

Low Vision and Blindness

Review of the Literature

Background

The 2004 CERA Clear Insight report (35) concludes that eye health is a major issue in Australia and it will become more of an issue as the population ages. It is estimated that ~100,000 Queenslanders are visually impaired in both eyes and ~10,000 are legally blind*; and it is predicted that by 2024 this number will almost double. It is also estimated that 75% of vision loss is preventable or treatable and it is, therefore, essential that improvements in eye care are made across the State. Eye care is not only proven, it is low risk, highly successful and a cost-effective intervention.

**These figures are extrapolated from the CERA Clear Insight 2004 report (35), the population of Australia being 21,007,310 (July 2008) and Queensland 4,253,200 (44).*

Definition of Vision Impairment

The World Health Organisation (WHO) classifies low vision as “visual acuity of less than 6/18, but equal or better than 3/60 (a visual acuity of 6/60 is usually the reference used in Australia ()), or corresponding visual field loss to less than 20° in the better eye with the best possible correction. Blindness is defined as visual acuity of less than 3/60 or corresponding visual field loss to less than 10°, in the better eye with the best possible correction. The term visual impairment includes low vision as well as blindness”. The WHO also reports an increase in vision impairment due to a longer life span (34).

To put these figures in context; in 1992, Bergman and Jjostrand (22) reported that watching TV requires a visual acuity of 6/12-6/15 and in the US study of Leinhaas (21) reported a similar visual acuity was required for daily living. In two Australian reports, researchers found that vision is significantly impaired at a visual field of < 74° (19) and in a separate study three times more vision impairment was caused by visual field loss than visual acuity (18).

Causes

The main five causes of visual impairment are:

- Age-related macular degeneration (AMD), causing vision impairment in 1 in 7 people over 50 ‘ and loss of vision in 1 in 4 people over the age of 90. AMD is the major cause of blindness in Australia, and if caught early enough the ‘wet form’ can be treated.
- Cataract –cataracts develop as a consequence of ageing – replacement lens are a very effective treatment (~\$2,000 per eye)
- Diabetic retinopathy – eye exams every two years can enable practitioners to prevent or control vision loss
- Glaucoma – some glaucoma can be managed with drugs or surgery if detected early enough.

- Refractive error, half of the people who seek help due to vision loss can have improvement with the correct spectacles.

Number of Australians with visual impairment CERA 2004

	Visual impairment	Blindness
AMD	48,319	24,204
Glaucoma	13,741	6,901
Cataract	68,657	6,111
Diabetic Retinopathy	7,758	4,908
Refractive Error	296,742	1,882

Indigenous groups have a higher level (estimated at 10 times higher) of vision loss due to higher rates of diabetes, eye injury and the need for cataract replacement lenses (35).

Costs

In 2004, the total cost of vision disorder in Australia was estimated to be \$9.85 billion. The direct costs for eye health are greater than those for coronary heart disease, stroke, arthritis and depression, around 1.8 billion dollars is spent in Australia each year (35).

Quality of Life issues

Vision impairment has been linked to:

- double the rate of falls,
- four to eight times the incidence of hip fractures,
- admittance to a nursing home three years earlier, and
- the prevalence of vision loss trebles per decade over 40 (35).

Recent surveys in 2006 and in 2008 have tried to assess the perceived physical and emotional effects associated with vision loss.

In 2006 Pfizer and Vision 2020 commissioned a survey of 1,405 Australians (27) and reported that:

- 67% of Australians said independence would be an aspect of life they would miss if they lost their vision, followed by seeing family and friends and reading.
- 75% felt employment would be the most difficult aspect of life for someone with low vision,
- 66% felt travel on, public transport would be an issue, and
- 50% that cooking and education would be a challenge.

The 2008 news poll commissioned by Vision 2020 (24), a survey of 1,200 Australians including 200 Queenslanders, suggests that:

- 34% of Queenslanders are most afraid of going blind, this is second only to fear of cancer

- 80% believe that loss of sight will lead to a loss of quality of life
- 36% also did not believe that blindness or loss of vision as you grow older is mostly preventable.
- 22% did not know that early stages of eye disease can only be detected through an eye exam
- 64% did not know that there are no symptoms to indicate early stages of eye disease
- 33% mistakenly believed that the age to get eye health tested regularly was when you notice a change in the eyes.

