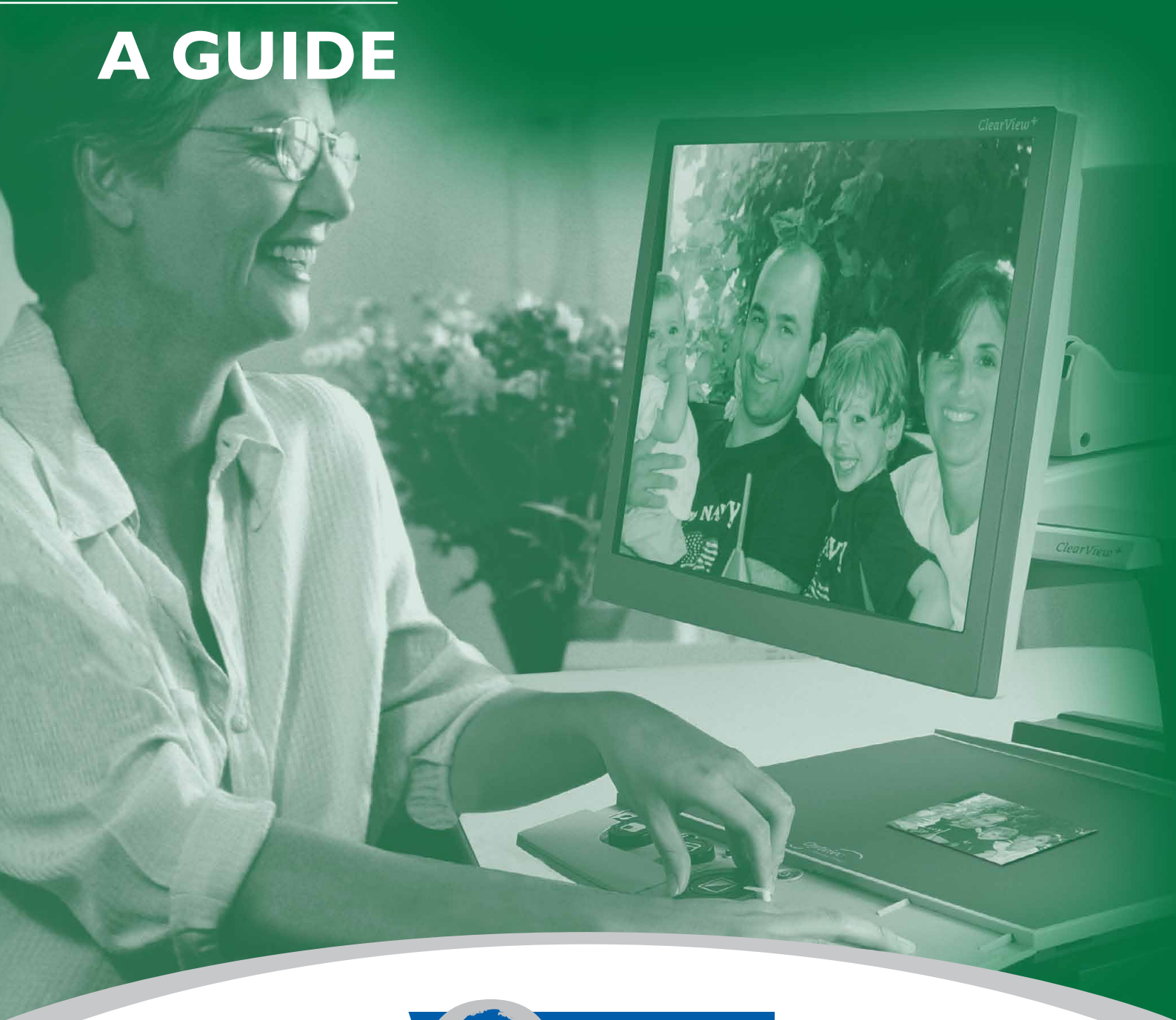


Low Vision Aids & Technology

A GUIDE



Our focus is your vision

The Macular Degeneration Foundation

Our vision is to reduce the incidence and impact of Macular Degeneration in Australia.

The key objectives of the Foundation are education, awareness, research, support services and representation.

The Foundation is a charity which relies on donations and support from government, business and the community to help continue our vital work.

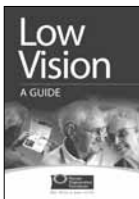
All donations of \$2 or more are tax deductible and are gratefully accepted.

The Macular Degeneration Foundation Guides



Low Vision Aids & Technology – A Guide:

The fourth in a series of guides produced by the Foundation. It is helpful to read this guide in conjunction with all other guides produced by the Macular Degeneration Foundation.



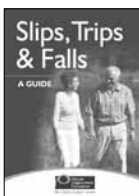
Low Vision - A Guide:

A practical introduction to living with low vision



Family, Friend & Carer - A Guide:

For people providing care to a person with low vision



Slips, Trips & Falls - A Guide:

Provides practical advice on avoiding falls

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Introduction

Low Vision Aids & Technology - A Guide provides information on the different types of aids, equipment and technology which can assist those with low vision in many different settings from home to work.

Using aids and technology can help to maintain independence and quality of life. This can range from simple hand-held optical magnifiers to more technology based options such as electronic magnifiers, reading machines and computer software.

Advances in technology such as mobile phones and computers have changed the way we communicate in both the spoken and written word. One great advantage of new technology is the benefit to those who are blind or have vision impairment.

Critical to getting the best outcome from using aids and technology is recognising that each person is different, has specific individual needs and that solutions exist to meet those needs.

Services are available to help determine what is needed, where and how aids or technology can be obtained and how to access training and ongoing support.

The prime objective with the use of aids and technology is always to maintain quality of life and independence for whatever task or activity is undertaken in the workplace, the home or social settings.

Being informed, accessing appropriate services, having a positive approach and remaining open to learning new ways of doing things are key elements to great outcomes in the use of aids and technologies.

This guide answers key questions often asked by people with low vision, their family and carers. It also provides examples of how aids and technologies have helped many people with a vision impairment to achieve the goal of maintaining quality of life and independence.

The guide is a resource for those on the low vision journey to help navigate the aids and technology pathway.

Section 1:

What is Low Vision?

A person is said to have low vision when their eyesight is limited or impaired and cannot be adequately corrected with surgery, conventional glasses or contact lenses.

Low vision can affect people of all ages and can have an impact on many aspects of a person's life. It may cause problems with reading, using the computer, dialling the telephone, watching TV, recognising faces, seeing stairs, crossing the road and daily living and leisure activities such as cooking, walking and active sports.

Low vision is often a loss of sharpness or acuity but may also present as a loss of field of vision, light sensitivity, distorted vision or a loss of contrast.

Low vision is measured by distance visual acuity. When a person has normal vision their visual acuity is rated 6/6 or 20/20. This rating indicates that a person who has normal vision can read the letters on an eye chart which is designed to be seen at a distance of six metres or twenty feet away. A person is said to have low vision when they see fewer letters on the eye chart from this distance. For example 6/18 means that the patient can see at 6 metres what a person with normal vision is able to see at 18 metres.

The primary cause of vision loss is eye disease, although it may also occur as a result of birth defects, injury or a medical condition.



Section 2:

Common Causes of Low Vision

The most common causes of low vision in western countries are Macular Degeneration, Glaucoma, Diabetic Retinopathy, Retinitis Pigmentosa, Cataract and other retinal dystrophies. These eye diseases affect vision in different ways. The impact of each disease is connected to the amount of loss in visual acuity, visual field and contrast and this will vary from person to person.

