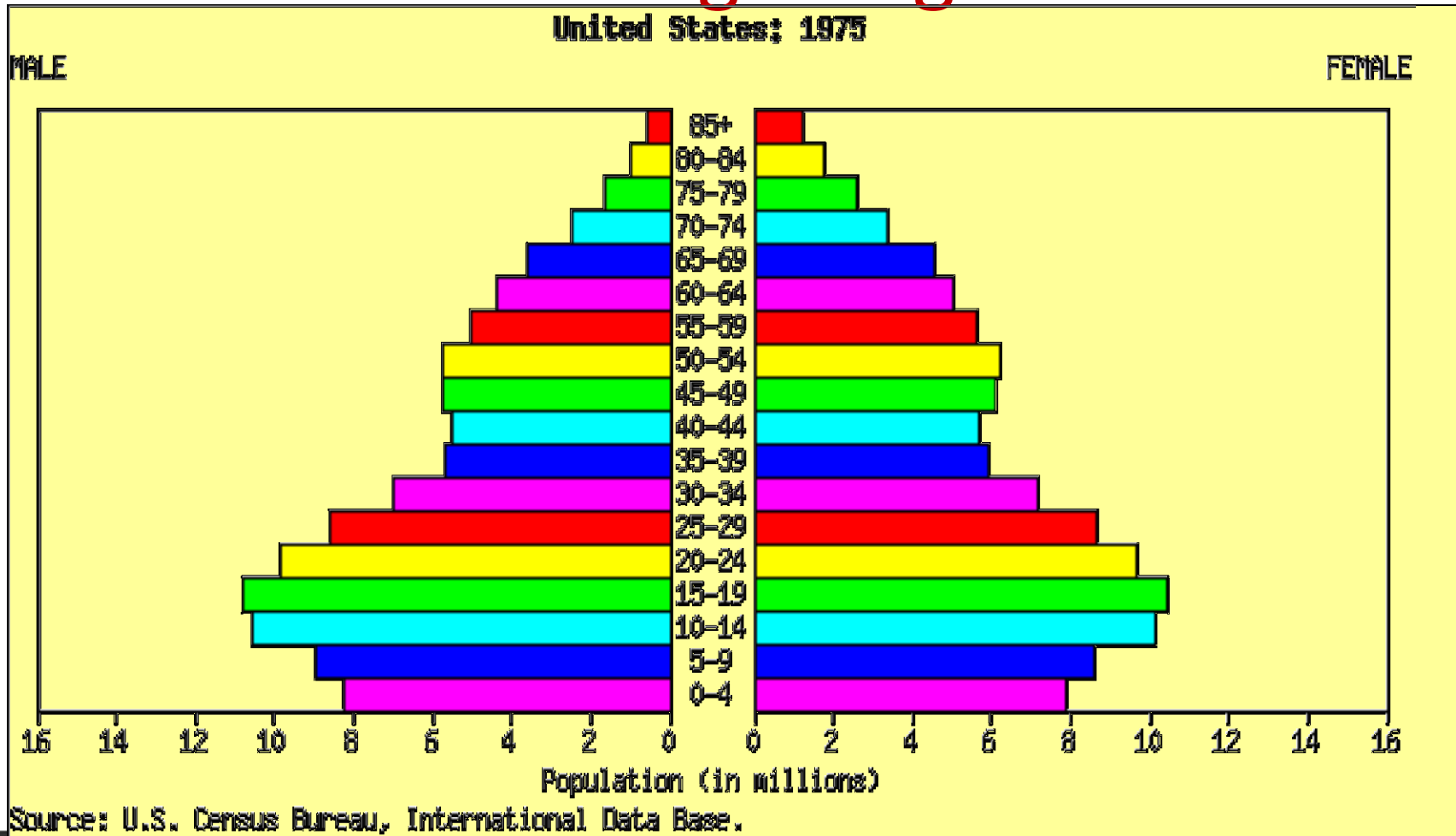
# WHAT IS LOW VISION?

