Vision problems among older Australians

Visual impairment and blindness

The condition

There have been various definitions of the terms 'visual impairment' and 'blindness' used in Australia, and population surveys have used different approaches to data collection, either ophthalmologic examination or self-report methods (Box 3).

This variation in definition and methods needs to be taken into account when interpreting estimates of the prevalence of vision impairment in older Australians. According to clinical data sources used in this bulletin, which date from the early 1990s, visual impairment refers to a visual acuity of < 6/12 and blindness to a visual acuity of < 6/60. Low vision refers to visual impairment excluding blindness (ICO 2002). Visual impairment includes low vision as well as blindness.

These definitions differ from the current WHO definitions (WHO 2004) which define low vision as visual acuity of less than 6/18, but equal to or better than 3/60, or corresponding visual field loss to less than 20 degrees, in the better eye with best possible correction. Blindness is defined as visual acuity of less than 3/60, or corresponding visual field loss to less than 10 degrees, in the better eye with best possible correction. Like the Australian definitions, visual impairment includes low vision and blindness.

The prevalence of visual impairment and blindness

Based on combined data from the MVIP and BMES, it is estimated that 444,400 older Australians aged 55 or more have visual impairment, which represents 9.4% of the 4.7 million Australians in that age group (Table 5). The estimated number of cases of blindness in 2004 is 56,100 (1.2%), and 388,300 people (8.2%) have low vision. There is a strong association between visual impairment and advancing age.

Other Australian data

In June 2003, Centrelink records included 17,668 recipients (0.8%) aged 55 or more who were receiving a disability support pension or age pension and classified as 'legally blind'. Since blindness from uncorrected refractive error is relatively uncommon in Australia, this suggests that around 40,000 Australians aged 55 or more who satisfy the criteria for 'legal blindness' do not receive a disability support or age pension.[2]

A comparison of separate estimates of the prevalence of visual impairment from the MVIP, BMES and other Australian studies are shown in Table A1 (see appendix). The differences between the MVIP and BMES estimates are due, at least in part, to differences in methods including age groups studied, definitions and coverage. Prevalence rates for each study were strongly age-related.

Definitions and coverage also varied between the studies using self-reported data. The 1995 NHS and the 2003 and 1998 NSDACs only included eye conditions that could not be corrected by spectacles. The 2001 NHS included all eye conditions whether or not they could be corrected by spectacles. The NHSs excluded people in non-private dwellings, and the NSDACs included people in institutional settings.

2 People who are legally blind are exempt from income or assets testing for the disability support pension and the age pension.

Table 5: Prevalence estimates of blindness[a] and visual impairment[b] for Australia, 2004

	Rate (%)			Number[c]		
Age (years)	Blindness	Low vision[d]	Visual impairment	Blindness	Low vision[d]	Visual impairment
40–49	n.a.	0.6	0.6	n.a.	18,900	18,900
50–59	0.1	2.2	2.3	2,200	56,600	58,700
60–69	0.3	4.4	4.7	4,800	72,200	77,000
70–79	0.7	10.5	11.1	7,800	123,100	130,900
80–89	4.1	24.6	28.7	23,800	142,400	166,200
90+	17.8	22.5	40.3	18,700	23,700	42,400
Total	**0.9**	**4.5**	**5.5**	**57,300**	**436,800**	**494,100**
Total 55+	**1.2**	**8.2**	**9.4**	**56,100**	**388,300**	**444,400**

n.a. Not available. Prevalence cannot be reliably estimated from combined data from the MVIP and BMES.

(a) Blindness is defined as visual acuity < 6/60.

(b) Visual impairment is defined as visual acuity < 6/12, and includes blindness.

(c) Estimated for the Australian population at 30 June 2004.

(d) Low vision is defined as visual impairment but not blindness.

Source: Based on combined data from MVIP and BMES.

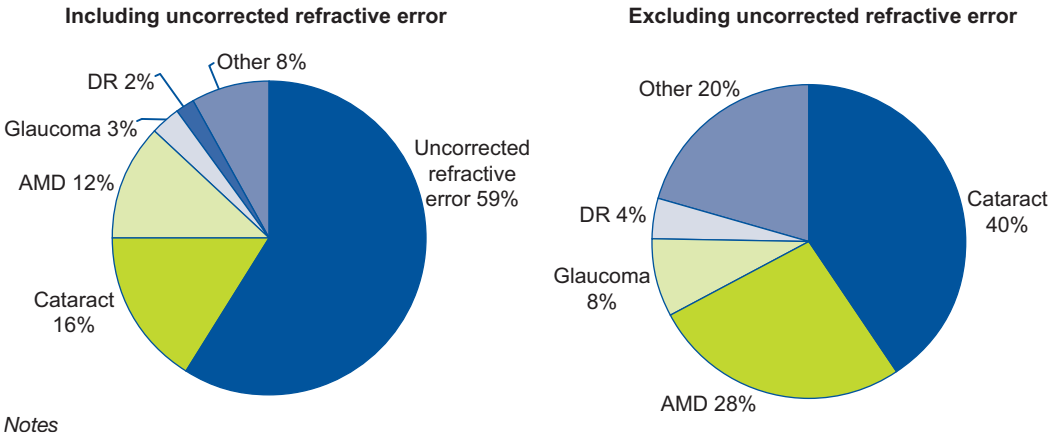
Causes of visual impairment and blindness