1. Macular Degeneration

Macular Degeneration (MD) is Australia's leading cause of blindness. The disease causes progressive damage to the central part of the retina known as the macula, resulting in central vision loss. The most common form of Macular Degeneration is frequently referred to as Age-related Macular Degeneration or AMD. MD affects one in every seven Australians over the age of 50 and the incidence increases with age.

There are two types of MD: Dry MD and Wet MD. Dry MD is the most common form of the disease; it results in gradual loss of central vision. Wet MD is characterised by a sudden loss of vision and is caused by abnormal blood vessels growing into the retina.

2. Glaucoma

Glaucoma is the name given to a group of eye diseases in which the optic nerve at the back of the eye is slowly destroyed. This damage is usually due to a blockage of the circulation of the water (aqueous fluid) in the eye, or its drainage, leading to an increase in pressure inside the eye. In other cases, it can be caused by poor blood supply to the nerve fibres, a weakness in the optic nerve or a problem in the health of the nerve fibres.

How a person sees the world when they have:

1. Macular Degeneration
2. Glaucoma
3. Cataract
4. Diabetic Retinopathy
5. Retinitis Pigmentosa



Glaucoma destroys a person's vision gradually, starting with the peripheral (side) vision. People can have glaucoma and be completely unaware of it, as there is usually no pain or early warning signs associated with the most common form of glaucoma. Early detection is critical as any sight lost is irreversible.

3. Diabetic Retinopathy

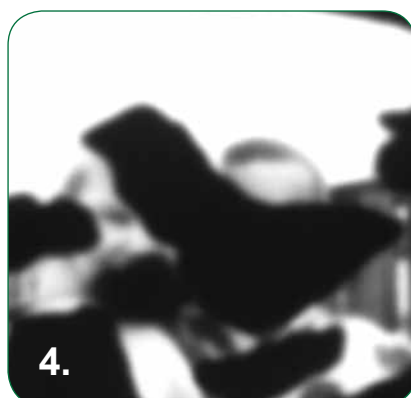
The most prevalent cause of visual impairment in people who have diabetes is diabetic retinopathy, a condition in which changes occur in the tiny blood vessels that nourish the retina. In the early stages of diabetic retinopathy, small blood vessels weaken and leak fluid or tiny amounts of blood, which distort the retina. In the more advanced stage, blood vessels in the retina are blocked or closed completely and areas of the retina die.

4. Cataracts

A cataract is a clouding of the normally clear and transparent lens of the eye. When a cataract develops, the lens becomes as cloudy as a frosted window, and light cannot be properly focused on the retina, resulting in an unclear image. Cataracts can be removed by having cataract surgery, and this is dependent on the individual and the eye specialist's advice.

5. Retinitis Pigmentosa

Retinitis pigmentosa is a degenerative, hereditary disorder that is often first characterised by night blindness, followed by loss of peripheral vision. It can eventually lead to total blindness. Retinitis pigmentosa is one of many retinal dystrophies and is the leading cause of youth blindness in Australia. It is second only to diabetes as a cause of blindness for those in their twenties and thirties. Retinitis pigmentosa in most cases is hereditary. However, in some instances there is a gene mutation that leads to the disease when there is no family history.



Section 3:

The Impact of Low Vision

Low vision can affect quality of life and independence. The impact may be small and manageable or it may be more difficult and require more time, support and patience. The impact of low vision will vary from person to person and can depend on a whole range of factors.

Everyone responds differently to vision loss - from acceptance and accommodation to apprehension and even, for some, depression. It is very important for anyone with low vision to seek help immediately from their doctor if they have any concerns, especially feelings of helplessness, anxiety or depression. Don't wait; act immediately as help and support is available.

Upon developing low vision, it may take time to adjust to new circumstances. Tasks, which may seem a real difficulty, can become just another element of daily life with some slight adjustments to everyday activities. Learning new skills and adapting old ones to new circumstances can help support living an independent life.

Low vision service providers can assist with gaining a better understanding of levels of sight, and how to continue to do everyday activities and tasks at work, home and out and about in the community.



Section 4:

Moving Forward with Low Vision

Moving forward starts with taking control of the situation. This involves acquiring knowledge, understanding the potential impacts of any diagnosis and knowing the options available to deal with any challenges.

Different eye diseases or conditions will result in varying effects on vision so it is important to pursue support services and aids and technologies which cater to individual requirements.

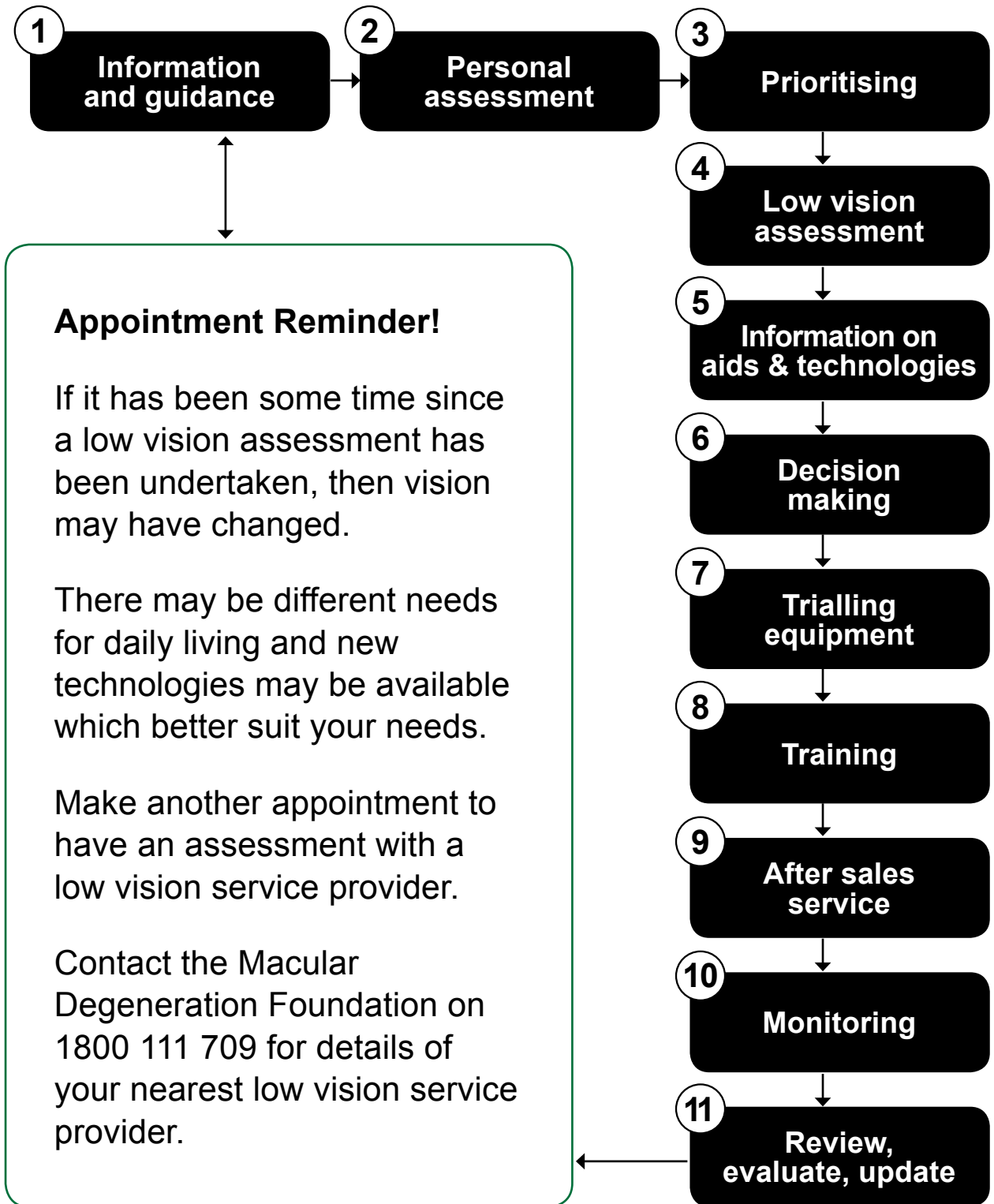
One of the most important things you can do to take control is to attend a low vision assessment as this is the starting point for information, help and guidance.