These results suggest it is important to educate the Queensland population about the benefits of eye health checks and to encourage the community to seek regular eye check-ups when necessary. Early referral of those with vision loss to low vision services can also be beneficial in terms of maintaining independence (see below).

Low vision services

Providers

Low vision services across Queensland are provided mainly by not-for-profit organisations such as Vision Australia and Guide Dogs Queensland. These organisations offer a variety of expert services and resources (36-42); information is also available on the following websites www.visionaustralia.org, www.vision2020australia.org.au www.lowvision.optomsgld.com and www.guidedogsgld.com.au

Vision Australia (VA) provide some services in regional Queensland: VA have offices in Southport, Maroochydore, Cairns and Darwin and they list Queensland Peer Support Groups for South East Queensland, Wide Bay Burnett, Gladstone region, Rockhampton, Mackay Whitsunday region, Townsville, Cairns and Far North Queensland, South West and Darling Downs. There were no groups listed for Mount Isa, the North West region and the central West, and the information listed is from 2005.

Guidedogs Queensland has branches at the Gold Coast, Toowoomba, Maroochydore, Bundaberg, Rockhampton, Townsville and Cairns. The breeding and training centre is based in Bald Hills Brisbane. The association provides the following services Statewide:

- Guide dog mobility
- Long cane training
- Electronic travel aid training
- Special education programs
- Adaptive technology
- School holiday camps
- Young people's programs
- Counselling retreats

- Low vision support groups
 - Low vision clinics
 - Community and Professional workshops and mobility expos
- Guide Dogs Queensland also run two low vision clinics, in Toowoomba and Townsville, and the Brisbane and Gold Coast offices run outreach programs visiting clients in their own homes. Assessment units, including orientation and mobility and counselling sessions, are run weekly in Brisbane and Maroochydore with plans to provide services in all the other offices in the near future. All services are free to residents of Queensland, but after assessment most are delivered through residential programs at the client residence in Brisbane.

Reports on access to Low Vision Services

A Queensland report of the experiences of three vision-impaired patients at the QUT vision rehabilitation and low vision centre, highlighted the need for a multidisciplinary approach to low vision services (15). The study involved optometrists, O&M instructors, Occupational Therapists and other health professionals to achieve vision goals, prescribe low vision devices, and to provide mobility training, occupational therapy and counselling for daily tasks. The results were very encouraging and patients benefited greatly from this multidisciplinary approach.

Unfortunately a patient survey conducted in Victoria in 2003 (14) found that only 5-10% of those eligible for low vision services actually use them. In this study the researchers endeavoured to investigate the reasons why, and a number of consultation groups were established with visually impaired participants who had little experience of agencies. They found that, 28% of participants had not been referred to low vision services (even though 25% had moderate vision loss and 3% severe) and 33% of those who were experiencing difficulties related to vision were still not referred.

Participants in the study found that barriers to accessing low vision services included:

- Access and transport to and from the low vision agencies
- Understanding what low vision services were available
- Eye care professionals and low vision organisations lack of information and the projection of the wrong image by low vision agencies
- Lack of understanding of the term 'low vision'.

The 1996 report by Keefe estimated that only 3% of people suffering low vision actually received low vision services and in 2005 another Taylor reported 10-15% of those eligible accessed low vision agencies (12). In other countries similar figures were reported: 11% in Canada and in the US less than 15% of those eligible sought low vision

services. This is a small number considering the benefits that can be reaped by accessing low vision services earlier rather than later. The Pfizer Australian Health Report of 2006 (27) states that, "Low vision services improve an individual's capacity to lead a full life and participate in their community. Services that assist people to make necessary adjustments to their day-to-day life may include provision of magnifiers, adaptive technologies, mobility training, minor changes to the home environment and better use of lighting."

A 2008 paper (1), "Predicting the need of patients for low vision or rehabilitation services" also recommended a more holistic approach to patient referral. The researchers identify that visual acuity is an important indicator for referral to low vision services, but clinicians also need to consider patient's dependence and also the impact of co-morbidities. Patients with mobility problems, due to vision loss, are likely to benefit from orientation and mobility training etc. Again the study reported that rehabilitation can potentially benefit 90% of people with low vision.