The best data for estimating the prevalence of visual impairment by cause are combined estimates from the MVIP and BMES. The combined data set reconciles, as far as possible, differences in methods and definitions and provides estimates of greater accuracy than either study individually. The combined Australian data are preferred to pooled estimates from the US meta-analysis, which may be influenced by differences in access to eye care and treatment patterns in the countries concerned, i.e. Australia, the United States and the Netherlands.

Based on the combined Australian data, the major eye diseases that cause visual impairment among Australians aged 55 or more are cataract, age-related macular degeneration (AMD), glaucoma and diabetic retinopathy (DR). Together with uncorrected refractive error, they contribute to over 90% of visual impairment in this age group (Figure 1). If refractive error, which can be corrected by eyewear, is excluded as a cause of visual impairment, cataract is the primary cause of 40% of cases of vision loss in older Australians and AMD the primary cause of 28%.

The leading causes of blindness among Australians aged 55 or more are AMD (50%), glaucoma (16%) and cataract (12%).

Figure 1: Visual impairment classified by primary cause, Australians aged 55 or more



Notes

1. The data are shown both including and excluding uncorrected refractive error, which can be corrected by eyewear.
2. The primary cause of visual impairment was determined where 2 or more disorders were present.

Source: Based on combined data from MVIP and BMES.

Aboriginal and Torres Strait Islander peoples

Based on self-report, the estimated prevalence rate of total or partial loss of vision is 4% among Indigenous Australians and 3% among other Australians. Rates for Indigenous men and women are the same. The estimated prevalence rate for Indigenous Australians aged 55 or more is 6%, the same as for other Australians (ABS 2002).

Eye and vision problems are reported less frequently by Indigenous Australians (46%) than by other Australians (51%), a pattern that is consistent across age groups. Within the Indigenous population, those living in non-remote areas are more likely to report eye and eyesight problems (49%) than those living in remote areas (38%) (ABS 2002). It has been speculated that, since Indigenous Australians living in remote areas have limited access to specialist eye services, they may be less likely to report eye and vision problems, or to be diagnosed with such problems (ABS & AIHW 2003).

Cataract

The condition and its symptoms

A cataract is a clouding of the eye's naturally clear lens. When the lens becomes opaque, the amount of light that passes through it is reduced and scattered, and the image cannot be correctly focused on the retina at the back of the eye. Subsequently the vision becomes poor, as if looking through a frosty window. The eyes may also be more sensitive to glare and light, and colours may seem faded or yellowed. Monocular double vision may also occur.

Cataracts are mainly of three types: nuclear cataract, which occurs in the centre of the lens; cortical cataract, which radiates from the outside of the lens to the centre; and subcapsular, which starts from the back of the lens (McCarty et al. 1999).

Risk factors

Cataracts are largely related to the ageing process. Other factors are long-term exposure to sunlight and cigarette smoking. Other possible causes include heavy alcohol consumption, medical conditions such as diabetes, eye injury, and use of drugs such as steroids (oral, topical or inhalational) (University of Melbourne 2003; National Eye Institute 2002; McCarty et al. 1999).

Treatment

When symptoms begin to appear, spectacles such as glasses, strong bifocals, magnifying glasses or other visual aids may be used to improve vision for a while. When the condition becomes serious enough to affect daily life, a surgical procedure becomes necessary to restore vision. The operation is a simple and effective procedure that removes the cloudy lens and replaces it with a clear, permanent intra-ocular lens (University of Melbourne 2003).

Prevalence

The prevalence of cataracts in Australia has been estimated from the pooled data from US, European and Australian population-based clinical studies (Congdon et al. 2004). The data contributed by the two Australian studies were very similar to those from the other three studies that also contributed data. Although it is possible that differences in environmental, treatment and behavioural factors may produce differences in the prevalence of cataract between countries, the similarity of the rates across studies was taken by the study authors to indicate that pooling was appropriate and that the estimates were likely to be reliable.