- **Permanent vision loss without a cure in sight**
- **A life changing event**
- **A catalyst for psychosocial disruption**

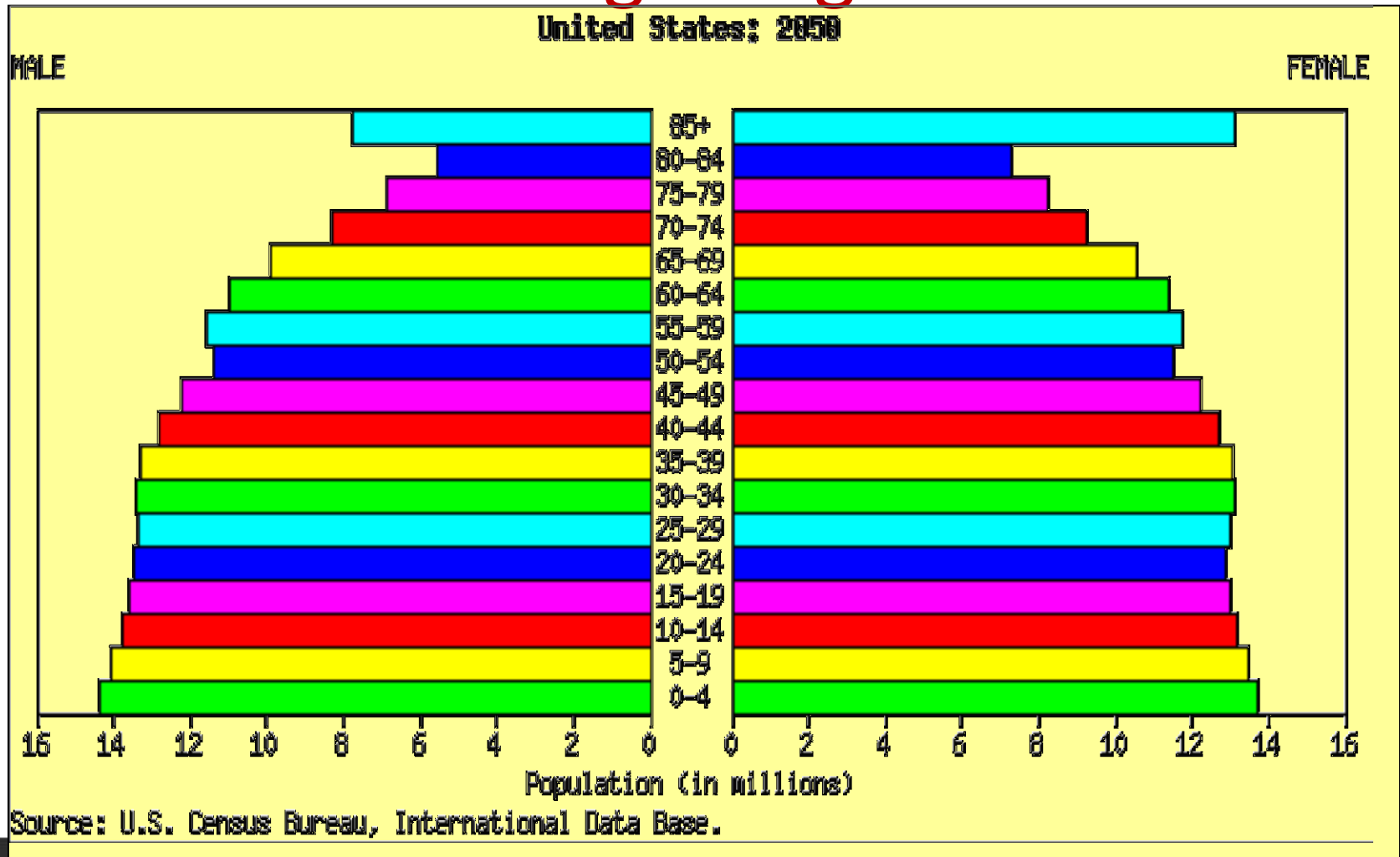
# Vision Loss from Eye Disease will Increase as Americans Age ...

