

Access to Eye Health Services Among Indigenous Australians



An Area Level Analysis



THE UNIVERSITY OF
MELBOURNE

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Executive summary

Our project examined equity of access to eye health services at a community level by examining the relationship between the percentage of Indigenous people living in an area, socioeconomic status and remoteness and access to ophthalmic and optometric services and the professionals that provide them. We achieved this in three stages:

1. Mapping the location of eye health professionals
2. Mapping the distribution of eye health services and the relationship between different types of service provision and
3. Examining the relationship between the provisions of eye services and health outcomes.

Methodology

The project brought together data from multiple sources including:

- Data on the geographic distribution of ophthalmologists and optometrists
- Medicare Australia data for services provided by ophthalmologists and optometrists
- Inpatient and outpatient data for eye procedures
- National Indigenous Eye Health Survey
- Supply of azithromycin to remote area Aboriginal and Torres Strait Islander health services and
- National Trachoma Surveillance report.

The analysis focussed on the extent to which access to eye health services varied at an area level according to the proportion of the population that was Indigenous. The Indigenous proportion of the population was classified into 6 categories based on census categories (0-1.0, 1.1-3.0, 3.1-6.0, 6.1-10.0-20.0, 20+ percent). This was recoded into six categories (very low=0-1.0, low=1.1-3.0, low medium=3.1-6.0, high medium=6.1-10.0, high=10.0-20.0, very high=20+). The analysis also took into account remoteness and the Socioeconomic Indices for Areas (SEIFA).

Results

- **The supply of optometrists and ophthalmologists** decreased as the proportion of Indigenous people living in a community increased. However, this effect was largely due to the fact that Indigenous people live in socioeconomically disadvantaged areas.
- **The provision of eye exams** using all data sources decreased as the proportion of Indigenous people in the population increased. For example the rate of eye exams provided in areas with very high Indigenous populations was two-thirds of the rate of eye exams for areas with very low indigenous populations.
- The results of the area level analysis suggested that **rates of cataract surgery** in areas with high medium to very high Indigenous populations were less than half those of reference areas.
- It is concerning that any areas had **rates of cataract surgery** that fell below the WHO guidelines (3000 per million). It is even more problematic that Indigenous communities were so strongly over represented. For example, over a third of communities with very high Indigenous populations fell below the World Health Organisation (WHO) guidelines compared to three percent in areas with very low Indigenous populations.
- Despite the much higher incidence of diabetes among Indigenous Australians there was a clear disparity in eye procedures for **diabetic retinopathy** provided through Medicare.
- In this study levels of azithromycin treatment recommended by WHO for trachoma endemic communities exceeded those suggested by the Australian Communicable Disease Network Australia (CDNA). Levels of azithromycin supplied through Section 100 fell below those recommended by WHO, for WA and for NT when regional estimates were used. The amount of azithromycin through Section 100 greatly exceeded the amount that was reported in trachoma treatment.

Conclusions

The results suggest that despite a number of government initiatives to improve Indigenous people's access to eye health services there remain significant inequities in access. While these are most marked for ophthalmic services there are also substantial disparities in optometry services. Even though Australia is a developed country, there was evidence that treatment for cataract and trachoma fell below WHO guidelines in some areas with large Indigenous populations. Developing a targeted co-ordinated approach to address these issues is a challenge in an environment of complex service provision. More extensive take-up of existing Medicare provisions would be an important step in this process. The national health survey data suggest that along with improving access to health services, community education around the importance of eye health and the effectiveness of treatment might reduce reluctance to seek help.

1. Introduction

Equitable and accessible health services form a key component of equitable health outcomes. Addressing inequities in health services is particularly important in eye health where the disadvantage of Indigenous Australians is unequivocal. The rate of low vision in Indigenous adults is 2.8 times rates in the general population and the rate of blindness 6.2 times higher than general population rates ⁽¹⁾.