It is estimated that, in 2004, untreated cataract affects almost 1.5 million Australians aged 55 or more, which represents 31% of that age group (Table 6). Age-specific rates for cataract increase with age and are well over 70% for people aged 80 or more. Generally, prevalence rates are higher among women than among men.

Table 6: Prevalence estimates of cataract[a] for Australia, 2004

	Rate (%)			Number[b]		
Age (years)	Men	Women	Persons	Men	Women	Persons
40–49	2.8	1.9	2.3	41,400	28,500	69,900
50–54	4.9	5.0	5.0	32,300	33,300	65,600
55–59	8.2	9.4	8.8	49,800	56,200	106,000
60–64	13.8	16.9	15.3	63,200	75,900	139,000
65–69	22.4	27.7	25.1	82,500	104,600	187,200
70–74	33.9	41.0	37.6	101,700	133,600	235,300
75–79	47.2	54.7	51.3	116,300	165,000	281,300
80+	71.3	76.6	74.7	178,100	333,500	511,600
Total	**15.2**	**20.0**	**17.7**	**665,400**	**930,500**	**1,595,900**
Total 55+	**26.5**	**34.9**	**31.0**	**591,700**	**868,700**	**1,460,400**

(a) Significant lens opacity was defined as the presence of 1 or more of the following in either eye: posterior subcapsular cataract of 1 mm or more, cortical cataract occupying 25% or more of the lens visible through a dilated pupil, or nuclear cataract ≥ the penultimate grade in the classification system used.

(b) Estimated for the Australian population at 30 June 2004.

Source: Derived from Congdon et al. 2004.

Prevalence rates were also estimated for pseudophakia/aphakia, which is indicative of surgical removal. Pseudophakia is the presence of an intraocular lens after cataract extraction and aphakia is the absence of the natural lens of the eye (usually resulting from the removal of cataracts). Based on the pooled data, in 2004 there were 429,600 Australians aged 55 or more who had had cataract surgery, which represents 9.1% of that age group (Table 7).

Table 7: Prevalence estimates of cataract surgery[a] for Australia, 2004

	Rate (%)			Number[b]		
Age (years)	**Men**	**Women**	**Persons**	**Men**	**Women**	**Persons**
40–49	0.8	0.5	0.6	11,800	7,500	19,300
50–54	1.2	0.8	1.0	7,900	5,300	13,200
55–59	1.9	1.4	1.7	11,500	8,400	19,900
60–64	3.1	2.5	2.8	14,200	11,200	25,400
65–69	5.2	4.6	4.9	19,200	17,400	36,500
70–74	8.5	8.2	8.3	25,500	26,700	52,200
75–79	13.6	14.0	13.8	33,500	42,200	75,700
80+	29.6	33.5	32.1	73,900	145,800	219,800
Total	**4.5**	**5.7**	**5.1**	**197,600**	**264,600**	**462,200**
Total 55+	**8.0**	**10.1**	**9.1**	**177,900**	**251,800**	**429,600**

(a) Pseudophakia/aphakia.

(b) Estimated for the Australian population at 30 June 2004.

Source: Derived from Congdon et al. 2004.

Australian data

Based on the 2001 NHS self-report data, it is estimated that, in 2004, cataract affected 403,900 Australians aged 55 or more, which represents 8.6% of that age group (Table A2). Prevalence rates rose with age for both men and women. Women appear to be more susceptible to the condition than men, with 10.4% of women of this age group reporting that they 'had cataracts' at the time of interview compared with 6.3% of men (age-standardised to the Australian population at 30 June 2001).

Thus, although the prevalence estimates based on self-report show the same increase with age and higher rates for women than men, their much lower level compared with the pooled clinical data suggests that the net effect of self-report biases is to produce an underestimate of cataract prevalence.

Results published from Australian population-based clinical studies (MVIP and BMES) are based on different methods and definitions and do not provide a comparable estimate of cataract prevalence.

Aboriginal and Torres Strait Islander peoples

There are no data on the prevalence of cataract for Indigenous Australians based on ophthalmic examination. The prevalence of cataract based on self-report is 3% among Indigenous Australians, compared with 2% among other Australians (ABS 2002).

It is reported more commonly among Indigenous men (5%) than women (2%). The prevalence rate for Indigenous Australians aged 55 or more is 11% which, although higher than for other Australians (8%), is subject to a high relative standard error (ABS 2002).