- **“Blindness and Low Vision can lead to loss of independence and reduced quality of life” said Elias A. Zerhouni, M.D. Former Director of NIH. “As our population lives longer, eye disease will be an even greater concern.”**

# America is getting older



# America is getting older



**FOCUS ON EYE HEALTH:  
A National Summit**

# New Prevent Blindness Statistics

## United States

### Estimated Number of Cases by Vision Problem Age $\geq$ 40

<b>Total Population</b>	<b>142,648,393</b>
<b>Vision Impairment &amp; Blindness</b>	<b>4,195,966</b>
<b>Blindness</b>	<b>1,288,275</b>
<b>Vision Impairment</b>	<b>2,907,691</b>
Refractive Error	
Myopia $\geq$ 1.0 diopters	34,119,279
Hyperopia $\geq$ 3.0 diopters	14,186,819
AMD*	2,069,403
Cataract	24,409,978
Diabetic Retinopathy	7,685,237
Glaucoma	2,719,379

\* Age-related macular degeneration, age 50 and older



# WHAT ARE THE CONSEQUENCES OF LOW VISION?

- Visual impairment has wide ranging negative affects on health, both visual and systemic. It also has extensive societal implications in terms of participation in society, employment, personal income and quality of life.
- Visual impairment imposes both direct and indirect costs on affected individuals and society as a whole.
- The total worldwide financial cost of visual impairment is estimated to be US \$3.0 Trillion in 2010. <sup>(1)</sup>
- As of April 1, 2010 ... There were 40.3 million people 65 years and over in the USA,. This represents 13% of the total population of the USA <sup>(2)</sup>.
- 2010 Population in the USA – 308,745,538, Illinois - 12,830,632, DC – 601,723 <sup>(2)</sup>

1. A. Gordis, H. Cutler, L. Pezzolo, K. Gordon, A. Cruess, S. Winyard, W. Hamilton AND k. Chua (2011): An Estimation of the Worldwide Economic and Health Burden of Visual Impairment, Global Public Health, 001: 10.1080/ 17441692.2001.635815
2. U.S. Census Bureau

# WHAT ARE THE CONSEQUENCES?

- Compared with people who are sighted, people with vision loss experience a reduced quality of life, greater difficulty with daily living and social dependence, higher rates of clinical depression, twice the risk of premature death, an increased risk of falls, fractures and premature admission to nursing homes. <sup>(1)</sup>
- Prevalence of Visual Impairment and Selected Eye Diseases Among Persons Aged > 50 years with and without diabetes – United States 2002 ... CDC  
**Visual impairment and blindness affect an estimated 3.4 million US adults aged > 40 years. The leading causes of visual impairment and blindness are diabetic retinopathy and age related eye diseases (e.g., cataracts, macular degeneration and glaucoma).** <sup>(2)</sup>

1. McCarty, C.A., Nanjan, M.B., and Taylor, H.R., 2001 Vision Impairment Predicts 5 Year Mortality, British Journal of Ophthalmology, 85,322-326
2. The Eye Disease Prevalence Research Group. Causes and Prevalence of Visual Impairment among adults in the United States, Arch Ophthalmology 2004; 122: 447-85

# WHAT IS LOW VISION REHABILITATION?

- **Vision rehabilitation is the process of treatment and education that helps individuals who are visually disabled attain maximum function, a sense of well being, a personally satisfying level of independence, and optimum quality of life.** Function is maximized by evaluation, diagnosis and treatment including, but not limited to, the prescription of optical, non-optical, electronic and/or other treatments. The rehabilitation process includes the development of an individual rehabilitation plan specifying clinical therapy and/or instruction in compensatory approaches.
- Vision rehabilitation may be necessitated by any condition, disease, or injury that causes a visual impairment which results in functional limitation or disability. In addition to the evaluation, diagnosis and management of visual impairment by an eye care physician (optometrist or ophthalmologists), vision rehabilitation may include, but is not limited to, optometric, medical, allied health, social, educational and psychological services.

