Section four: Eye health research and data

This section provides an overview of the eye health research sector in Australia, its funding sources and research priorities, together with an outline of key health data collections of relevance to eye health.

Australian eye health research infrastructure

Eye health research is supported and undertaken by many institutions and organisations in Australia. The Australian Government, through the National Health and Medical Research Council (NHMRC) and the Cooperative Research Centres Programme, is a major source of funding for eye health research.

Other support for eye health research comes from the private and non-government sectors with a number of foundations specifically set up to raise funds for eye health research. These funds are used to support research that would otherwise not be funded through the NHMRC, or to top up research funded by mechanisms such as the NHMRC.

National Health and Medical Research Council (NHMRC)

The NHMRC was established in 1936 and its broad strategic intent is better health for all Australians. It is governed by legislation and reports to the Minister for Health and Ageing. The NHMRC plays a pivotal role in providing independent advice on all aspects of health and health care delivery in Australia. This is achieved by managing the complementary functions of funding for health and medical research, providing ethical guidance on health and medical research issues, and providing health advice that is both current and relevant to the Australian community.

NHMRC’s research programs encompass the full spectrum of health and medical science, and funding is granted on the basis of scientific quality as judged by rigorous peer review.

Research support is provided through a variety of schemes, including support for individual research projects, broad programs of research, training awards and fellowships. Through its Strategic Research Initiatives Working Committee, it also has capacity to develop and support strategic and priority driven research, and to respond to research issues deemed urgent.
While eye health research is not currently identified as an NHMRC research priority, nevertheless the NHMRC awarded 87 new and continuing grants totalling $9.6 million for vision-related research in 2004. Half of the grants (44) were for basic eye research, with an emphasis on neurology. A further third (30) were for clinical and medical science (including diagnosis and treatment) and the remaining 13 were for public health, with 7 grants for epidemiology and 1 for preventative health.

The NHMRC has identified priority areas as outlined in the NHMRC’s Road Map. At the 144th (October 2002) meeting of the Council, the Council agreed to a number of recommendations, including to adopt Aboriginal and Torres Strait Islander Health research as a strategic priority, as well as to accept responsibility for implementing the Road Map and commit to allocating at least 5% of the total annual research funding to achieve this commitment over the course of the current triennium. The NHMRC has established the Aboriginal and Torres Strait Islander Forum to guide Council activities in this area. In addition to the Forum the NHMRC has established an Aboriginal and Torres Strait Islander Health Research Working Committee to assist in the implementation and monitoring of the health research priorities as identified in the Road Map.

**The Collaborative Research Centre Programme (CRC)**

The Australian Government established the CRC Programme in 1990 to improve the effectiveness of Australia’s research and development effort. It links researchers with industry to focus Research & Development efforts on progress towards utilisation and commercialization. The close interaction between researchers and the users of research is a key feature of the programme. Another feature is industry contribution to CRC education programs to produce industry-ready graduates. CRCs combine funding from the CRC Program with in-kind or cash contributions from all participants.

**Vision Cooperative Research Centre (Vision CRC)**

The Vision CRC was established in 2003. It is a synergistic collaboration of national and international researchers from 38 organisations involved in eye care and vision research, education and delivery. Vision CRC is a multi-node centre, with its hub at dedicated premises at the University of New South Wales in Kensington, Sydney. Vision CRC participants comprise **Core, Supporting** and **Industry** members.
### Core members

**Australia**
- University of Melbourne, Centre for Eye Research Australia (CERA)
- University of New South Wales, International Centre for Eye Care Education (ICEE)
- University of Sydney, Institute for Eye Research

**India**
- LV Prasad Eye Institute

### Supporting members

**Australia**
- Aboriginal Health and Medical Research Council
- Professor Robert Augusteyn
- CSIRO Molecular Science
- International Association of Contact Lens Educators (IACLE)
- Optometric Vision Research Foundation
- Open Training and Education Network
- Queensland University of Technology, Centre for Eye Research, School of Optometry
- Government of Victoria, Department of Human Services
- University of Sydney
  - Centre for Vision Research
  - Save Sight Institute
- Vision 2020 Australia
- Vision 2020 (Global)
- VisionCare NSW