Age-related macular degeneration

The condition and its symptoms

Age-related macular degeneration (AMD) is a progressive condition affecting the central part (macula) of the retina. The macula is the area at the back of the eye that provides fine vision for daily tasks such as reading and recognising faces. The early stage of the disease is sometimes referred to as age-related maculopathy (ARM). In this stage, vision is unaffected and people may be unaware that they have the condition. People with ARM are at higher risk of AMD but do not necessarily progress to AMD. If the disease progresses to AMD, irreversible loss of central vision occurs, usually in both eyes. People with advanced AMD often maintain sufficient peripheral vision to be able to move around independently, but they are legally blind and their capacity to undertake normal daily activities is limited.

AMD is classified as either dry (geographic atrophy) or wet (neovascular). Dry AMD is more common and is often associated with yellow deposits (drusen) under the retina. Wet AMD is less common, resulting from abnormal blood vessels forming and leaking into the macula. Vision loss tends to be gradual for those with the dry form, but is often sudden for those with the wet form and vision loss may be severe. Although people with AMD are less likely to have the wet form, it is more likely to lead to blindness than the dry form.

Risk factors

AMD is strongly related to advancing age and family history, and the most important known preventable risk factor is smoking (Mitchell et al. 2002, Evans et al. 2005). The evidence for other possible factors, including dietary related factors, is less well established (van Leeuwen et al. 2003; Evans & Henshaw 2004).

Treatment

There is no cure for AMD but treatment may delay or halt its progress. Laser therapies can help reduce the short-term risk of advancing vision loss in selected cases of wet AMD. There is some evidence that, in people with particular indications of AMD, taking a supplement of antioxidants and certain minerals may delay progression of the disease but further research is needed (AREDS Research Group 2001; Richer et al. 2004).

Prevalence

Estimates of the prevalence rate of AMD in Australia can be derived from the pooled results from three continents, in which Australian studies represented two of the six studies analysed (Friedman et al. 2004a). Each study used a standard photographic grading system for determining the prevalence of AMD and early AMD and the analysis

used definitions of wet and dry AMD as specified by the International ARM Study Group.

Applying the pooled age- and sex-specific rates to the Australian population estimates for 2004 produces an AMD prevalence rate of 3.1% (147,000) for the population aged 55 or more (Table 8). Rates were similar between men and women and increased markedly for men and women over 80.

Table 8: Prevalence estimates of age-related macular degeneration[a] for Australia, 2004

	Rate (%)			Number[b]		
Age (years)	**Men**	**Women**	**Persons**	**Men**	**Women**	**Persons**
40–49	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
50–54	0.34	0.20	0.27	2,200	1,300	3,600
55–59	0.41	0.22	0.32	2,500	1,300	3,800
60–64	0.63	0.35	0.49	2,900	1,600	4,500
65–69	1.08	0.70	0.89	4,000	2,600	6,600
70–74	1.98	1.52	1.74	5,900	5,000	10,900
75–79	3.97	3.44	3.68	9,800	10,400	20,200
80+	11.90	16.39	14.75	29,700	71,400	101,100
Total	**1.97**	**2.97**	**2.49**	**57,000**	**93,500**	**150,600**
Total 55+	**2.46**	**3.71**	**3.12**	**54,800**	**92,200**	**147,000**

n.a. Not available.

(a) Age-related macular degeneration was defined as the presence of geographic atrophy or neovascular age-related macular degeneration in either eye.

(b) Estimated for the Australian population at 30 June 2004.

Source: Derived from Freidman et al. 2004a.

These estimates are for AMD, also called late-stage ARM, which is responsible for loss in visual acuity. The prevalence of early ARM (the pre-symptomatic stage) was defined in the pooled study by large drusen (≥ 125 μm) in either or both eyes. On this basis, 491,900 Australians aged 55 or more (10.4%) have early ARM defined by large drusen in at least one eye and are at risk of developing AMD (Table 9). Large drusen are associated with an almost 6% risk of developing AMD over 5 years in the involved eye (Friedman et al. 2004a).

Thus 638,900 Australians aged 55 or more have either the early (491,900) or late (147,000) stage of ARM (Tables 8 and 9). The number of people aged 40 or more with early or late ARM is 720,900.

Australian data

Prevalence estimates from the two Australian studies (Table A3) were lower than the estimates from pooled analysis. Rates were higher in women than men in both Australian studies and were clearly age-related (Table A3).

There are no data on the prevalence of AMD among Indigenous Australians.