A core concept in equitable health care is distribution according to level of need for services, without regard to characteristics that do not inform these needs ⁽²⁻⁴⁾. Inequity in access to ophthalmic services has been shown to affect populations disadvantaged by social class, age, geographic location and ethnic minority communities ⁽⁵⁻⁷⁾, and the link between eye disorders and social and economic disadvantage has also been strongly demonstrated in high- and low-income countries ⁽⁶⁻⁹⁾.

Equity of service utilisation requires use of the provided services at equitable rates ⁽⁴⁾ and, in conjunction with other factors, impacts strongly on equity in health outcomes ^(4, 10). Within Australia, it has been demonstrated that rates of cataract surgery vary considerably, and that these variations were not necessarily consistent with differences in cataract prevalence ⁽¹¹⁻¹³⁾. In Indigenous adults, only 65% of those who experienced vision loss from cataract received surgery ⁽¹⁾. These patterns demonstrate a need to develop an understanding of how ophthalmic services in Australia as a whole are being accessed by Indigenous populations.

Efforts by governments to improve eye health services for Aboriginal people have had minimal impact on improving eye health to date. The National Aboriginal and Torres Strait Islander Eye Health Program (NATSIEHP) was established by the Commonwealth, but the program has not been fully integrated into existing primary health care services and important eye health care services for detecting conditions such as the early detection of diabetes is not linked to retinopathy screening ⁽¹⁴⁾.

The need to improve eye health services for Indigenous Australians has been recognised by the introduction of a major new Eye Health Initiative in the 2006-07 federal budget, involving 13.8 million dollars over 4 years ⁽¹⁵⁾ as well as the allocation of 58.3 million dollars over four years in the 2009 budget.⁽¹⁶⁾

Our project examines equity of access to eye health services at a community level by examining the relationship between the percentage of Indigenous people living in an area, socioeconomic status and remoteness access to ophthalmic and optometric services and the professionals that provide them. We achieved this in three stages:

1. Mapping the location of eye health professionals
2. Mapping the distribution of eye health services and the relationship between different types of service provision and
3. Examining the relationship between the provisions of eye services and health outcomes.

2. Methodology

2.1 Practitioner data

2.1.1 Data

To determine how health services vary in populations where there is a high proportion of Aboriginal and Torres Strait Islander peoples, service distribution statistics from Medicare is compared to the geographic distribution of ophthalmology practices. Data on the geographic distribution of ophthalmology practices was obtained from the Royal College of Ophthalmologists (n=1058) membership in 2008.

Data on the geographic distribution of optometry practices was obtained from the 2008 electronic white pages (n=6270). Although the Australian Optometrists Association was originally envisaged as an appropriate sampling frame, the strategy was revised because of incomplete ascertainment. It should be noted that in both cases the number of practitioners is estimated based on the number of offices. In some cases practitioners had several practices. It was not possible to ascertain the amount of time any one practitioner worked in a given office. Therefore these data will tend to overestimate practitioner availability.

Data on the population composition, remoteness, and Socioeconomic Index for Areas (SEIFA) of statistical subdivisions (SSDs) were obtained from CDATEA online ⁽¹⁷⁾. The Indigenous composition of the SSD was coded into 10 categories initially based on the percentage of Indigenous people living in each areas (0-1.0, 1.1-2, 2.1-3.0, 3.1-4.0, 4.1-6.0, 6.1-10.0, 10.1-20, 20+). This was recoded into six categories (very low=0-1.0, low=1.1-3.0, low medium=3.1-6.0, high medium=6.1-10.0, high=10.0-20.0, very high=20+). Remoteness was coded into categories (Major City, Major city/Regional/Remote, Inner Regional, Inner Regional/Outer Regional/Remote, Outer Regional, Outer Regional/Remote, Outer Regional/Remote/VRemote and Remote/VRemote). SEIFA indexes for advantage and disadvantage and educational and occupational attainment were included in the analysis.