Taking control can also involve:

- ✓ Learning effective coping strategies to help overcome challenges
- ✓ Setting realistic goals, and actively learning new skills
- ✓ Working through decisions regarding employment, activities, future plans and lifestyle
- ✓ Working through critical issues in a calm and supportive environment
- ✓ Obtaining support and advice on staying engaged with social and recreational networks
- ✓ Confidence building in managing everyday activities
- ✓ Learning new communication skills with family and friends in order to maintain autonomy and independence
- ✓ Learning new skills and technologies
- ✓ Obtaining orientation and mobility training
- ✓ Re-organising the home and adapting an old environment to a new set of needs

Section 5: Mapping the Journey on Low Vision Aids and Technology

This flow chart provides a simple guide to the steps involved in accessing low vision aids and technologies.



1 Information and guidance

Information and guidance on the pathway you can follow can be obtained from a variety of sources such as the Macular Degeneration Foundation, ophthalmologist, optometrist, low vision rehabilitation service, orthoptist or occupational therapist.

Question

Could I utilise low vision aids and/or technology to improve my quality of life and level of independence?

2 Personal assessment

It is important to determine your greatest individual needs. It is a great starting point before an assessment to think about what it is you really want to do that you are finding difficult and is important for your independence. Is it daily living with cooking and housekeeping, or reading for your work commitments or are you an avid gardener? It may be that you simply want to be able to move freely and safely in your home? This personal assessment will help match aids and technology for your individual requirements.

Question

What do I want to do better or undertake that I am not doing now? What is my biggest frustration?

3 Prioritising the personal assessment list

Sometimes the list of needs can be quite exhaustive. Prioritising the top three can make the starting point a little easier. You can always come back to the next lot of priorities, but sometimes stepping the way through the list is more manageable and you can build upon success as confidence increases.

Question

**What are my highest priorities?
Why are they important to me?**

4 Low vision assessment

A low vision assessment is an important first step in taking control. It provides for a comprehensive assessment of vision in order to find the starting point and the best pathway for maintaining activities and independence suited to individual needs.

Some people do purchase low vision aids or technology without a low vision assessment. While the purchase may help the situation, without a formal assessment, the best outcomes cannot be assured. The hearing-impaired have expert advice on the right hearing aid; the same should apply for a low vision aid.

During an assessment, advice is provided on aids, equipment and technology that can help to maximise vision to manage everyday tasks in the workplace, home and community. Some services also provide support through individual counselling and support groups.

Low vision assessments are provided by low vision agencies across Australia, as well as several major hospitals, universities, and also some optometrists.

“I have learnt to use my remaining vision and other senses to best serve me while out shopping, travelling or even bushwalking. It takes training, tenacity, practice and persistence to learn new skills and aids – but the effort is worth your independence”. Frank



A low vision assessment may include:

- Testing for current vision
- Assessing the client's eye disease and the effect upon vision and explaining this to the client
- Learning techniques to enhance remaining vision and maximise the use of other senses
- Discussion on the psychological and social impacts of vision loss
- Referral to counselling and support
- Comprehensive information and practical demonstrations on the use of low vision aids and technologies best suited to needs
- Information on modifications for the home or workplace
- A visit to the home for advice on living well and safely in the home
- Orientation and mobility training to help get out and about
- Information on eligibility and access for subsidies or entitlements

Question

What is my current level of vision? What specific problems do I have? What does it mean for daily living?

5 Information on aids and technologies

Obtaining accurate and current information on what is available with aids and technology to meet your needs is critical to a positive outcome. After a low vision assessment you may only require a simple magnifier or you may require stronger magnification with an electronic magnifier. You may need better lighting and daily living aids like a talking watch. Whatever your need, obtaining information on the range of aids and technologies is important.

Question

What aids and technologies are available to help me? Why would they help me?

6 Decision making

Making an informed decision means considering all aspects of your situation before proceeding and gives confidence in the decision. Your decision making will be different for different levels of aids and technology. eg a low vision aid such as a simple hand held magnifier is not likely to need a trial period but a higher magnification and technology based item, such as an electronic magnifier, may require a warranty and trial period.

What is the most useful and cost effective choice for my needs? Can I view a range of aids and technologies? Is it necessary to trial prior to purchase? Is the product practical, affordable and manageable? Does the product come with a warranty and/or service support? Are there subsidies available or does my health insurance provide a rebate? Does the aid or technology come with clear instructions? Is second hand equipment available?

7 Trialling equipment

If possible, being able to trial technology based equipment, for a period at home, is a practical and sensible approach, especially if it is a higher cost item.

Question

Can someone show me how to use the product? Is there a free trial period available? Can I trial new technology in my home or workplace and for how long? Is there any obligation after the trial period? Have the instructions been understood and can I have telephone support?

8 Training

Many low vision services and product suppliers provide training and this is an important part of the consideration of a high technology purchase. Having a friend, carer or relative attend the training with you can be very helpful for backup support.

Question

Can I receive training to ensure effective use of a product? Can I have someone else accompany me? What is the training and is it in the home or is travel involved? How would the training work for me?

9 After sales service

Before purchasing any product, especially more costly items, check that you have a clear agreement related to all aspects of after sales service.

Question

Is there a clear and written agreement on after sales service and support? Check the warranty and details of after sales service. If a repair is required, especially for larger pieces of technology, will it be collected and delivered back home after servicing? Is this service included in the after sales service warranty?

10 Monitoring

You can monitor how things are going with an aid or technology and check it is being used and is meeting your expectations.

Question

Does the low vision aid or technology assist me and does it support my independence and my quality of life? Am I utilising my aid and if not, why not and what should I do? Are there other options available that would better serve my needs? Have my needs changed?

11 Review, evaluate, update

It is important to have a personal, and perhaps professional, review of how any aid or technology has helped you. It may be that your vision has changed, or the equipment is not serving your needs or you need some extra aids and technologies to help you attend to your priority list. There may be just some minor adjustments which can help make aids and technologies more helpful.

If you are experiencing difficulties, it may be time for another assessment, to review and evaluate. Whatever the issue, do not ignore the problem.

Question

Do I need another low vision assessment?

“I cooked for my family and friends before I was diagnosed with MD and was determined that it would not stop me from enjoying cooking. It just meant that I would have to prepare for the future and change the environment in which I cooked, with better lighting, putting recipes in larger print, and making better use of my other senses. My family and friends still rave that I still make the greatest mango chicken! If you enjoy cooking, you’ll find a way to continue. Bon appetit”. James

Section 6:

Low Vision Aids and the Basics

Before considering any aid or technology there are some basic starter positions to be considered; simple and practical things that can be done to improve the environment and help with low vision. This will be part of your overall low vision assessment. The following gives an outline on some of these basic starting points.

Bigger Bolder Brighter

The aim is to make everything bigger, bolder and brighter. Treat these three actions as your first principles.

Lighting

Lighting is one of the most important and simple aids. One of the key aspects of any low vision assessment is to check your lighting to ensure you have the right lighting and it is positioned correctly. Some types of light will work better than others depending upon the eye disease.