Table 9: Prevalence estimates of early age-related maculopathy[a] for Australia, 2004

	Rate (%)			Number[b]		
Age (years)	Men	Women	Persons	Men	Women	Persons
40–49	1.56	1.41	1.48	23,100	21,100	44,200
50–54	2.65	2.52	2.58	17,500	16,800	34,200
55–59	3.77	3.70	3.74	22,900	22,100	45,000
60–64	5.32	5.39	5.35	24,300	24,200	48,500
65–69	7.48	7.81	7.65	27,600	29,500	57,100
70–74	10.40	11.17	10.80	31,200	36,400	67,600
75–79	14.30	15.73	15.09	35,200	47,400	82,700
80+	25.62	29.16	27.87	64,000	126,900	191,000
Total	**5.63**	**6.98**	**6.32**	**245,800**	**324,500**	**570,300**
Total 55+	**9.20**	**11.52**	**10.43**	**205,300**	**286,600**	**491,900**

(a) Early age-related maculopathy was defined as at least 1 druse 125 µm or larger in diameter present in either or both eyes.

(b) Estimated for the Australian population at 30 June 2004.

Source: Derived from Freidman et al. 2004a.

Glaucoma

The condition and its symptoms

Glaucoma is a disease involving damage to the optic nerve and subsequent vision loss or blindness. The condition is often associated with increased intraocular pressure (IOP) resulting from either malfunction or malformation of the eye's drainage system (Weinreb & Khaw 2004). However, the disorder can also occur with normal or even below-normal eye pressure.

Most cases of glaucoma are open-angle glaucoma (OAG), also called chronic glaucoma. OAG usually begins with a loss of peripheral vision, which is often unnoticeable. As permanent nerve damage occurs, symptoms become obvious. Tunnel vision may develop, and only objects that are straight ahead can be seen. Other signs include headache, blurred vision, light sensitivity or haloes around lights. Primary closed-angle glaucoma is less common and usually occurs in an acute form, which presents with the sudden onset of symptoms such as decreased vision, extreme eye pain, headache, nausea and vomiting, and glare and light sensitivity.

Risk factors

The development of glaucoma is associated with advancing age (although it can occur at any stage of life), a family history of glaucoma, and ethnicity (Weinreb & Khaw 2004). Other factors that have been associated with increased risk include IOP, hypertension, cardiovascular disease and extreme short-sightedness.

Treatment

In many cases medical treatment, laser treatment or surgery can slow or halt the progress of glaucoma but any vision loss cannot be restored.

Prevalence

The best available estimates for glaucoma prevalence are those from the pooled analysis of data (Friedman et al. 2004b). The pooled analysis included the data from the two Australian population-based clinical studies and from three similar studies conducted in the United States and Europe. Although there is no single standard for defining glaucoma in population-based research, all five studies in the pooled analysis based their definition on both visual field and photographically obtained optic nerve head data, and the results were similar across studies. Prevalence rates in the pooled analysis are for open-angle glaucoma.

Applying the pooled age- and sex-specific rates to the Australian population estimates for 2004 produced a glaucoma rate of 2.3% (109,300) for the population aged 55 or more (Table 10). There was no statistically significant difference in prevalence rates between men and women, and rates increased with age.

Table 10: Prevalence estimates of glaucoma[a] for Australia, 2004

	Rate (%)			Number[b]		
Age (years)	Men	Women	Persons	Men	Women	Persons
40–49	0.36	0.83	0.60	5,300	12,400	17,800
50–54	0.61	0.89	0.75	4,000	5,900	9,900
55–59	0.85	1.02	0.93	5,200	6,100	11,300
60–64	1.18	1.23	1.20	5,400	5,500	10,900
65–69	1.64	1.58	1.61	6,000	6,000	12,000
70–74	2.27	2.16	2.21	6,800	7,000	13,800
75–79	3.14	3.12	3.13	7,700	9,400	17,100
80+	5.58	6.94	6.44	13,900	30,200	44,200
Total	**1.25**	**1.78**	**1.52**	**54,400**	**82,600**	**137,000**
Total 55+	**2.02**	**2.58**	**2.32**	**45,100**	**64,200**	**109,300**

(a) Glaucoma indicates primary open-angle glaucoma.

(b) Estimated for the Australian population at 30 June 2004.

Source: Derived from Friedman et al. 2004b.

Australian data

Data from the two Australian population-based clinical studies alone suggest a prevalence rate for OAG of around 3% of the population aged 55 or more (Table A4). This is slightly higher than the pooled rate because the three non-Australian studies in the pooled analysis had slightly lower prevalence rates in the older age groups.

Population-based clinical studies of glaucoma are preferred to surveys that collect self-report data, because the former have consistently found that about half those with

glaucoma are unaware they have the condition. However, the Australian estimates based on self-report are of the same magnitude or greater as those based on clinical examination (Table A4). This is perhaps unexpected, given that both Australian population-based clinical studies also reported that about half of people with glaucoma were unaware that they had the condition (Mitchell et al. 1996; Wensor et al. 1998). Although the clinical studies measured OAG and self-report referred to glaucoma generally, this difference in scope is unlikely to be an explanation for the possibly unexpected results, because OAG is by far the most common form of glaucoma.