**Canada**
- University of Waterloo, Centre for Contact Lens Research

**China**
- Zhongshan Ophthalmic Centre, Sun Yat-Sen University

**Finland**
- Professor Antii Vannas

**UK**
- Anglia Polytechnic University, Department of Optometry and Ophthalmic Dispensing

**USA**
- Bascom Palmer Eye Institute
- Johns Hopkins University, Department of Ophthalmology
- Pennsylvania College of Optometry
- University of California, Los Angeles, Jules Stein Eye Institute
- University of Houston, College of Optometry

### Industry members

**Australia**
- Australian Ophthalmic Consortium (Precision Optics, City Optical, Opticare and Express Eyecare)
- Contact Lens Industry Council
- Ellex Medical
- I-Optics
- ProVision
- Vision Instruments

**USA and International**
- CIBA Vision
- Essilor
The Vision CRC aims to tackle world-scale research and development projects to deliver vision excellence for all people in order to establish Australia as a world leader in research, education and delivery of vision correction; to improve international eye care; and to maximise commercial opportunities for the Centre, Australia and the eye care industry.

Its major programs are in the areas of myopia, presbyopia, vision care delivery, business growth, science and core capabilities, and professional and academic education for postgraduate students, eye care professionals and industry in Australia and internationally. Myopia and presbyopia have been identified as key areas of opportunity in eye care; and Vision Care Delivery and Business Growth, will provide the essential support needed to ensure market development.

The Vision CRC is receiving Australian Government CRC Grant funding for seven years (2003-04 to 2009-10).

<table>
<thead>
<tr>
<th>Funding</th>
<th>Average Funding per annum ($million)</th>
<th>Total Funding over Grant period ($million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRC Programme Funding</td>
<td>4.6</td>
<td>32.0</td>
</tr>
<tr>
<td>Total Resources for CRC</td>
<td>51.2</td>
<td>358.1</td>
</tr>
</tbody>
</table>


In addition to the primary eye health work of the Vision CRC, the Cooperative Research Centre for Aboriginal Health (CRCAH) is undertaking complementary research which is considering improvements to Indigenous chronic and infectious disease treatment and management. This research is looking at earlier diagnosis, critical intervention points and more effective treatment strategies. The CRCAH health systems and processes research program focuses on achieving substantial changes in aspects of primary health care delivery.

**Aboriginal Health and Medical Research Council of NSW**

The Aboriginal Health and Medical Research Council of NSW is the peak body representing the Aboriginal community controlled health sector in NSW. The Council works in partnership with NSW Health and has collaborated with the Institute for Health Research (a coalition of universities and research centres in NSW) to form the Coalition for Research to Improve Aboriginal Health (CRIAH).
The aims of CRIAHR are to:

- foster Aboriginal health research;
- provide a forum for brokering partnerships between researchers and Aboriginal communities;
- promote high quality research which has the potential to improve Aboriginal health; and
- seek to build capacity among Aboriginal health researchers.

CRIAHR has conducted an audit of individuals and groups undertaking Aboriginal health research in NSW.

**Centre for Eye Research Australia (CERA)**

The Centre for Eye Research Australia (CERA) is a joint undertaking between:

- University of Melbourne
- Royal Victorian Eye and Ear Hospital
- Royal Australian College of Ophthalmologists
- Ansell Ophthalmology Foundation
- Christian Blind Mission International
- Lions Clubs of Victoria
- Vision Australia

CERA was established in 1996 as a centre for excellence for eye research and was registered as a public company limited by guarantee in November 1996 and was granted Approved Research Institute status in March 1997. CERA has developed around the research activities of the University of Melbourne Department of Ophthalmology and is located at the Royal Victorian Eye and Ear Hospital, East Melbourne. The Department is also a World Health Organization Collaborating Centre for the Prevention of Blindness, the only such centre in Australia.