Having good lighting while reading, writing or undertaking fine work is very important; it can make a huge difference to the ability to see the task being undertaken.

There are a large range of task or portable lamps that can be adjusted to provide appropriate directional lighting. There are also lights with built-in magnifiers designed specifically for reading, writing and other tasks.

- ✓ Have your back to a window to reduce glare
- ✓ Use direct lighting from behind
- ✓ Use lighting on a flexible arm (gooseneck lamps) so it can be positioned to suit the task
- ✓ A magnification lamp can provide additional lighting for doing close work or reading
- ✓ Ensure stairs, bathrooms, kitchens and other areas of activity are well lit
- ✓ Avoid looking directly into bright lights

Glare

Control glare as much as possible as it can really make it very difficult with vision loss. Discuss with your eye care professional or your low vision agency the various options including UV shielding sunglasses, fit-overs or clip-ons for use outside and the appropriate options for your vision. They are available in a variety of styles, colours and a range of special lenses which can help reduce glare.

- ✓ To cut down glare when outdoors or under fluorescent lights, wear a visor or hat
- ✓ Reduce glare from shiny surfaces by covering them with a cloth, and control glare on windows with blinds or curtains
- ✓ Place a chair safely at doorways to remind you to stop and pause and allow your eyes to adjust to the light
- ✓ Adjust your TV viewing: position yourself or the TV to reduce glare, move closer to the TV and/or adjust your angle

Contrast

Good contrast is important for those with low vision. Contrast is when we create an effect by placing or arranging very different things such as colours, shades and textures next to each other in a way that highlights their differences.

- ✓ Ensure crockery and utensils are in different, bright and contrasting colours
- ✓ Use white plates on plain contrasting coloured place mats
- ✓ When writing, enlarge text size and use a thick black felt pen on white non-glossy paper
- ✓ Use different coloured chopping boards and utensils, eg chop light items such as onion on the dark board
- ✓ Think about the colours used on work surfaces in kitchens and bathrooms to maximise contrast when using the surface
- ✓ Contrast paint or tape on the edges of work surfaces and shelves to make the edges easier to see
- ✓ Use contrasting colours for cupboard handles
- ✓ Use light and power switches with contrasting coloured backing plates

Glasses

If you have been prescribed glasses, ensure you have regular reviews and discussions with your eye care professional about your needs including:

- ✓ Your prescription
- ✓ What your glasses should be doing for you
- ✓ Whether you have the right glasses for specific activities such as glasses for reading and close work and a pair of tinted sunglasses for improved outdoor vision

Organisation

Getting organised is an important part of maintaining independence. Be well organised, disciplined and practical. Keep important items in the same place. Think ahead about upcoming events or outings for good planning. Make the home and workplace easy to navigate, uncluttered and well organised.

- ✓ Have a bright coloured wallet, keys holder and glasses case
- ✓ Keep these regularly used important items in a white basket (for contrast) and in the same place, ready for quick collection when going out, and place them there immediately when returning home
- ✓ Use a dark felt pen on light materials to label as many objects as possible
- ✓ Use velcro or tactile dots on commonly used dials, remotes and domestic appliances
- ✓ Ask the restaurant to fax or mail a copy of the menu so you can review it beforehand
- ✓ If possible, obtain forms in advance (eg travel documents, bank forms) and fill them out in the well-lit comfort of home

Orientation and mobility training

Orientation and mobility training is a valuable service provided by many low vision agencies. This training aims to increase mobility and help improve independence and confidence. The first step is always to have an assessment which is undertaken by highly qualified and experienced people in the field of orientation and mobility.

Orientation and mobility training is personalised to work on achieving the desired outcome for an individual. It may be that they wish to walk to the local shops confidently, or be able to do the grocery shopping, or travel on trains or planes. For many people with vision loss, training can be undertaken to maximise the use of remaining vision and the other senses to gain more information about the surroundings.

Orientation and mobility trainers will recommend the use of a variety of aids from simple white canes to more technical devices.

For more tips for orientation and mobility and independent travel, refer to the Macular Degeneration Foundation's publication, *Low Vision - A Guide*.



“Before I leave home I have my checklist of aids to make sure I’m prepared – I have my visor, cap and fit-overs to reduce glare, my magnifier and magnification glasses in case I need to read something, my monocular for distance viewing and my identification cane.” Fran

Section 7:

Aids and Technologies

Low vision aids and technologies range from simple everyday practical aids for daily living and specific aids for low vision right up to existing and adaptive technologies which can be successfully used by those who are blind or are living with low vision. All aids and technologies which are outlined in this section of the Guide are included as they satisfy the two main criteria of maintaining independence and providing quality of life.

Daily Living Aids: Provide practical solutions to daily living and working including cooking, housework, personal care, and handling money.

Low Vision Aids: Help enlarge print for reading, such as simple hand held magnifiers or it may be a simple cane that helps with moving around confidently and safely

Technologies: There are many technologies that can assist those with low vision. Many have been developed for use in a variety of environments. However, some technologies have been specifically adapted for use with those who are blind or have vision impairment and this is referred to as adaptive technology eg, electronic magnifiers (sometimes called CCTV) and text-to-speech computer software.



Aids and Technologies:

Daily Living Aids

Daily living aids provide practical solutions to daily living and working environments and can include talking watches and scales, liquid level indicators and tactile markers, non-slip trays, food plate surrounds to prevent spills, coin sorters to make coins easier to find and money organisers with separate sleeves for different notes.

The huge range of daily living aids and their usefulness for those with low vision should be addressed as part of a low vision assessment. There is a huge array of daily living aids and many are available from low vision service providers. The following are just some examples.

“There are so many gadgets and simple changes you can make to help you to keep on doing everyday activities independently. I am legally blind; however every day I use a liquid level indicator to make myself a cup of tea; a talking clock to tell the time; a lamp with a magnifier to read the newspaper; and a talking book device to listen to audio books.” Ray

Labels:

Identification labels which can help with organisation and ease of use include:

- ✓ Plastic tie-on labels
- ✓ Clothing labels
- ✓ Iron-on barcode labels and barcode readers
- ✓ Radio locator tags
- ✓ Bump-ons, stick-ons or tactile marking pens to mark frequently used button or settings on equipment

Talking aids:

There is a large range of talking aids available including talking scales, timers, clocks, watches, calculators, food thermometers, key chain alarms, key ring voice memo devices, vibrating and beeping liquid level indicators and talking colour detectors. A bar code reader can be used to record the details of an object such as a food tin or DVD, and play back the recording on demand.

Hobbies:

A few simple modifications can enable people who have low vision to access a wide variety of hobbies including:

- ✓ Large print, tactile or Braille playing cards
- ✓ Bingo sets and board games designed for people with low vision (anything from Noughts and Crosses to Monopoly)
- ✓ Accessible computer games
- ✓ Specially adapted equipment for photography, drawing and painting
- ✓ Assistive equipment for sewing and craft work, such as needle threaders, large headed pins, magnetic seam guides and stand magnifier for needlepoint
- ✓ Special telescopic glasses to help with detailed work such as sewing or model building
- ✓ Custom made gardening tools



Aids and Technologies:

Low Vision Aids

Low vision aids are used to help enlarge print for reading (such as simple hand held magnifiers, magnifiers with built in lighting or large print books) and simple orientation and mobility aids such as canes.

Pocket light:

A pocket flashlight will provide additional lighting to enhance vision, for example in a restaurant to help read the menu, to negotiate a dimly lit environment, to read the right floor number on the elevator or find the toilets.