There are no authoritative data on the prevalence of glaucoma among Indigenous Australians.

Diabetic retinopathy

The condition and its symptoms

Diabetes impairs the body's ability to use glucose for energy and results in high blood glucose levels. Over a period of years, this will damage small blood vessels in the body, among other effects, and often cause complications. Diabetic retinopathy (DR) is a common diabetes complication that affects the small blood vessels of the retina (see Glossary). It remains one of the leading causes of vision loss despite the availability of effective treatment (Tapp et al. 2003).

In the early stages, known as non-proliferative DR, the blood vessels of the retina can develop small swellings in the walls (microaneurysms), can bleed, and can leak fluid. This stage is not usually associated with visual impairment and there are no symptoms. However, if this process affects the macula, fluid can accumulate (macular oedema) and, unless treated, loss of central vision occurs. In proliferative DR (which usually occurs only in people who have had diabetes for many years) abnormal blood vessels grow on the surface of the retina, and without treatment these can bleed, causing cloudy vision or blindness. Abnormal fibrous tissue may also develop, leading to retinal detachment and severe vision loss.

Risk factors

Everyone with diabetes is at risk of developing DR. People with diabetes who are most at risk include those who have had diabetes for many years, those whose diabetes is poorly controlled, those with kidney damage, and those with high blood pressure or high blood cholesterol (NHMRC 1997).

Treatment

DR is symptomless in its early phases but can be treated successfully by laser surgery if identified early. People who have diabetes need to have an eye examination at least every two years if no retinopathy is present, and more frequently if retinopathy is found. Laser treatment can be used to prevent severe vision loss and blindness in advanced DR (NHMRC 1997).

Prevalence

The best data source for estimating the prevalence of DR in Australia is AusDiab because of its coverage and its inclusion of clinical data. The study was a population-based Australia-wide survey of diabetes prevalence and determined DR by retinal photography among people identified as having diabetes (either on the basis of self-report diabetes medication or by an oral glucose tolerance test). This enabled DR rates to be determined for all people with diabetes, both previously diagnosed and undiagnosed. AusDiab has better geographical coverage than the BMES and MVIP and identified a large number of people with diabetes on which to calculate rates of DR.

Results of the meta-analysis for DR have not been used as a basis for Australian estimates of prevalence because the estimates relate to people who reported that they had diabetes. The estimates do not take into account DR among the significant proportion of people who do not know they have diabetes, among whom DR prevalence is usually lower (Kempen et al. 2004).

Based on AusDiab data, it is estimated that 133,900 Australians aged 55 or more have DR. For this age group this represents 2.8% of people and 16.6% of people with diabetes (Table 11). The prevalence of DR was greater in the older age groups.

Table 11: Prevalence estimates of diabetic retinopathy[a] for Australia, 2004

	Diabetes[b]	Diabetic retinopathy		
Age (years)	% population	% Diabetes	% population	Number[c]
25–34	0.3	16.7	0.1	1,400
35–44	2.4	14.5	0.3	10,500
45–54	6.2	11.1	0.7	19,000
55–64	13.1	13.3	1.7	36,900
65–74	17.9	18.5	3.3	45,500
75+	23.0	18.2	4.2	51,600
Total	**7.9**	**15.6**	**1.2**	**164,900**
Total 55+	**17.1**	**16.6**	**2.8**	**133,900**

(a) The level of retinopathy was defined according to a simplified version of the Wisconsin grading system, using retinal photographs.

(b) Diabetes was diagnosed on the basis of fasting plasma glucose of ≥ 7.0 mmol/L, 2-h plasma glucose of ≥ 11.1 mmol/L, or current treatment with insulin or oral hypoglycaemic medication.

(c) Estimated for the Australian population at 30 June 2004.

Source: Derived from Tapp et al. 2003, Dunstan et al. 2002 and AusDiab 1999–2000 data supplied by the International Diabetes Institute.

Other Australian data

Published results from AusDiab for Australians aged 25 or more reported that the prevalence of DR was similar in men and women (Tapp et al. 2003). Also, DR (any form) occurred in 22% of those with known type 2 diabetes and in 6% of those who had not previously been diagnosed. The prevalence of proliferative retinopathy was 2.1% in those with known type 2 diabetes and there were no cases identified among those whose diabetes had not been previously diagnosed (Tapp et al. 2003).