CERA’s focus is on the elimination of vision loss and blindness and it works on the prevention, treatment and rehabilitation of eye disease, vision loss and blindness through six units: Corneal Research Unit, Eye Health Promotion Unit, Glaucoma Research Unit, Macular Research Unit, Ocular Genetics Unit & McComas Family Laboratory, Retinal Vascular Unit.
Funding for CERA comes from government, foundations and other agencies by means of competitive grant applications and other requests and from support it receives from the **Eye Research Australia Foundation** (an independent foundation established to raise funds to support the research of CERA).

**The Centre for Vision Research**

The Centre for Vision Research was established in 2001 to bring together the vision and allied sensory research being conducted by the University of Sydney Department of Ophthalmology at Westmead Hospital to collaborate with many other university departments and hospitals and their research centres, both in Australia and in other countries.

The Centre is a multidisciplinary, collaborative body of scientists from a number of Australian universities, and is currently one of five research centres of the Westmead Millennium Institute (WMI) and is also affiliated with the Save Sight Institute (SSI).

The Centre’s focus is on reducing vision and other sensory impairments in Australia through researching the causes, risk factors and impacts of relevant diseases and developing strategies to reduce their frequency and impact.

The Centre receives funding from government and foundations and support from sponsors. The Centre has received several grants from National Health and Medical Research Council (NHMRC), Ophthalmic Research Institute of Australia (ORIA) and other bodies. Both the WMI and SSI are research institutes of the University of Sydney, are registered for charitable donations (through their respective Foundations) and are recipients of research infrastructure funding from NSW Health.

**Glaucoma Australia**

Glaucoma Australia is a non-profit registered charity that aims to minimise visual disability from glaucoma. One of the ways that it does this is by funding glaucoma research.

**Institute for Eye Research**

The Institute for Eye Research was established in 1985 to support, conduct and coordinate scientific research and education in matters relating to vision, including detection, diagnosis, causes, prevention, cure and correction of abnormalities of the
eye and vision system. It is a company limited by guarantee and affiliated with the University of NSW in Sydney.

The Institute aims to:

• support, conduct and coordinate scientific research in matters in any way relating to vision, including detection, diagnosis, causes, prevention, cure and correction of abnormalities of the eye and vision system; and

• integrate their work with eye research and educational programs undertaken by other organisations.

The Institute funds particular projects and organisations in Australia and overseas. Particular research interests are optical design, metrology and bioengineering of ophthalmic products; and biological and clinical sciences related to the eye.

**International Diabetes Institute**

The International Diabetes Institute was established in 1976 to study health effects of lifestyle change in developing countries. It is an independent, volunteer-based charity.

The Institute aims to develop the capacity to cure and prevent diabetes and its complications through integrated research, education and care and to find a cure for diabetes and contribute to its worldwide prevention.

The Institute research interests are in epidemiology, nutrition, activity programs and the clinical application of pharmaceutical products, and it maintains the largest diabetes clinic in Australia.

**Lions Eye Institute**

The Lions Eye Institute in Perth, Western Australia, is the largest eye research institute in the southern hemisphere. The Institute was established in 1983. The Institute maintains a close relationship with the University of Western Australia, with which it formed the Centre for Ophthalmology and Visual Science (COVS) in 1994. COVS has independent University status within the Faculty of Medicine and Dentistry. Other affiliations include Sir Charles Gairdner Hospital, Royal Perth Hospital and Fremantle Hospital.

The Institute grew out of the Lions Save Sight Foundation’s establishment of a Chair in Ophthalmology at the University of Western Australia to foster and co-ordinate research
into blinding eye diseases and conditions. It aims to:

- conduct research into the causes, diagnosis, prevention and treatment of diseases and conditions giving rise to blindness and other ocular disorders;
- advance the standards of medical eye care through education and training of the medical and allied professions; and
- stimulate public interest in the social and economic impact of eye disease.

Core activities of the Institute now include research and technical development to prevent or cure blindness, ophthalmic services and teaching, and community service aimed at early detection and prevention of blinding eye disease. Institute research teams investigate cataract, diabetes, glaucoma, retinal degenerations, artificial cornea and laser and gene therapies.