Large Print Books:

Large print books are usually printed in 16 or 18 point font and this can be a good option if sight allows for this level of print size. A selection may be available from the local library or a low vision service to borrow or purchase. Large print music is available for those who read music.



Reading:

Reading guides are simple devices that enable better focus when reading either normal or large print. They are simple black cards or sheets with a block cut into them to guide the writer or reader. Reading stands and lap desks with built in lighting can help with correct positioning while reading.



Writing:

There are a number of writing aids available including large print or tactile address books, diaries, organisers and notebooks along with:

- ✓ Writing frames or simple rail line guides, available in various formats including envelopes guides and signature guides, raised line or bold writing paper
- ✓ A range of thick felt tip pens



Optical Magnifiers:

There is a large range of optical magnifiers in different magnification strengths and sizes. The more powerful magnifiers are smaller, and need to be held close to the eye when being used.



With stronger magnifiers the field of vision is smaller, and may only enable the sight of a part of a word.

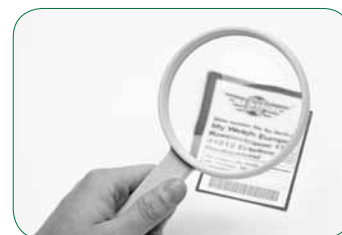
The type of magnifier needed will depend on what reading is required.

The following is an overview of the type of magnifiers available:

- ✓ Hand-held magnifiers, some with built-in lighting
- ✓ Bar magnifiers that can magnify one line of writing at a time
- ✓ Dome magnifiers which many find easier to use
- ✓ Fixed stand magnifiers which keep your hands free for reading, writing and other activities such as signing a cheque
- ✓ Spectacle binoculars available in clear or tinted colour for reading or close detail work

Pocket Magnifiers:

There is a large variety of pocket size magnifiers available in different shapes, sizes, and magnification strengths. They are a useful tool when out and about, for example, to check bus timetables or price tags and with hobbies such as tying lines when fishing.



Other Magnifiers

- ✓ Prismatic half eye magnification glasses or clip-on mini reading glasses are available in all different styles and colours.
- ✓ Clip-on magnifiers that attach to glasses for detailed work
- ✓ Telescopes in a range of sizes and styles that help with close and distance vision
- ✓ Pendant or gooseneck magnifiers
- ✓ Large lamp or stand magnifiers with built-in lighting and adjustable arms for reading, writing and close detail work
- ✓ Monoculars or binoculars to assist with reading distance items, for example, reading street signs, spotting an upcoming bus, playing bowls and getting a better view of the action at the theatre
- ✓ Specially designed lightweight binocular glasses for watching television



Orientation and Mobility Low Vision Aids

There are different types of canes that can be used and a proper assessment will be able to identify if it is needed and the most appropriate to suit your needs. This can range from a hand-held cane to a hand-held sensor device or a device containing a Global Positioning System (GPS) locator.

Primary Aids: Canes

Many people with low vision may never need or use a cane but it can be very useful for negotiating the environment. Many people find that a cane gives them much greater confidence to move about. Canes are available in collapsible styles for ease of carrying and can easily fit into a smaller carry bag or handbag. It is important to learn how to use a cane from a qualified instructor and this can be done during orientation and mobility training. The white cane is an internationally recognised symbol of vision impairment and alerts people to a person's reduced vision.



Long Cane: used for those with severe vision loss when people have problems detecting obstacles as well as changes in ground surfaces such as stairs, drop offs and uneven ground.

Identification Cane: a thin, light weight cane positioned diagonally across the front of the body. Helpful for those who can detect obstacles and drop offs, such as stairs, and need help with depth perception to probe the height of a drop off.

Support Cane: used by those with low vision who need extra support to lean upon and stability when walking.

“With deteriorating central vision due to wet MD in both my eyes, I found it difficult to read the numbers on the buses as they approached and so I am now using a cane after having had training sessions in its use. The bus now stops when they see my cane and the driver announces the number of the bus. The cane also helps me to gauge the height and width of the steps and to recognise rough surfaces and gaps on walking areas”. Margaret

Primary Aids: Guide dogs

Guide dogs assist people who are blind or vision impaired to travel around safely and independently and are most commonly Labradors and Golden Retrievers. These dogs are legally entitled to travel anywhere, including public transport, taxis and all public places. Guide dogs are for those who are blind, proficient in the use of a primary mobility aid such as a long cane and meet certain criteria as outlined by the service provider.

Secondary Aids: Electronic

These are often used with the primary aid of a cane or a dog to provide additional information in detecting overhead obstacles and/or additional information such as the location of doorways and a clear pathway of travel. Training with a qualified instructor is necessary.

Electronic Orientation Devices:

The most popular is the Miniguide which acts in a similar fashion to a bat's inbuilt sonar, sending out ultrasonic beams and providing vibratory or auditory feedback to the user when it detects an obstacle.

GPS devices:

Global Positioning Systems (GPS) are available to verbally guide the user along specified routes to destinations. The GPS software can be operated through an accessible mobile phone (with speech software).

Aids and Technologies:

Technologies

Technology has changed the way we undertake so many tasks, from accessing information to driving a car. Don't dismiss technology because it was not a part of your education or your life experiences so far. Be keen to investigate and learn different types of technology and be open to learning new skills to help maintain quality of life and independence. If it is helpful and achieves the right outcomes, then it is worth considering.

Mobile Phones

There are three options to consider:

- ✓ A simple phone with tactile buttons
- ✓ A phone that is compatible with magnification and speech software
- ✓ A touch screen phone with audio functions eg Apple iPhone

If the primary use for the mobile is just for phone calls then a simple phone with basic functions is ideal. It should have large, high contrast keys and display, loud ring tones and emergency call functions.

If a mobile is needed for additional functions, select a model with screen reader software programs which will speak all of the information on the screen, including contacts, caller information and text messages. It should also have a screen enlargement program (to increase the font size on the screen) and a high contrast display panel for easier reading.

New generation touch screen phones (often called smart phones such as the Apple iPhone) have a broad range of features including functions to support those with low vision, for example, magnification and speech accessibility for voice navigation commands. In addition to the usual tools of phone, email and web accessibility, they can also provide GPS navigation and applications such as a DAISY talking book player.

Television

To help with TV viewing there are large screen televisions and universal remote controls with large buttons. You may want to consider an upgrade to an LED TV which has the advantage of more vibrant colours and sharper contrast. The very large screens now available are often found to be very helpful.

Audio Books

Audio books or talking books are available from a range of providers including low vision agencies, council libraries and audio book websites. Some local newspapers are also available in audio format. The content is now mostly in a digital format and can be played on a range of devices including standard CD players, MP3 devices and tablet computers.

Some specific examples are:

Navigator:



A hand-held device that reads aloud books and newspapers. Digital audio files are loaded on to the Navigator from a computer and it will hold around five books. The Navigator was designed so that people with little or no technical knowledge can easily use technology to read a book and quickly master playback and navigation of audio content. The Macular Degeneration Foundation provides Navigators to selected local libraries in NSW and also to those people across Australia who can download content directly from their computers.