1. Approved by the American Optometric Association Board of Trustees, June 2004

# WHAT IS LOW VISION REHABILITATION?

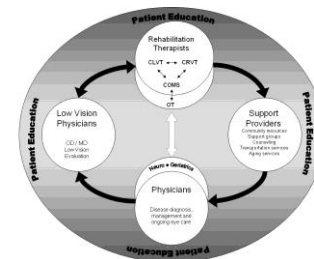
- **Hope**
- **Help**
- **It's Healthy!**
- **It's Happiness!**
- **It's the “till then, “ ... till we find the cures.**

**Low Vision Rehabilitation is a “treatment modality” and represents the continuum of eye care when vision impairment occurs that cannot be restored with eye medications, eye surgery or conventional glasses.**

# WHERE DO YOU GET LOW VISION REHABILITATION ?

- Low Vision Specialists are licensed Doctors of Optometry or Ophthalmology, who are skilled in the examination, treatment and management of patients with visual impairments not fully treatable by medical, surgical or conventional eyewear or contact lenses.
- Low Vision Rehabilitation is a team effort often involving the low vision specialist (an optometrist or ophthalmologist), rehabilitation teachers, mobility/orientation specialists, occupational therapists, technicians, and other profession as needed.

AOA, AAO, AER, AOTA



# Low Vision Rehabilitation Professionals

- Low Vision rehabilitation is currently part of the ophthalmological residency training in most programs in the U.S.
- Low Vision rehabilitation has been part of the optometric curriculum for over 50 years.
- Over 20 residency programs now exist for doctors of optometry to complete a one year training program in low vision rehabilitation.
- No fellowship in low vision rehabilitation has yet to be established in ophthalmology.
- University trained rehabilitation teachers (low vision therapists) and O & M specialists (orientation and mobility) have also been trained for over 50 years and receive a master's degree.
- Occupational therapists have recently become an important service in the low vision rehabilitation field.
- Occupational therapists have been instrumental developing and providing services in rehabilitation driving programs.
- Certification training does exist for assistive / adaptive technology specialists.
- Other professionals are entering the low vision rehabilitation field, such as ophthalmic nurses, certified ophthalmic technicians, and para-optometric assistants.

# Standards in low vision rehabilitation

- **The National Accreditation Council (NAC) for agencies serving the blind and visually impaired is a not-for-profit organization established in 1966 which currently provides accreditation for about seventy institutions in the U.S.**
- **NAC standards encourage a multi-disciplinary approach to low vision rehabilitation including;**
  - Low vision Rehabilitation trained doctors (optometrists/ ophthalmologists),
  - Rehabilitation teachers/therapists and occupational therapists,
  - Orientation and Mobility specialists and rehabilitation driving programs,
  - Rehabilitation counselors and social workers,
  - Assistive/adaptive technology specialists, and other rehabilitation professionals, services and programs, and resources.

# GROUPS THAT MAKE A DIFFERENCE

- VisionServe
- NAC
- AOA/AAO/AER/AOTA
- AMD Alliance International
- Lions Clubs International
- Spectrios Institute for Low Vision
- Service Clubs
- PBA
- FFB
- AFB
- NOAH
- USABA
- DHS
- And many, many more



# DOES IT HELP PEOPLE WITH VISION LOSS?

## You bet your sweet Bippy !!!

- Professional Paternalism / patient education
- Maximizes potential / developing new abilities
- Prescriptive glasses, devices and technology determined
- Improvement when cure is not possible
- It focuses on the positive
- It confronts fear
- It helps us to re-invent ourselves