**Ophthalmic Research Institute of Australia**

The Ophthalmic Research Institute of Australia (ORIA) was founded in 1953 by a group of ophthalmologists concerned with the need to advance eye research in Australia. ORIA is now the research arm of the Royal Australian and New Zealand College of Ophthalmologists.

ORIA is dedicated to promoting research into the nature and cause of eye disease and to prevent blindness.

**Optometric Vision Research Foundation**

The Optometric Vision Research Foundation (OVRF) is a team of optometrists and researchers who share a common interest in vision care research and a genuine desire to improve and preserve the vision of the Australian community, and people in other lands.

**Retina Australia**

Retina Australia funds high quality scientific/medical research relevant to causes, treatments, prevention and cure of retinitis pigmentosa and other inherited and age-related retinal dystrophies.

Since it became active in fund raising for research (1998) Retina Australia has provided a total of $1.3 million to fund, or assist with funding, research by a total of 25 researchers at 12 institutions (predominantly universities).
The Royal Australian and New Zealand College of Ophthalmologists Eye Foundation

The Royal Australian and New Zealand College of Ophthalmologists Eye Foundation was set up to fund eye research in Australia, improve community awareness and support ophthalmology aid projects. It is affiliated with the Royal Australian and New Zealand College of Ophthalmologists. One of the Eye Foundation’s key roles is raising money for research into age-related macular degeneration, diabetic eye disease and glaucoma.

The RANZCO Eye Foundation has set a target to raise $10 million from Federal and State Governments, corporate donors and private benefactors to support research into prevention and treatment of visiton disorders.

The Queensland University of Technology (QUT) Centre for Health Research (Optometry)

The Queensland University of Technology (QUT) Centre for Health Research (Optometry) was established in 1986 to provide a focus for optometric research and development activities at QUT. The Centre conducts research in optometry and vision science, including how eye growth is regulated and why myopia develops in some individuals, using human and animal based studies.

Save Sight Institute

The Save Sight Institute for Community Ophthalmology was established in 1985. The Institute aims to create new knowledge to enable sight for life for the whole community. Its research focus aims to:

- influence better eye care through research, teaching and service;
- empower the community to become advocates for eye health;
- generate eye health initiatives that are appropriate, affordable, acceptable and accessible to all members of the community, including remote and rural Australia;
- increase research activities to solve unanswered problems in diagnosis and sight restoration;
- discover new eye health initiatives through the interface of community, clinical and laboratory-based research; and
- share in overseas programs for prevention of needless blindness.
Research at the Institute concentrates on visual science (particularly relating to developmental neurobiology of the retina and optic nerves, age-related macular degeneration, and development of the lens and cataract and clinical visual science (particularly paediatric ophthalmology, external eye disease and immunology of the cornea, medical retina, glaucoma and cataract).

**Australian eye health data sources**

Australia has some of the best population-based data about eye disease and refractive error in the world. Nevertheless, that data is far from comprehensive, particularly in published form. There are no specific national mechanisms to monitor major eye conditions and eye trauma.

A number of population surveys in Australia collect data about eye health. The extent to which they routinely collect information on the Indigenous status of the patient is not known, although the National Health Survey and National Survey of Disability, Ageing and Carers have specific techniques to ensure that information can be provided about Aboriginal and Torres Strait Islander peoples.

Some of the most relevant surveys to eye health include:

**The Melbourne Visual Impairment Project (MVIP) 1992–96**

The MVIP, conducted by the Centre for Eye Research Australia (CERA), is a population-based study of the prevalence and causes of vision problems. The sample population consisted of 5,147 randomly selected individuals aged 40 and over, from Melbourne and rural Victoria, including residents of households and nursing homes (Weih et al. 2000).