Population projections by age and part of the state for the whole population were obtained from SuperTABLE 4.3.1 Build 10 ⁽¹⁸⁾. Population projections for the Indigenous population were obtained from Experimental Projections of Aboriginal and Torres Strait Islander Australians, Aboriginal and Torres Strait Islander Commission (ATSIC) Regions, 2001-2009 ⁽¹⁹⁾. These were then mapped into the new Indigenous regions and then into SSDs using the CP2006SSD_IREG concordance file ⁽²⁰⁾. Projections were then converted into a multiplier to adjust 2006 census counts for the Indigenous and non-Indigenous populations for the years before and after 2006.

2.1.2 Analysis

Intercooled Stata v10 was used to conduct a panel poisson regression using SSDs as the unit of analysis. The dependent variable was the number of estimated practitioners in each area. The independent variables were year and the percentage of Indigenous people living in each area. The analyses were run adjusting for remoteness and area socioeconomic advantage/disadvantage and occupational and educational status.

2.2 Health services data

2.2.1 Medicare

Medicare data were obtained for services provided by optometrists (New consult 10900, Next visit 10918, Progressive disease e.g. diabetes 10914, New complication 10913, Specific diseases that require dilation 10915, less than 15 minutes 10912 and vision has decreased more than 2 lines 10916) and ophthalmologists (Cataract (42698, 42701, 42702), Eye exams (104,105,106,107,108,109), Diabetic retinopathy (11215, 11218, 42725, 42809), Trichiasis (42581, 42587), Pterygium (42686) and Trauma (42510, 42512, 42515, 42551, 42554, 42557, 42560, 42563, 42566, 42644). Data covered the period from 2004/05-2007/08 (Medicare Australia,

2009). The utilisation data was broken down by age (0-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84 and 85+ years) and statistical subdivision (SSD). Medicare data does not include procedures in public hospitals nor does it include an Indigenous identifier. A detailed list of these procedures is given in appendix A.

2.2.2 Inpatient and outpatient data

Hospital inpatient data for eye related AN-DRGs for public and private hospitals were obtained from New South Wales, Victoria, Queensland, South Australia and Tasmania by SSD and Aboriginality. Lens procedures, same-day (C16B), Eyelid procedures (C11Z), Retinal procedures (C03Z), Lens procedures, not same-day (C16A), Hyphema and medically managed trauma to the eye (C62Z), Glaucoma and complex cataract procedures, same-day (C15B) and Major corneal, scleral and conjunctival procedures (C04Z). AN-DRGs encompass procedures for a broad range of clinical conditions.

The availability of inpatient data from Western Australia and the Northern Territory was limited because of concerns of privacy. Western Australian data was provided by procedure and region. Rates of use in each SSD were then estimated based on population size. Northern Territory data for eye procedures was provided at Territory level. The distribution of services across the Territory was then estimated using the overall distribution of hospital procedures.

Inpatient data does include an Indigenous identifier but this suffers from well documented problems of under enumeration.⁽²¹⁾ The extent of this problem varies between states and territories. Recent AIHW reports suggest that inpatient identification of Indigenous status is around 89%.⁽²¹⁾ However the application of correction factors is not currently recommended. It should also be noted that identification of Indigenous status is considered unreliable for the ACT and Tasmania.⁽²¹⁾

Data on attendances at outpatient from eye clinics was also collected from each State and Territory by SSD. Data on paediatric attendances was not available from one region of Western Australia because of privacy concerns. Attendance at this clinic was estimated based on the ratio between adult and child hospital separations attendances in the rest of WA. The only complete year of data available for all states and territories was for 2007/08. Analyses using these data are restricted to this year. Outpatient data do not include data on either the age or the Indigenous status of patients seen.

Each State and Territory was contacted to identify any other major programs that would not be captured using Medicare and hospitalisation data. While some small additional programs were identified in Queensland, there was no evidence of other major initiatives.

2.2.3 Analysis

Population level data for health services were developed as outlined in 2.1.

Rates of service provision were mapped nationally. Additional analysis was conducted to examine the distribution of communities where eye health services were provided at below average (>1 standard deviation) or below recommended levels.