Digital Accessible Information System (DAISY):

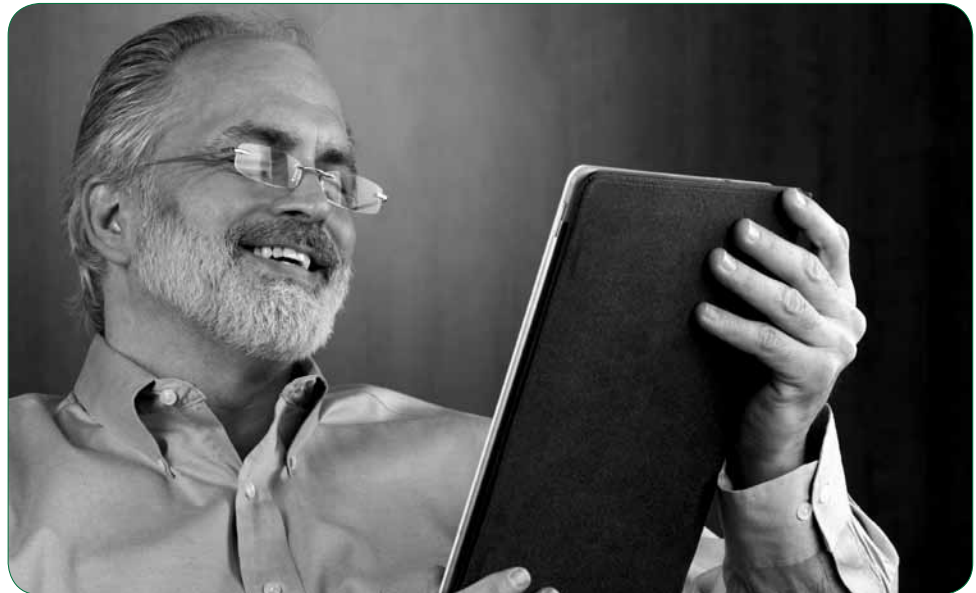
A way of preparing an audio book, usually in CD format, that allows the reader different options to play DAISY books on a computer or a digital playback device called a DAISY player.

Tablet computers:

A tablet computer is a wireless, portable computer with a touch screen. It is typically smaller than a notebook computer but larger than a smart phone. Like an e-book reader, it can hold hundreds of books which can be read either with enlarged text on the screen or in audio format. There are many brands of tablet computers available including iPad (from Apple) and Galaxy Tab (from Samsung).

E-book readers:

An e-book reader is a portable electronic device that is designed primarily for the purpose of reading digital books, newspapers and other publications. They have large storage capacities (many hundred books) and new content can be purchased via the internet. E-book readers may be used by reading the print off the screen (the font can be enlarged or contrast altered) or to listen to audio content. The main advantages of e-book readers over tablet computers are better readability of their screens (especially in bright sunlight) and longer battery life. This is achieved by using electronic paper technology to display content. There are many brands of e-book readers including Kindle (from Amazon) and Reader (from Sony).



Document readers

Document readers have the ability to read anything that is typed. Some use a flat bed scanner and look similar to a photocopier. Some use a digital camera that takes a picture of the page. Both types of devices use special software to interpret the printed information and convert it to speech. Document readers use an Australian synthesised voice that can be adjusted. Some are motion activated and know when you have turned a page. There are now also some document readers that can be connected to a computer and the reading materials converted to large print, audio or computer files.

Electronic magnifiers

Electronic magnifiers are excellent for high magnification reading and writing to support a wide range of daily living activities. They provide distortion free viewing, a large field of view, and a very large range of magnification levels (from 2 to 70 times).

You can lay reading material on the flat bed of the electronic magnifier, select the magnification level that suits your vision and your preferred contrast colour, or a negative mode to reduce glare and read small print, view photographs or other material.

Many electronic magnifiers can magnify objects such as food packaging, medicine containers, and hobby and craft materials as well as printed reading material. Electronic magnifiers can also enable writing activities such as signing a cheque and doing a crossword and some even enable users to view images at a distance and store the images so you can view it up close in more detail.

Electronic magnifiers also come in portable versions. They can be used when out and about, for example to see price tags or items on menus. Simply take a snap shot of the image and magnify it on the screen.

“When hand-held magnifiers stopped working for me I started using a portable electronic magnifier to enable me to read whilst out shopping and around the house, and found it extremely handy for everyday use”. Jean

Computers

A computer opens up doors for accessing information and many people who thought they could not use one are now avid users. Many low vision service providers have computer training programs and typing courses. There is a range of ways to assist those with low vision to use a computer including a large screen to increase the viewing area and ways to increase the size of items on the screen.



For those with low vision, simple fonts without decorative curves are easier to read (eg Arial or Calibri) and use upper and lower case instead of typing in all capitals. Also, when typing, try to add extra spacing between words and lines of text so the breakdown of sentences and paragraphs is clearer.

Computer modifications

To get the most out of using your computer consider some of the following modifications:

Large monitor to increase viewing area

- ✓ Large print keyboard or apply large font keyboard stickers
- ✓ Increase the cursor size (software is available for this)
- ✓ Learning to touch type and use keyboard commands if using the mouse or cursor is difficult
- ✓ Enlarge the toolbar display, change the colour contrast, improve the visibility of the mouse pointer (such modifications are built into Windows and Apple Mac computers)

Screen magnification

Screen magnification software increases the size of the image displayed on the screen so that only a portion of the original screen image can be seen at one time. You move the magnified window in order to view other parts of the original screen image using the mouse or keyboard.

Screen reader

Screen reading software translates the written word (text) to the spoken word (speech). Such software is designed for people who have very little usable vision.

Screen magnifier and reader

At times, a program with a magnifier AND speech may help:

- ✓ Typing Echo – hearing text as it is typed can be useful for new or slow typists
- ✓ With long documents or web pages, listening may be less tiring after a while
- ✓ Starting with both may simplify the transition to speech only if your vision deteriorates further

Program	Function	
	Screen magnifier	Screen reader
Guide Zoom Text MAGic	✓	✓
Magnifying Glass Pro Mouse Magnifier Utility Lightning	✓	
JAWS Windows-Eyes Thunder Dragon Dictate		✓

Popular screen magnifiers and readers

Guide: A program to use if you are not familiar with using the computer but want to learn to send and receive emails and browse the Internet. It is specifically designed for beginners, with an easy to use menu, built in magnification, colour contrast and text-to-speech capability.

Zoom Text: If you are using Windows operating systems and need to magnify the images on your computer, then Zoom Text can be used. It has 36 x magnification capabilities, enhanced mouse pointers and cursors, the ability to change background colours to increase contrast, and an optional text-to-speech output.

JAWS: This program works with PCs to provide access to operating systems, software applications and the Internet. JAWS has a text-to-speech application that vocalises everything on screen in an orderly way, and also supports a large number of Braille applications.

In addition, there are a number of free options

Microsoft Windows: Has a built-in narrator, and has third party software support allowing for greater access.
For more information: www.microsoft.com/enable

Apple Mac: Has built-in full-screen magnification, a voice over feature that converts text-to-speech, voice command capability and high-contrast settings.
For more information: www.apple.com/accessibility

Linux: Has an open source operating system that has accessibility features built in, including a screen reader, and a sophisticated on-screen keyboard.
The version Ubuntu is one of the versions that has all the accessibility features along with information on how to use them: help.ubuntu.com/community/Accessibility

NVDA: This Non-Visual Desktop Access (NVDA) provides Windows users with a free text-to-speech program.
It can be downloaded from: www.nvda-project.org

Web Anywhere: A text-to-speech tool that integrates into the web browser in virtually any operating system, providing free basic voice access to the internet.
The voice software can work on almost any computer with sound and will start almost immediately after download:
<http://webanywhere.cs.washington.edu/wa.php>

System Access to Go: An online screen reader, available from any Internet Explorer connected Windows Computer.
Log on to: <http://www.satogo.com>

Web browsers

Whether you use Windows or Mac, you access the Internet through a web browser. There are several web browsers available, the most popular being Internet Explorer and Mozilla Firefox. Each contains a variety of features which can help people with low vision who rely on the use of a keyboard or need to make a webpage easier to see.