Data on referral pathways

Ophthalmologists

In 1996 an Australian report on referrals by ophthalmologists to low vision services (20) found that 11% of ophthalmology patients have low vision (< 6/21). In this study all ophthalmologists referred at least some patients to low vision services, however, it was noted that 11% rarely referred. The mean visual acuity for referral was 6/27, and the majority of ophthalmologists would also refer patients with a visual field, between 10° to 30°. Unfortunately, referrals to rehabilitation services or peer report groups was less, as 15% of ophthalmologists never referred to rehabilitation services and 27% never referred patients to peer support groups. (Feedback on referrals from the low vision agencies was generally good 75% of the time).

In conclusion, this study found that many patients were not referred until they were almost legally blind. The researchers went on to recommend better communication between ophthalmologists and low vision agencies, and better knowledge and information was required from low vision agencies for ophthalmologists to give to patients.

Optometrists

In 1996 Lovie-Kitchin (19) reported that 4.7% patients seen by Australian optometrists have low vision (<6/21). Encouragingly, almost all (90.3 %) optometrists referred some patients for low vision services, but only 28.3% reported referring often and always. Unfortunately, 19% reported rarely or never referring low vision patients to low vision services and 11.8% did not know whether services were provided in their area. The mean visual acuity for referral was 6/27, but 19% did not refer until <6/36 (almost legally blind). The majority of optometrists also referred at visual field ~15°, but 10.5% referred

at 10° or less and other functional criteria were also used. Unfortunately, the feedback to optometrists who did refer from low vision agencies appeared to be poor, with 39.4% receiving written reports less than 25% of the time.

Again it appeared that in the 1990s optometrists were referring patients when their vision had deteriorated (visual acuity at 6/21 – 6/36) and it was noted that this should have been earlier. In 2005, a report by Taylor et al summarised a number of studies that concluded that visual acuity less than 6/12 is associated **with a significant reduction in the quality and length of life and in the capacity of individuals for healthy independent ageing** (12).

It was also concluded that some optometrists assume ophthalmologists will refer and there was a need for increased communication. **Victorian optometrists rated low vision services more available and equitable, than NSW and Qld - the larger states.**

Primary Health Care Practitioners (PHCP)

In 2008, a retrospective study (2) highlighted the problems in delayed referrals from primary health care practitioners to ophthalmologists. Misdiagnosis and the consequence in delayed referral for patients with acute eye conditions led to preventable adverse outcomes in a significant number of cases. In the study, 123/1062 Brisbane patients suffered a preventable adverse outcome resulting from misdiagnosis and/or mistreatment of an acute eye condition. In 78% of cases the PHCP was a GP, 17% an emergency department practitioner and 5% an optometrist. The study recommended earlier referral of patients with particular acute eye conditions to ophthalmologists, and noted GPs do not have the time or equipment to accurately diagnose the underlying condition. The paper again highlights the need for increased communication between eye health professionals.

Referral pathways overseas

Many of the issues fundamental to Australia are also relevant overseas. In a report on low vision services in Canada (9), referrals to low vision agencies (majority to Canadian Institute for the Blind) tended to come from ophthalmologists and optometrists. Almost all ophthalmologists and 90% of optometrists stated that they referred patients to vision rehabilitation services. As in Australia, referrals to low vision services tended to be at the low vision end of visual acuity. In Canada, eye health professionals were reported to refer at visual acuity levels of 20/70-20/199, where a visual acuity of less than 20/200 is considered legally blind). In this study it was pointed out that rehabilitation was likely to be more cost effective before vision impairment progressed.

In this study, a number of clients from the Canadian National Institute for the Blind (CNIB) were also surveyed. The majority waited until vision loss was significantly affecting everyday activities, or they experienced a number of episodes of difficulty, before seeking help. The following issues were raised: In Canada the rising costs of vision aids is an issue for seniors, there is a lack

of information for and awareness in seniors of services available and many seniors in Canada live in rural areas and many services and eye health professionals are based in an urban setting.