# BARRIERS ...

- **Anger, frustration, and depression**
- **Selective listening and denial**
- **Limited support – no coach**
- **Wants to be dependent**
- **No motivation**
- **Multi-disabilities, cognitive issues**
- **Not told about low vision services**
- **Financial resources**



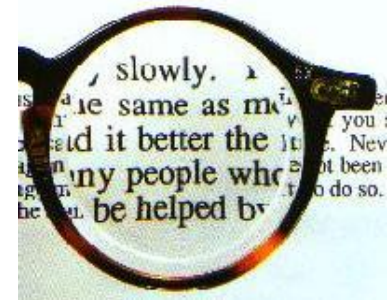
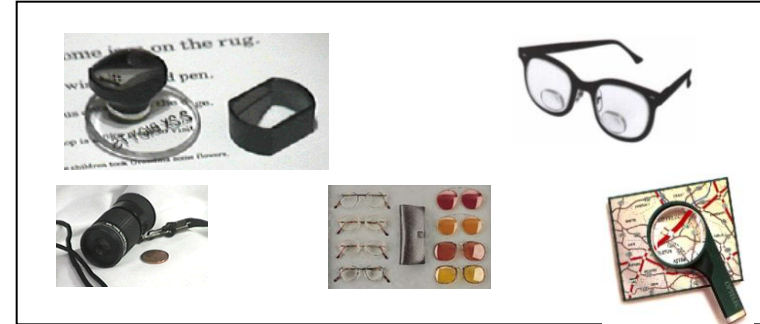
# Prescriptive Tools Make A Difference .....

- Like the apprentice carpenter with an empty tool box, help the patient realize that not one, but many tools exist and that the rehabilitation process will help determine what tools are necessary and assist them in prioritizing tasks they wish to accomplish to reach their goals.
- Ophthalmic magnification and Electronic Assistive technology



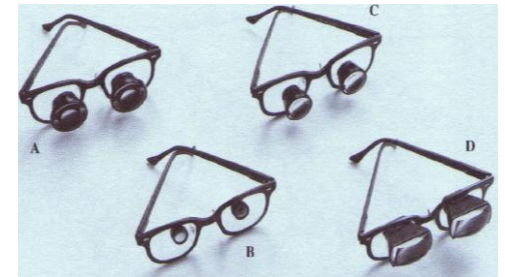
# 5 Ways to Improve Nearpoint Spotting Abilities...

- Stronger reading lenses (stronger adds, microscopic designs)
- Prescription magnifiers (3X – 12X illuminated, hand-held, or stand)
- CCTV systems (electronic magnification) Assistive Technology
- Make things bigger in the real world (large print books, checks, etc.)
- Good lighting, increase contrast, and magnification

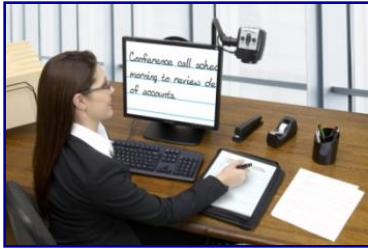


# 5 Ways to Improve Distance Spotting Ability...

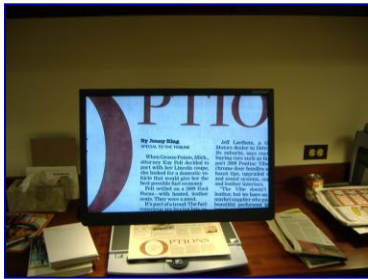
- Eccentric Viewing training
- Good 10 foot refraction (glasses when indicated)
- Get closer to things (relative distant magnification)
- Telescopic applications  
(monoculars, binoculars, bioptics)
- Video magnification



# “Reading Machines” can greatly impact visual abilities



**ACROBAT** by  
Enhanced Vision



**CLEARVIEW**  
by Optelec

- **Electronic magnification versus Ophthalmic magnification**
- **Adaptive technology opportunities**