Intercooled Stata v10 was used to conduct a panel poisson regression using SSDs as the unit of analysis. The dependent variables for the primary care analysis were eye exams provided by optometrists and ophthalmologists through Medicare and hospitals. The dependent variables in the hospital analysis were the supply of services for cataracts through private and public hospitals. The independent variables were year and the percentage of Indigenous people living in each area. The analyses were run adjusting for age, remoteness and area socioeconomic advantage, disadvantage and occupational and educational status.

Rates of cataract surgery were also compared to WHO guidelines and the national average. The national average was calculated based on the following (193 Insertion of intra-ocular lens prosthesis (193), Intracapsular crystalline lens extraction (195), Extracapsular crystalline lens extraction by aspiration alone (196), Extracapsular crystalline lens extraction by phacoemulsification (197), Extracapsular crystalline lens extraction by mechanical phacofragmentation (198), Other extracapsular crystalline lens extraction (199), Other extraction of crystalline lens (200) and Other application, insertion or removal procedures on lens. Procedure rates and population data were obtained from the Australian Institute of Health and the Australian Bureau of statistics respectively.^(22, 23) the National average for cataract surgery rates were 8689 and 9072 per million in 2006/07 and 2007/08. The 2007/08 estimate is used in this report.^a

Some conditions where hospitalisation may be required are particularly relevant to Indigenous peoples, in particular diabetic retinopathy and trichiasis. AN-DRGs do not provide sufficient specificity to identify treatment for these conditions however Medicare data is more specific. Accordingly for diabetic retinopathy and trichiasis are presented based on Medicare data. Public hospital use is estimated based on the proportion of procedures in Medicare related to the AN-DRG that are used in each diagnostic category. However it should be noted that this estimate will be incorrect if the mix of procedures in public and private settings is not comparable. In the case of diabetic retinopathy this process also enabled non-hospital based procedures to be included.

2.4 Eye Health Survey

The National Indigenous Eye Health Survey was undertaken to define:

- the extent of vision loss in Aboriginal and Torres Strait Islander peoples,
- the causes of vision loss in Aboriginal and Torres Strait Islander peoples and
- the impact of vision loss in Aboriginal and Torres Strait Islander peoples.

The study used a multi-stage, random cluster sample using data from the 2006 Census. For the final sample 30 clusters containing 300 – 400 people were selected. In each cluster/community, all children 5 – 15 years and all adults over 40 years were examined. Data collected consisted of an eye health survey and an eye exam ⁽¹⁾.

2.5 Azithromycin and National Trachoma Survey

2.5.1 Pharmaceutical Benefits Scheme (PBS)

Medicare Australia provided data on the supply of azithromycin through the Section 100 provisions for the supply of medicines to clients of Aboriginal and Torres Strait Islander Health Services. The PBS items selected included 8200N (Azithromycin Tablet 500 mg), 8201P (Azithromycin Powder for oral suspension 200 mg per 5 mL, 15 mL) and 8336R (Azithromycin Tablet 500 mg). Data covered the period from 2004/05-2007/08 and were provided by statistical division. These data were provided for all states and territories with the exception of Victoria which has no eligible areas. It should be noted that these data refer to doses supplied to Aboriginal and Torres Strait Islander Community health services and not to individuals. It can be assumed that doses will ultimately be provided to individuals.

2.5.2 National Trachoma Surveillance Report

In 2006 the Australian Government awarded a tender to the Centre for Eye Research Australia (CERA) to establish the National Trachoma Surveillance and Reporting Unit (NTSRU) with the responsibility of providing high quality national information on trachoma prevalence based on data received from state and territory

^a National data rather than data obtained from the states and territories were used for the estimate of averages to enhance replicability. These data vary slightly because of differences in classification.

jurisdictions. The data included in this study were from the screening of children aged 1-9 years in remote Aboriginal communities during 2008 by regions in the Northern Territory (NT), South Australia (SA) and Western Australia (WA) where trachoma was identified as being present by states and territory. Data were reported for 121 communities from a total of 16 regions in NT, SA and WA. Other jurisdictions were not included in this project. Data were based on screening children aged 1 to 9 years for trachoma and compliance with Communicable Disease Network Australia (CDNA) guidelines. The data also included reported rates of trachoma treatment. Detailed discussion of the methods is included in Tellis et al ⁽²⁴⁾.