Electronic note takers

An electronic note taker is basically an adapted personal data device. Users can do the same tasks that a typical personal data device allows including: taking notes, reading email, diary functions, calculator, playing music or digital books and data transfer to or from computers. Because the electronic note takers are adapted for persons who are blind or vision impaired, they have built-in speech output.

Netbooks and tablet personal computers

Netbooks and tablet personal computers are essentially just small computers. They are highly portable which means that those with low vision can readily access low vision technology when out and about.

Learning the computer

For those who are unfamiliar with computers but would like to learn, contact your low vision service provider to check if they have classes for vision impaired people. Local Computer Pals clubs for seniors which offer a fun and supportive environment may also be suitable for learning computer skills. Technical Aid to the Disabled (TAD) can help to provide affordable computer packages for people with a disability. Another excellent resource is Media Access Australia (MAA). MAA is a not-for-profit organisation devoted to increasing access to media for people with disabilities. Their website contains information on assistive technology: www.mediaaccess.org.au



Digital recorder (dictaphone)

A recorder can be useful to create shopping lists or a to-do list. Choose one that allows the creation of multiple lists. Newer recorders also have the ability to read aloud e-books, DAISY books and text files.

Audio description

Audio description is used in the performing arts (theatre, dance, and opera), media (TV, cinema, DVD) and also in art galleries and museums to verbally describe the image or action. Only selected performances for performing arts and cinema will include audio description. DVDs will be marked if they include an audio description feature. Audio-described music lessons are also available.

Radio

Digital radios provide the clearest sound output. There is now a wide range to choose from including those with large print, large buttons and high colour contrast.

A FINAL NOTE

Remember to maintain a sense of humour as you learn to use new aids and technology.

You will no doubt have your share of mishaps, as everyone does. Try to laugh at the situation as you learn and discover new pathways to independence.

Be patient, but persistent, and practise.

New technology can be frustrating at first, but once you learn how to use it, new worlds can open up for you.

Section 8:

Examples of Low Vision Aids and Technologies

Hand Held Optical



Starting point for majority of people with Low Vision. Highly portable. Typical progression involves using options of increasing strength as vision deteriorates. As magnification increases useful reading area decreases.

Item:	Many options	
Uses:	Object identification. Spot reading	
Used By:	Early stage vision loss	
Price:	\$50 - \$200 approx	Support Needs: Low
Power:	N/A	Training Needs: Low

Hand Held Illuminated



Provide improved usability in hand held optical magnifiers as source material is illuminated. Bright and soft light options are available. Battery powered units are portable though heavier than non-illuminated. Mains power restricts use away from home.

Item:	Many options	
Uses:	Object identification. Reading	
Used By:	Early stage vision loss	
Price:	\$100 - \$350 approx	Support Needs: Low
Power:	Batteries, Mains	Training Needs: Low

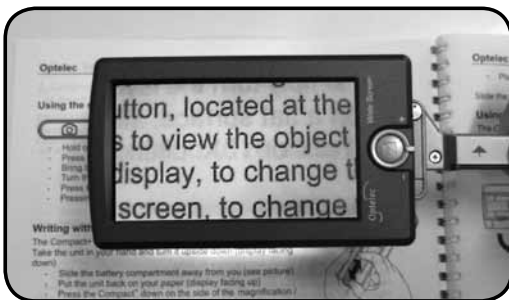
Illuminated Stand Magnifiers



Enables hands free magnification. Good adjunct for hand held magnifiers and used for crosswords and other writing activities. Often the next option after hand held magnifiers become less useful. Low magnification only.

Item:	Scribolux, Makrolux	
Uses:	Reading. Writing. Manipulate objects	
Used By:	Early stage vision loss	
Price:	\$200 - \$400 approx	Support Needs: Low
Power:	Batteries, Mains	Training Needs: Low

Hand Held Electronic



Electronic magnification provides distortion-free viewing plus the ability to change background and foreground colours (glare reduction).

Item:	Compact+, Compact Mini, Looky	
Uses:	Object identification. Reading	
Used By:	Post hand held optical devices	
Price:	\$500 - \$1100 approx	Support Needs: Low
Power:	Batteries, Rechargeable batteries	Training Needs: Medium

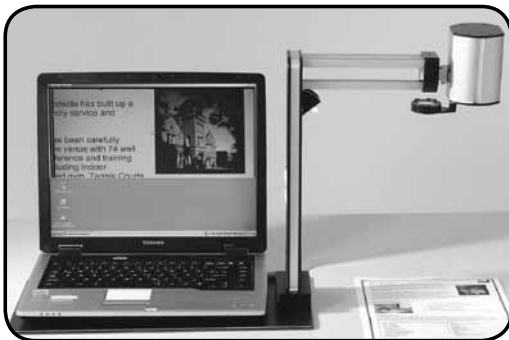
Hand Held Electronic Distance



The ability to capture distant images and magnify greatly assists mobility. Also used in education for capturing whiteboards. Able to scan whole page and enable scrolling around page after image captured.

Item:	FarView		
Uses:	Distance Viewing. Whole Page Scanning		
Used By:	Students, Active Seniors		
Price:	\$4,000 approx	Support Needs:	Medium
Power:	Rechargeable batteries	Training Needs:	High

Computer Connectable - Optical Camera



Camera on flexible arm. High flexibility for near and distance viewing and very high magnification level. Images can be captured and stored on PC for later use. Magnified and enhanced images are displayed on the computer screen.

Item:	ClearNote, ClearNote Plus		
Uses:	Study, craftwork, distance viewing		
Used By:	Students, seniors with PC		
Price:	\$4,000 - \$5,000 approx	Support Needs:	Low
Power:	USB, Batteries	Training Needs:	Medium

Computer Connectable - Digital Camera



Use of digital camera enables text to be captured quickly, and converted to large print and speech on PC. Words are highlighted as they are spoken. Speech files can be saved and used on MP3 type devices.

Item: Pearl, Zoom-Ex, Zoom-Twix

Uses: Magnify text and convert to speech

Used By: Students, seniors with PC

Price: \$2,000 - \$5,000 approx

Support Needs: Medium

Power: USB

Training Needs: High

Desktop Electronic Magnifier



By far the most commonly used aid for reading, writing, and handicrafts. Various options available for screen sizes, reading modes, non-reflective screens and high definition. Greatly enhances independent living skills.

Item: ClearView, ViVA

Uses: Low Vision workhorse

Used By: Everyone with Low Vision

Price: \$3,000 - \$6,000 approx

Support Needs: Low

Power: Mains

Training Needs: Low

Desktop Electronic Magnifier PC



Offers the same basic design and functionality as regular desktop units with additional flexibility of connecting to a PC (use one screen for both). Split screen options facilitate study and employment opportunities.

Item: ClearView PC

Uses: Home, office, study

Used By: Everyone with Low Vision

Price: \$4,000 approx

Support Needs: Low

Power: Mains

Training Needs: Medium

Magnification Software for PC



Provides access to computing and Internet for all low vision users. Provides functionality well above that of standard accessibility features of PCs.