**Magnilink**



**LVI Student**

**Best for: Reading, writing, hand crafts**

# Portable units that go anywhere

- **Pocket size portability that can go anywhere**
- **Uses battery pack**
- **Capture of images**



**Compact by Optelec**

**Best for: Shopping, menus, program booklets**



**Ruby by Enhance Vision**



**Pebble by Enhanced Vision**



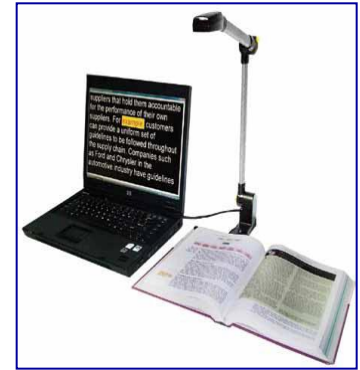
**Farview by Optelec**

# Capture to Speech



**ClearReader by Optelec: Portable scan to speech device**

**OpenBook with Pearl: Scan to read/speech hardware and software for use with computers**



**Eye Pal Solo: Portable scan to speech device**

**SARA by Freedom Scientific: Scan to speech device for non-computer users, easy to use**

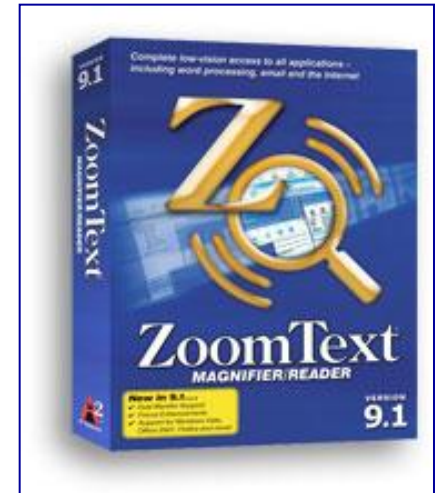


**Best for: Reading, PDF files, magazine articles, journals**

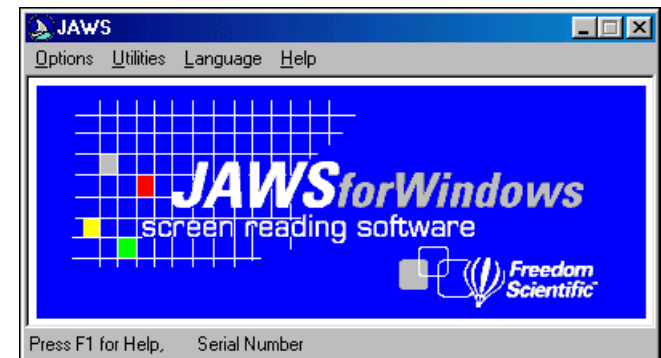


# Low Vision Assistive Technology Categories...

- **Computer screen magnification**
- **Computer screen reading**
- **Access to print via scanning**
- **Voice recognition**



**Best for:** Employment, online banking, email, internet use, school work



# Touch Technology

**Samsung  
Galaxy**



**I-Phone**



**I-Pad by  
Apple**



**I-Pod Touch**

**Best for: Personal independence, email, internet, photos, GPS,  
special APPS for daily living**

**FOCUS ON EYE HEALTH:  
A National Summit**

 **Prevent  
Blindness  
America**  
Our Vision Is Vision®

**The continuum of eye care does not end when a cure is not possible, ... vision rehabilitation must be attempted to maximize remaining sight, other senses and abilities. It's a treatment modality.**

**Vision loss does not determine how happy or successful you will be. Your head and heart will determine your outcome.**

**And we need more low vision rehabilitation research!**

*(1) How Effective is Low Vision Service Provision? Public Health and the Eye: Survey of Ophthalmology; Vol 57, Number 1, January-February 2012*

***THANK YOU!***



Our Vision Is Vision®