Reports in both Canada (9) and Australia (12) also state that some patients are told by eye health professionals that there is “nothing more that can be done”, and patients are left without a referral to a low vision service, rehabilitation organisation or peer support group. This again demonstrates that ophthalmologists are unaware of the low vision, rehabilitation services in their area.

A number of countries have identified the need for improved referral pathways to direct the visually impaired to low vision and rehabilitation services. The Dutch Ophthalmic society has developed evidence-based guidelines for the referral of visually impaired persons to low vision services - guidelines that recommend visually impaired adults should be referred whenever possible, to access low vision aids (and rehabilitation if required) (13). In the USA, it was reported in 2005 that a rehabilitation medicine model for low vision services was required and an evidence base from which to formulate the guidelines was proposed (11). In addition many States in Canada are addressing the need for low vision service models (4-9).

In the United States, the United States Department of Health and Human Services have been working to promote eye health awareness across the country. In 2005, ‘independence through low vision rehabilitation’ was promoted in a healthy vision month in May 2005. There is now a program with the National Eye Health Education Program (NEHEP) to increase access to vision rehabilitation services and technologies for people with visual impairment (6). The NEHEP reported that ophthalmologists or low vision clinics would be best placed to provide information about low vision (33). This study also made interesting observations about outreach programs, outlining current successful community-based outreach programs. The report also mentioned the necessary involvement of tribal community and tribal leaders as essential for successful education efforts in American Indian and Alaskan native populations. These are issues which may be relevant to outreach in aboriginal and islander communities in Queensland.

The American Academy of Ophthalmology and the professional organisations of optometrists and other eye health professionals are also working to ‘improve professional awareness of the need to evaluate functional manifestations of ocular disease and increase access and referral to effective models of vision rehabilitation’. Medicare now fund rehabilitation services however, refraction provision of spectacles and low vision devices and other adaptive technology are not funded (6). It has been reported that although vision services in the States have improved there are still issues with timely referrals, there is also a shortage of funds, resources and staff to serve all of those with visual impairment (6).

An initiative of the American Academy of Ophthalmologists called Smart Sight, was launched in 2005 and is being looked at as a template for vision

rehabilitation services in North America and Canada (8). The initiative was supported by mailing out a patient handout to all members of the Academy, placing information on the Academy website, and providing a directory of nationwide low vision services (8).

In Canada, the experiences of Alberta and Saskatchewan (where 60% of the population are scattered in regional and rural areas, highest percentage of seniors (5)) in Canada were reviewed in 2006. In Saskatchewan 30-50 patients are seen per month in each district, CNIB forms are completed by GP, ophthalmologist or optometrist and forwarded to central Winnipeg where clients are offered information on low vision aids by CNIB or may visit the low vision rehabilitation clinic in Saskatoon – waiting list 3-4 months. Medicare covers assessments – visual aids can be provided free of charge Saskatchewan Aids to independent Living (SAIL) program CNIB funded? In Canada they would like all low vision clients to visit a low vision rehabilitation clinic, but suitable funding is still required (5). In Alberta (4) they are developing their own coordinated and collaborative system - to deliver medical rehabilitation and counselling services. In the UK (4) the impact of interdisciplinary low vision services has been reported to have a positive effect on vision and a positive effect on 'Quality Of Life', but service improvements were needed in emotional well-being of patients. In Wales a study that provided community-based low vision services through optometrists was shown to cut waiting times faced by rural patients and made services more accessible and equitable.

National Eye Health Initiative and Government Initiatives

In 2005, the National Eye Health Initiative/Framework outlined a strategy and implementation plan for eye health services across Australia (29) and reported that the barriers to low vision services include:

- Lack of awareness about the availability and services provided
- Problem with access for regional areas
- A need for awareness of rehabilitation and peer support groups required
- Need referral pathways to include low vision services
- Need to involve visually impaired people via consultation and in self management programs?

A 2009-12 strategy has just been released (23) and a National Low Vision and Rehabilitation Strategy is currently being formulated by Vision 2020 Australia.