Aboriginal and Torres Strait Islander peoples

The prevalence of diabetes (based on self-report by people aged 15 and over) is significantly higher among Indigenous Australians (11%) than other Australians (3%) (ABS 2002). Further, rates are higher for Indigenous Australians in remote areas (16%) than non-remote areas (9%). Individual studies indicate that the prevalence of type 2 diabetes may be much higher in some communities (OATSIH 2001; AIHW 2002b).

There are few recent statistically sound estimates of the prevalence of DR among Indigenous Australians.[3] Two studies conducted in the Katherine region in the Northern Territory in 1993 and 1996 reported prevalence rates of 18% and 21% respectively for DR among Indigenous Australians with diabetes (Jaross et al. 2003). A non-random study in the Pilbara region in Western Australia estimated the prevalence to be 23% (Diamond et al. 1998). In each study the average age was 48–49 years. The studies are not designed to allow ready comparison with rates for other Australians taking age into account. However, these crude rates are on a par with rates among non-Indigenous Australians with diabetes and, since the prevalence rate of diabetes is higher among Indigenous Australians, the data suggest that the rate of DR in Indigenous Australians is also higher.

Presbyopia

Presbyopia is an age-related loss of the focusing power of the lens that results in difficulty seeing objects close up. It is generally considered to be a refractive error, an optical defect that results in light not being properly focused on the eye's retina. The most common eye conditions affecting refraction apart from presbyopia are hyperopia (long-sightedness), myopia (short-sightedness) and astigmatism (uneven focus). Almost all refractive error can be corrected by spectacles or contact lenses, and some by laser surgery.

Although short-sightedness and many cases of long-sightedness are not specifically age-related, the problems are common conditions in later life. Long-sightedness, short-sightedness and presbyopia were included among the five most common long-term medical conditions reported by people aged 55 or more in the most recent National Health Survey (Table 12).

Table 12: Main long-term medical conditions reported by people aged 55 or more, 2001

55–64 years	%	65–74 years	%	75 years or more	%
Long-sightedness	55	Long-sightedness	48	Arthritis	52
Short-sightedness	34	Arthritis	45	Long-sightedness	43
Arthritis	33	Hypertension	38	Deafness	42
Back problems	32	Short-sightedness	32	Hypertension	42
Hypertension	26	Presbyopia	31	Presbyopia	37

Note: Refractive error was defined by self-report as a long-term condition which has lasted or is expected to last for 6 months or more, regardless of whether or not it could be corrected by spectacles.

Source: ABS 2002.

3 AusDiab, which was the data source used to estimate DR prevalence among non-Indigenous Australians, was not designed to provide reliable estimates for Indigenous Australians.

Vision problems among older Australians

This rest of this section focuses on presbyopia since it is specifically caused by an age-related process.

The condition and its symptoms

Presbyopia is a condition in which the natural lens of the eye loses its flexibility so that focusing on close objects becomes difficult. It develops over a number of years and usually becomes noticeable during middle age, beginning in the 40s. The signs of presbyopia include tendency to hold reading materials at arm's length, blurred vision at normal reading distance, and fatigue, eyestrain or headache when performing close work.

Risk factors

Presbyopia is generally believed to be part of the natural process of ageing, unlike eye diseases such as cataract, age-related macular degeneration, glaucoma and diabetic retinopathy. Several factors have been associated with early onset of presbyopia including trauma or ocular disease which causes damage to the lens or its surrounding muscles, conditions such as diabetes, and use of drugs such as alcohol, anti-depressants and antihistamines. Greater exposure to ultraviolet radiation and a hotter climate may also increase the rate of progression of the condition (Pierscionek & Weale 1996).

Treatment

The most common treatment for presbyopia is prescription eyewear, e.g. reading glasses, bifocal glasses or progressive addition lenses (multifocal glasses). Contact lenses may also be used.

Prevalence

Estimates of the prevalence of presbyopia have been based on self-reported data collected by the 1995 and 2001 NHSs (Table 13). These surveys had national coverage, large samples and high response rates. The estimates relate to people who identified presbyopia as a sight problem they had. Because the estimates are based on self-report, people who did not identify presbyopia as a sight problem are not included, even though presbyopia is generally considered to be a natural part of the ageing process. Therefore, estimates of the prevalence of presbyopia based on self-report are likely to be significant underestimates and are perhaps best considered as estimates of symptomatic presbyopia.

Based on the most recent NHS, presbyopia affects 1,317,000 older Australians (aged 55 or more), which represents 27.9% of that age group (Table 13). The survey found that there was a clear increase in the prevalence rate with age, from 15.3% of those aged 45-49 to 40.1% of those aged 80 or more, with men and women having similar patterns.

The prevalence rate of presbyopia among Australians aged 55 or more changed little between 1995 and 2001—the difference being within sampling error.