Item: ZoomText, MAGic, iZoom

Uses: Access to PC

Used By: Everyone with Low Vision

Price: Free - \$700 approx

Support Needs: Medium

Power: N/A

Training Needs: High

Section 9: National Service Directory Low Vision Service Providers

Australian Capital Territory

Canberra Blind Society

Phone: (02) 6247 4580

Address: Room G06, Griffin Centre
Genge Street, Canberra City ACT 2601

Website: www.users.tpg.com.au/canblind

Email: canblind@tpg.com.au

Guide Dogs NSW/ACT

Phone: (02) 6285 2988

Address: Suite 4, Mungga-Iri House
18 Napier Close, Deakin ACT 2600

Website: www.guidedogs.com.au

Email: ACTOffice@guidedogs.com.au

Vision Australia

Phone: 1300 847 466

Address: Floor 2, 22 East Row
Canberra ACT 2601

Website: www.visionaustralia.org

Email: info@visionaustralia.org

New South Wales

Guide Dogs NSW/ACT

Phone: 1800 804 805

Address: 2-4 Thomas Street
Chatswood NSW 2067

Website: www.guidedogs.com.au

Vision Australia

Phone: 1300 847 466

Address: 4 Mitchell Street, Enfield NSW 2136

Website: www.visionaustralia.org

Email: info@visionaustralia.org

University of NSW School of Optometry

Phone: (02) 9385 4624

Address: Level 1 Rupert Myers Building (North Wing)

School of Optometry and Vision Science

Gate 14, Barker Street

Kensington NSW 2033

Website: www.optom.unsw.edu.au

Email: optomclinic@unsw.edu.au

Queensland

Guide Dogs Queensland

Phone: 1800 810 122

Address: 1978 Gympie Road

Bald Hills QLD 4036

Website: www.guidedogsqld.com.au

Queensland Blind Association

Phone: (07) 3848 8888

Address: 26 Warwick Street

Annerley QLD 4103

Website: www.qba.asn.au

Email: qba@qba.asn.au

Vision Australia

Phone: 1300 847 466

Address: 373 Old Cleveland Road

Coorparoo QLD 4151

Website: www.visionaustralia.org

Email: info@visionaustralia.org

South Australia

The Royal Society for the Blind (RSB) SA

Phone: (08) 8232 4777

Address: Knapman House
230 Pirie Street
Adelaide SA 5000

Website: www.rsb.org.au

Email: mail@rsb.org.au

Guide Dogs Association of SA / NT

Phone: (08) 8203 8333

Address: 251 Morphett Street
Adelaide SA 5000

Website: www.guidedogs.org.au

Email: info@guidedogs.org.au

Tasmania

Royal Guide Dogs Tasmania

Phone: (03) 6232 1222

Address: 164 Elizabeth Street
Hobart TAS 7000

Website: www.guidedogstas.com.au

Email: admin@guidedogstas.com.au

Lions Low Vision Clinic

Phone: (03) 6222 8310

Address: Eye Clinic, RHH
Cnr Argyle & Liverpool Streets
Hobart TAS 7000

Email: llvc@dhhs.tas.gov.au

Victoria

Guide Dogs Victoria

Phone: (03) 9854 4444

Address: Chandler Highway
Kew VIC 3101

Website: www.guidedogsvictoria.com.au

Email: referrals@guidedogsvictoria.com.au

Vision Australia

Phone: 1300 847 466

Address: 454 Glenferrie Road
Kooyong VIC 3144

Website: www.visionaustralia.org

Email: info@visionaustralia.org

Western Australia

Association for the Blind of WA

Phone: (08) 9311 8202

Address: 61 Kitchener Avenue
Victoria Park WA 6100

Website: www.guidedogswa.com.au

Northern Territory

Guide Dogs Association of SA/NT

Phone: (08) 8995 2222

Address: Shop 4, 5 Keith Lane
Fannie Bay NT 0820

Website: www.guidedogs.org.au

Email: info@guidedogs.org.au

Helpful Information

Australian Senior Computer Club Association encourages seniors to take advantage of modern information technology to meet their individual needs and to provide further challenges, to become computer literate at their own pace, in a friendly non-threatening environment and to have fun whilst doing so.

Address: Level B, 280 Pitt Street
Sydney NSW 2000

Phone: (02) 9286 3871

Website: www.ascca.org.au

Email: office@ascca.org.au

Media Access Australia is an independent not-for-profit organisation devoted to increasing access to media for people with disabilities.

Address: Suite 4.08, 22-36 Mountain Street
Ultimo NSW 2007

Phone: (02) 9212 6242

Website: www.mediaaccess.org.au

Email: info@mediaaccess.org.au

Private Providers of Low Vision Aids and Technology

Quantum is a leading Australian distributor of technology for people who have a print disability (people who are blind, vision impaired or have a learning disability). They have over two decades of experience in the field and are a privately owned Australian company. Quantum has been an ongoing partner of the Macular Degeneration Foundation since its formation in 2001.

NSW: (02) 9479 3100

QLD: (07) 3831 4894

VIC: (03) 9545 4100

Email: info@quantumrlv.com.au

Web: www.quantumrlv.com.au

HumanWare is a global company with marketing, production and research and development operations in Canada and established sales offices in other countries including Australia.

NSW: (02) 9686 2600

Email: au.sales@humanware.com

Web: www.humanware.com

Audio-Read is an Australian company that has developed the Audio Navigator, a user friendly digital audio player for recreational audio reading.

Phone: (02) 9911 6614

Email: info@audio-read.com.au

Web: www.audio-read.com.au

Australian Independence Products

Phone: (03) 9946 5459

Email: gaethjo@micromarvellous.com.au

Web: www.ozindproducts.com.au

Optek Systems

Phone: (02) 9680 0600

Email: opteksystems@bigpond.com

Web: www.opteksystems.com.au

Pacific Vision Equipment & Services Pty Ltd

VIC: 1800 859 594

NSW/ACT: 1800 987 959

QLD: 0424 266 889

Email: Office@pacificvision.com.au

Web: www.lowvision.com.au

Redbank Instruments

Phone: 1300 788 239

Email: sales@redbank.net.au

Web: www.redbank.net.au

Spectronics

Phone: (07) 3808 6833

Email: mail@spectronicsinoz.com

Web: www.spectronicsinoz.com

VisiTech Magnifiers

Email: sgriffin_visitech@bigpond.com

Web: www.enhancedvision.com

Magnifier.com.au

Phone: 1300 767 994

Email: info@u-shop.com.au

Web: www.magnifier.com.au

Apple

Email: accessibility@apple.com

Web: www.apple.com/accessibility

IBM – Human Ability & Accessibility Centre

Web: <http://www-03.ibm.com/able/>

Microsoft

Web: www.microsoft.com/enable/guides/vision.aspx

NVDA Software

Web: www.nvda-project.org

Desktop Zoom

Web: <http://users.telenet.be/littlegems/MySoft/Index.html>

WebAnywhere:

Web: <http://webanywhere.cs.washington.edu/wa.php>

System Access:

Web: <http://www.satogo.com>

The Macular Degeneration Foundation

The Macular Degeneration Foundation aims to reduce the incidence and impact of Macular Degeneration in Australia.

The key objectives of the Foundation are education, awareness, research, support services and representation.

The Foundation is a charity which relies on the support of government, business and the community to help continue our vital work.

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Guide Dogs NSW/ACT 2-4 Thomas Street, Chatswood, NSW 2067, Australia

Media Access Australia Suite 4.08, 22-36 Mountain Street, Ultimo, NSW 2007, Australia

Vision Australia PO Box 176, Burwood, NSW 1805, Australia

Lighthouse International The Sol and Lillian Building, 111 East 59th Street, New York 10022-120, USA

Royal National Institute for the Blind 105 Judd Street, London WC1H 9NE, UK

American Foundation for the Blind 2 Penn Plaza, Suite 1102, New York, NY 10121, USA

Low Vision Aids & Technology

A GUIDE

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Macular Degeneration Foundation
Suite 302, Level 3, 447 Kent Street
Sydney NSW Australia 2000

Helpline: 1800 111 709

Email: info@mdfoundation.com.au

Website: www.mdfoundation.com.au

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