Low vision and rehabilitation services are also linked to chronic diseases, as many chronic diseases cause vision loss. In 2020 it is predicted that 75% of all deaths will be linked to chronic disease and chronic disease will be the leading cause of disability requiring high support service usage (32). The Community and Disability Services are now mapping current provision and funding for low vision and rehabilitation services across all states and territories, to develop a complimentary strategy to the National Framework.

It was reported at the 2006 Community and Disability Services Ministers conference on low vision and rehabilitation services that “low vision and rehabilitation services across Australia are disparate, fragmented and inequitable with a number of essential programs provided by charitable organisations (26).” Unfortunately, in the Queensland Strategy for Chronic Diseases 2005-2015, the strategy focuses on the major causes of preventable death, but vision loss is not addressed (32). Implementation plans however, do include a need for campaigns to reduce smoking and improve nutrition and physical exercise, which would hopefully have a positive impact on reducing vision loss due to the occurrence of smoking-related macular degeneration and diet induced diabetic retinopathy (32).

Funding

In Queensland the majority of eye checks by optometrists are bulk billed through Medicare and the Queensland Government supports the Free Spectacle Supply Scheme at a cost of \$6 million per annum (47). In terms of outreach services in remote and very remote Queensland, the federal government also provides funding for the visiting optometrists scheme (VOS), which provides an outreach optometric service to remote and very remote communities (45) and the Medical Specialist Outreach Assistance Program (MSOAP)(46). Overwhelming anecdotal evidence suggests that these sources of funding are vital to the provision of outreach services.

Many of the issues relevant to patients accessing low vision and rehabilitation services have also been identified as areas for improvement in the Commonwealth State and Territory Disability Agreement 2006.

- Access
- Government links
- Family and carer support?
- Long-term strategies
- Management of demand
- Improved accountability

Future Developments

A number of NEHI funded projects (48) are looking at pilot studies to address eye health and some are looking to implement eye checks or to form collaborations/associations with other health professionals to include eye checks in their routine health monitoring. Examples include:

- the STEPS program (NSW)
- the Healthy Kids check
- a trial and evaluation of innovative methods of eye health education: Association for the Blind of Western Australia
- A pilot project to determine the effectiveness of childhood vision screening for Australia: Murdoch Children’s Research Institute Melbourne
- A pilot project to improve the coordination of eye health and vision care services for older communities across South Australia: Guide Dogs Association of South Australia and Northern Territory

- Improving the coordination and quality of eye health and vision care services for the Top End: Fred Hollows Foundation
- Providing a series of workshops for GPs, practice nurses and Aboriginal health workers to enhance their eye care skills and improve the triage of eye incidents and referral protocols: the Limestone Division of General Practice
- A pilot education program for general practitioners focussing on developing skills in early detection and management of macular degeneration: Macular Degeneration Foundation
- A method to reduce Glaucoma blindness by improving early detection of undiagnosed glaucoma in high risk individuals: Royal Hobart Hospital.

Many countries and States with a widely spread population are also investigating the use of tele-medicine. Tele-ophthalmology services have been trialled in WA and appear to have a marked impact on eye care health (17, 10) - though the numbers of patients in each study is small.

Future issues of an ageing population

In Canadian studies (7, 9) it was reported that it can take 3-6 months before the first consultation to a low vision clinics or rehabilitation centre and the services are overloaded. It was also concluded that people with vision impairment cannot rely on the public support for low vision devices and the demand will grow as the baby boomers approach 60. Skilled eye health professionals were not fully compensated for low vision services, and therefore did not provide these services. It was also predicted that the not-for-profit agencies such as CNIB, would not have resources or staff to cope with increased demand.

Funding frameworks in UK and Canada (and Australia), do not provide for rehabilitation services provision of low vision devices so this is a growing problem. These are all potential issues that will face Queensland as the population ages.

Conclusions

The aim of the QVI Inc project to look at referral pathways and knowledge of low vision services in regional, rural and remote Queensland will address many of the issues raised in the literature just reviewed. The papers on referral pathways for ophthalmologists and optometrists are from the 1990s (19, 20) and do not relate specifically to the Queensland population now. They do however pinpoint a need for earlier referral of visually impaired to low vision and rehabilitation services and a need for increased communication between eye health professionals. The literature review also pinpoints a lack of communication between eye health professionals and low vision services and rehabilitation services. Anecdotal evidence suggests this is still the case.