Estimates are not available from the MVIP or BMES, nor from the pooled analysis for refractive errors which related to hyperopia and myopia only.

Table 13: Prevalence estimates of presbyopia for Australia, 1995, 2001 and 2004

NHS 1995[a]		NHS 2001[a]	
Age (years)	**Rate (%)**	**Age (years)**	**Rate (%)**
45–49	11.8	45–49	15.3
50–54	16.9	50–54	20.1
55–59	18.5	55–59	18.8
60–64	24.4	60–64	22.1
65–69	30.5	65–69	29.2
70–74	33.4	70–74	33.8
75–79	39.3	75–79	33.9
80+	44.2	80+	40.1
Total	**23.8**	**Total**	**23.8**
	Estimates for ages 55 or more[b]		
Year	**1995**		**2001**
Number	1,094,700		1,201,400
Rate (%)	29.9		28.2
	Estimates for ages 55 or more[c], 2004		
Number	1,399,400		1,317,200
Rate (%)	29.7		27.9

(a) Presbyopia was defined by self-report as a long-term condition that has lasted or is expected to last for 6 months or more and that can be corrected or partially corrected by glasses or contact lenses.

(b) Estimated for the Australian population at 30 June 1995 and 2001 respectively.

(c) Estimated for the Australian population at 30 June 2004.

Source: AIHW analysis of ABS 1995 and 2001 National Health Surveys confidentialised unit record files.

Trichiasis and trachoma

The condition and its symptoms

Trichiasis is a sight-threatening complication of trachoma which affects mainly older Aboriginal and Torres Strait Islander peoples in some regions. In people with the condition, the lid margin and eyelashes turn inwards, and the rubbing of the eyelashes on the cornea leads to corneal damage and blindness in later life.

Trachoma itself is a chronic conjunctivitis caused by repeated episodes of infection with the bacteria *Chlamydia trachomatis*. It is an acute inflammatory condition which is evident first in childhood and, if untreated, can lead to scarring of the tissues of the eyelid over time.

Risk factors

High prevalence rates of trachoma have been associated with poor environmental health conditions, inadequate hygiene, crowding, low socioeconomic status and an arid environment (Ewald et al. 2003, Taylor et al. 2003).

Treatment

Treatment of trachoma is usually by antibiotics. Surgery may be used for trichiasis and may have to be repeated after some years (Taylor et al. 2003).

Prevalence

Prevalence data for trichiasis are few. A 1998 study of trichiasis among Aboriginal people aged 50 years or more in the Kimberley region found an overall prevalence rate of 2.8%. The rate was 11.0% in the Halls Creek Shire, which is also the highest area of trachoma prevalence in the Kimberley (Mak & Plant 2001).

A study of trachoma in a large, remote Central Australian Aboriginal community during 1998–2000 found the prevalence of trachoma among children aged less than 13 was 40% at baseline and changed little over the following 21 months (Ewald et al. 2003).

Although there is evidence of high prevalence rates of trachoma in some areas of Western Australia, South Australia and the Northern Territory, there are no data available for New South Wales, Victoria, Queensland and Tasmania (Taylor et al. 2003).

Main findings and discussion

This bulletin has shown that visual impairment and its causes are highly prevalent among older Australians and are strongly age-related. They have a significant effect on many aspects of living.

Main findings

The information presented in this bulletin represents the most robust and up-to-date estimates available of the prevalence of visual impairment and its causes in Australia in 2004. Estimates show that 9.4% (444,400) of Australians aged 55 or more have some degree of visual impairment, much of which is caused by uncorrected refractive error and the eye diseases cataract and AMD. Blindness occurs in 1.2% (56,100) of older Australians and is most commonly caused by AMD, glaucoma and cataract.

Of the main causes of visual impairment:

- Cataract is present in 31% (1.46 million) of older Australians. It accounts for 40% of cases of visual impairment (excluding uncorrected refractive error) and 12% of cases of blindness in this age group. About 9.1% (430,000) of Australians aged 55 or more have indications of cataract surgery.
- AMD (late stage ARM), which is usually associated with severe vision loss, affects 3.1% (147,000) of older Australians. A further 10.4% (491,900) have early ARM, which is often asymptomatic. In total, ARM is present in 13.5% (638,900) of older Australians. AMD accounts for 28% of cases of visual impairment and 50% of cases of blindness in older Australians. Its prevalence increases sharply after 70 years of age.
- Glaucoma is present in 2.3% (109,300) of older Australians and accounts for 8% of cases of visual impairment and 16% of cases of blindness.
- DR is present in 2.8% (133,900) of older Australians and accounts for 4% of cases of visual impairment.