**The Blue Mountains Eye Study (BMES) 1992–1994**

The BMES is a population-based study of the prevalence and causes of vision problems. The sample population included 3,654 non-institutionalised residents aged 49 or older living in two adjoining urban postcode areas in the Blue Mountains area, west of Sydney, in New South Wales (Mitchell et al. 1995).
Section four: Eye health research and data

The Australian Diabetes, Obesity and Lifestyle Study (AusDiab) 1999–2000

The AusDiab is a population based national study conducted by the International Diabetes Institute in 1999-2000. It provides information on the prevalence of diabetes and obesity, and on lifestyle and its related conditions in Australia. It included 11,247 participants aged 25 and over in 42 randomly selected areas from six states and the Northern Territory. The identification of diabetes was based on an oral glucose tolerance test (Tapp et al. 2003).

The AusDiab study was a large population-based cross-sectional survey of national diabetes prevalence and associated risk factors in non-institutionalised adults aged 25 years or older. An ophthalmological examination was included in order to estimate the prevalence of diabetic retinopathy. Retinopathy was assessed among those having diabetes, impaired fasting glucose, and impaired glucose tolerance, and in a random sample of those with normal glucose tolerance.

About 50% of eligible households participated in the household interview and 55% of eligible adults in these households took part in the clinical examination. An initial analysis of non-response bias concluded that the effect on survey estimates would be negligible (Dunstan et al. 2002).

National Health Survey (NHS) 2001 and 1995

The NHSs, conducted by the Australian Bureau of Statistics, were designed to obtain national information on the health status of Australians, use of health services and facilities, health-related aspects of people’s lifestyle, and demographic and socio-economic characteristics. Each survey included a sample of private dwellings such as houses, flats and townhouses across Australia. Non-private dwellings such as nursing homes, hostels and hospitals were not included in the surveys.

The 2001 survey collected information from approximately 26,900 respondents across all age groups between February to November 2001, of which about 9,000 were aged 45 and over. The 1995 survey collected information from 57,600 respondents between January 1995 and January 1996, of which about 16,600 were aged 45 and over.
The NHS asks respondents about their eyesight. Issues covered include colour blindness, refractive error (conditions and whether corrective lenses are used) and other problems with sight and whether they can be corrected with lenses or are linked to diabetes or high blood sugar levels. Other conditions for which data was collected in 2001 include blindness (total/partial, one or both eyes), glaucoma, cataract, trachoma and lazy eye/strabismus. The 2004 survey also collected data on macular degeneration.

**National Surveys of Disability, Ageing and Carers (NSDAC) 1998 and 2003**

The 1998 survey was conducted by the ABS from March to May 1998. It provided information from people around Australia with disability about their health status, and their need for and receipt of assistance. Data was also collected from carers of people with disability about the type of care they provide and impact that the caring role has on them.

The survey included people across all age groups in both private dwellings such as houses and flats, non-private dwellings such as hotels, motels, and cared accommodations such as hospitals, nursing homes and hostels. The sample population comprised approximately 37,000 respondents from about 15,700 private dwellings and non-private dwellings, and approximately 5,800 respondents from about 800 cared accommodations.

The 2003 survey was conducted by the ABS throughout Australia from June to November 2003. This survey was largely a repeat of the 1998 survey, with some additions to content in the areas of cognitive and emotional support and computer and internet use.

In this survey respondents are assessed as having a disability if they report that they have a limitation, restriction or impairment which has lasted, or is likely to last, for at least six months and restricts everyday activities. This includes loss of sight (not corrected by glasses or contact lenses).

**Data sources for Indigenous people**

There are few data sources that relate to vision problems among Indigenous people. Self-reported data on the prevalence of blindness and visual impairment, and the prevalence of cataract, are available from the NHS 2001. Apart from this, the only data available are from studies conducted in particular regions or communities that included an eye examination.
Recent estimates of the prevalence of diabetic retinopathy among Indigenous people are available from two studies in the Katherine region and a non-random study in the Pilbara region (Jaross et al. 2003, Diamond et al. 1998). Data on the prevalence of trachoma is available from studies in some areas of Western Australia, South Australia and the Northern Territory (Ewald et al. 2003, Mak & Plant 2001).