Many of these issues identified in the literature review as areas of concern are identified as key areas for action in the National Framework for Action to promote eye health and prevent avoidable blindness and vision loss (29).

- Health care providers, specialist eye health and generalist medical, nursing and allied health workers, have many opportunities to inform and advise the public about eye health in their day-to-day work with clients, especially high risk groups with chronic disease.
- There are many opportunities in Australia to address modifiable risk factors for blindness and vision loss. Maximum gains in prevention are likely to be achieved through establishing strong linkages to relevant national public health strategies that impact on eye health and addressing common causes and risk factors for chronic disease.
- Improved access to eye health services requires an adequate workforce supply, access for rural and remote communities, public awareness, cultural accessibility, affordability, access to cataract surgery and research.
- Improving systems and quality of care will require system integration (including development of referral pathways that include referrals to vision rehabilitation or low vision services that are available in the community) and a consumer focus
- And an improved evidence base.

This study aims to provide an up-to-date evidence base to be used as a basis for improvement of referral pathways, identify where information about low vision and rehabilitation services and peer support groups needs to be provided and gaps and duplications in services. These objectives will hopefully identify ways to improve early identification of eye conditions and referral of vision impaired patients. As the literature review reveals, the overwhelming experience in Australia and overseas suggests that information regarding low vision services and rehabilitation services needs to be better communicated between eye health professionals, vision agencies and the general public. QVI Inc's development of an accessible website, for dissemination of information about low vision organisations- especially those providing regional and outreach services, will meet this need. It will also be an excellent vehicle to promote awareness eye health.

New models/guidelines for better low vision and vision rehabilitation services are being developed in many of the developed countries to address the needs of an ageing population globally. QVI's project objectives aim to acknowledge existing and well-managed models in Queensland, for which there is currently very little information. And identify ways to address issues of heavy practice demands, overloading of facilities and ways to encourage new partnerships to involve other eye health professionals in identification of vision issues.

Overall the project will provide a substantial body of up-to-date knowledge that can be used as the evidence base to develop a detailed strategy to improve referral practices and knowledge of low vision services in Queensland.

References

1. O'Connor PM, Lamoureux EL and Keefe JE
Predicting the need for low vision rehabilitation
Br. J. Ophthal. (2008) 92: 252-255.
2. Statham MO, Sharma A and Pane AR
Misdiagnosis of acute eye diseases by primary health care providers: incidence and implications
Med. J. Aust. 7:402-404
3. Chiang PPC, O'Connor PM, Keeffe JE
Low vision service provision: a global perspective
Expert Review of Ophthalmology (2007), 2(5): 861-874.
4. Harper K, McFee C, MacDonald I and Jones M
Low vision service models in Alberta: innovation, collaboration and future opportunities
Can J Ophthalmol (2006) 41:373-377.
5. Gilmour GR
Low vision rehabilitation services: the Saskatchewan experience
Can J Ophthalmol (2006) 41: 370-372.
6. Gormezano SR and Kaminski JE
Low vision rehabilitation services in Michigan viewed against the national backdrop
Can J Ophthalmol (2006) 41:378-388.
7. Robillard N and Overbury O
Quebec model for low vision rehabilitation
Can J Ophthalmol (2006) 41 362-366.
8. Jackson ML
Vision rehabilitation for Canadians with less than 20/40 acuity: the SmartSight model
Can J Ophthalmol (2006) 41: 355-361.
9. Gold D, Zuvella B and Hodge WG
Perspectives on low vision service in Canada: a pilot study
Canadian Journal of Ophthalmology (2006) 41(3): 348-354.
10. Kumar S, Yohgesan K, Hudson B, Tay-Kearney ML and Constable IJ
Emergency eye care in rural Australia: role of the internet
Eye (2006) 20(12):1342-1344.
11. Stelmack J

Emergence of a rehabilitation medicine model for low vision service delivery, policy and funding

Optometry (2005) 76(5):318-326.

12. Taylor HR, Keefe JE, Vu HTV, Wang JJ, Rchtchina E, Pezzullo ML and Mitchell P
Vision Loss in Australia
Med. J. Australia 2005 182 (11):565-568.
13. De Boer MR, Langelaan M, Jansonius NM and Van Rens GH
Evidence based guidelines on the referral of visually impaired persons to low vision services
Eur J Ophthalmol. (2005) 15(3):400-406.
14. Pollard TL, Simpson JA, Ecosse L, Lamoureux EL and Keefe JE
Barriers to accessing low vision services
Ophthalmic Physiol. Opt. (2003) 23(4): 321-327.
15. Lovie-Kitchin JE, Devereaux J, Wells S and Sculpher KA
Multi-disciplinary low vision care
Clinical and Experimental Optometry (2001) 84:3.
16. McCarthy CA, Taylor KI, McKay R, Keefe JE
Working Group on Evaluation of NHMRC Diabetic Retinopathy guidelines
Clin. Experiment Ophthalmol. (2001) 29(2):52-58.
17. Bowater M
The experience of a rural practitioner using videoconferencing for telemedicine
J. Telemed. Telecare (2001) 7 (suppl 2):24-25.
18. Taylor HR, Livingston PM, Stanislavsky YL and McCarthy CA
Visual impairment in Australia: distance visual acuity, near vision and visual field findings of the Melbourne Visual Impairment Project
Am J Ophthal (1997) 123 (3): 328-337.
19. Lovie-Kitchin JE, Keefe JE and Taylor HR
Referral to low vision services by optometrists
Clinical and Experimental Optometry (1996) 79:6.
20. Keefe JE, Lovie-Kitchin JE and Taylor HR
Referral to low vision services by ophthalmologists
Aust NZ Ophthalmol. (1996) 24(3): 207-214.
21. Leinhaas M and Massof R
Opinions of ophthalmologists on the relation of disability to visual acuity
Invest Ophthalmol Vis Science (1994) 35:1553.

22. Bergman B and Jjostrand J
Vision and vision disability in the daily life of a representative population sample aged 82 years
Acta Ophthal. (1992) 70:35-43.

Also:

23. Vision 2020 Strategic Framework 2009-2012
www.Vision2020.org.au
24. Vision 2020 News poll survey 2008
www.Vision2020.org.au
25. A guide to Australian Eye Health Data:
Australian Institute of Health and Welfare 2007
26. Low Vision and Rehabilitation Submission Vision 2020 May 2006
27. Healthy Vision Report Pfizer and Vision 2020 2006
28. Vision 2020 Australia Client Insight Survey 2006
29. National Framework for Action to promote eye health and prevent avoidable blindness and vision loss November 2005
30. Vision problems among older Australians
31. Australian Institute of Health and Welfare Bulletin 27,
Australian Government 2005
32. Queensland Strategy for Chronic Diseases 2005-2015
Queensland Government
33. National Eye Health Education Program 2006
National Eye Institute, NIH, USA
34. World Health Organisation Fact Sheet 282: Magnitude and causes of visual impairment 2004
35. Centre for Eye Research Australia Clear Insight Report
The Economic impact and Cost of Vision Loss in Australia
Access Economics 2004.

Information directories for Regional, Rural and Remote Queensland

36. Queensland Support Groups - Queensland Blind Association 2008
37. Low Vision Services in Queensland (Guide Dogs Queensland) Martin Hodgson
38. RBF Compendium of Services 2001
39. 3VI Bigger, Bolder, Brighter - The Royal Society for the Blind CD 2001

Websites

40. Low Vision Online – University of Melbourne (website)
41. OAA Low Vision Services in Queensland
www.lowvision.optomsqld.com/directory
42. Guide Dogs “Blue” Book Available on OAA website
www.lowvision.optomsqld.com
43. Vision 2020 Australia: www.vision2020Australia.org.au
44. Australian Bureau of Statistics: www.abs.gov.au
45. Department of Health and Ageing, Visiting Optometrists Scheme:
www.sport.gov.au

46. Medical Specialists Outreach Assistance Scheme (MSOAP)

47. Spectacle Supply Scheme
Queensland Health

48. Department of Health and Ageing,
Australian Government