2.5.3 Analysis

The analysis compared actual doses of Azithromycin supplied to remote health Aboriginal and Torres Strait Islander health services through Section 100, doses reported to NTRSU ⁽²⁴⁾ and doses that would be expected given the NTRSU data on trachoma prevalence based on trachoma management developed by the World Health Organization (WHO) ⁽²⁵⁾ and Australian CDNA guidelines ⁽²⁶⁾ ⁽²⁴⁾. Section 100 data refer to all states and territories. However NTRSU data are only available for the Northern Territory, South Australia and Western Australia based on NTRSU data. Comparable data is not available for other states. It should also be noted that NTRSU data refers to the supply of azithromycin to individuals while Section 100 data refers to the supply of azithromycin to health services.

Estimates of recommended WHO guidelines area based on estimates of trachoma prevalence among children from the NTRSU. WHO guidelines state that the entire community should be treated if prevalence of trachoma among children is above 10%.

CDNA guidelines ⁽²⁴⁾ state that the households in which infected children live should be treated. Our estimate is based on ABS figures about the average number of members in remote Indigenous households. ⁽²⁷⁾ The NTRSU data does not indicate the number of infected children from the same household. It also does not indicate the number of children who may reside in more than one household. These factors may lead to overestimation and underestimation of the required doses respectively.

Finally both estimations require extrapolation from the NTRSU sample to the relevant population. Estimates are provided here assuming that the trachoma prevalence data apply to the whole region where the sample was taken and assuming that the estimates apply only to those communities where the NTRSU sample was also taken.

3. Eye health practitioners

Figures 1 and 2 show the distribution of ophthalmologists and optometrists throughout Australia by Statistical Local Area (SLA). Figure 1 shows that ophthalmologists are concentrated on the Eastern seaboard and metropolitan areas of Western Australia. However, there is also a high concentration of ophthalmologist offices in central Australia relative to the population. Optometrists tend to be far numerous and evenly distributed than ophthalmologists.

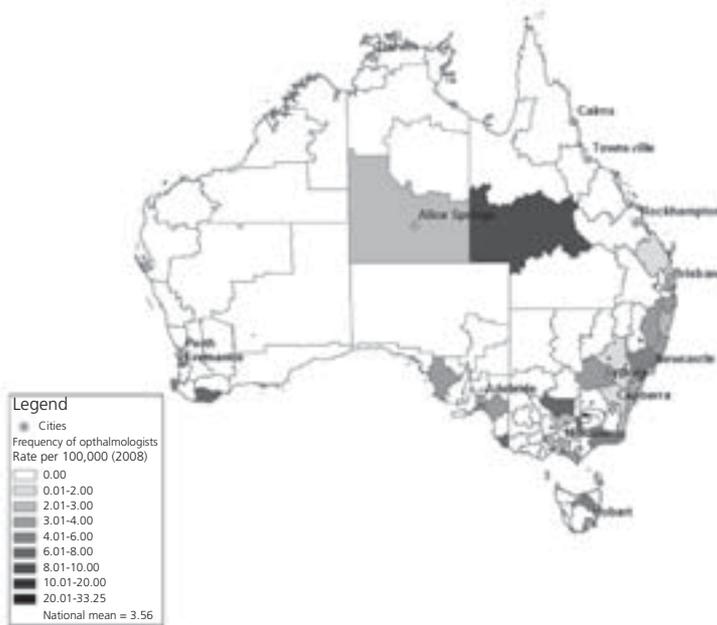


Figure 1: The frequency of ophthalmologist offices by SLA per 100,000 residents in 2008.

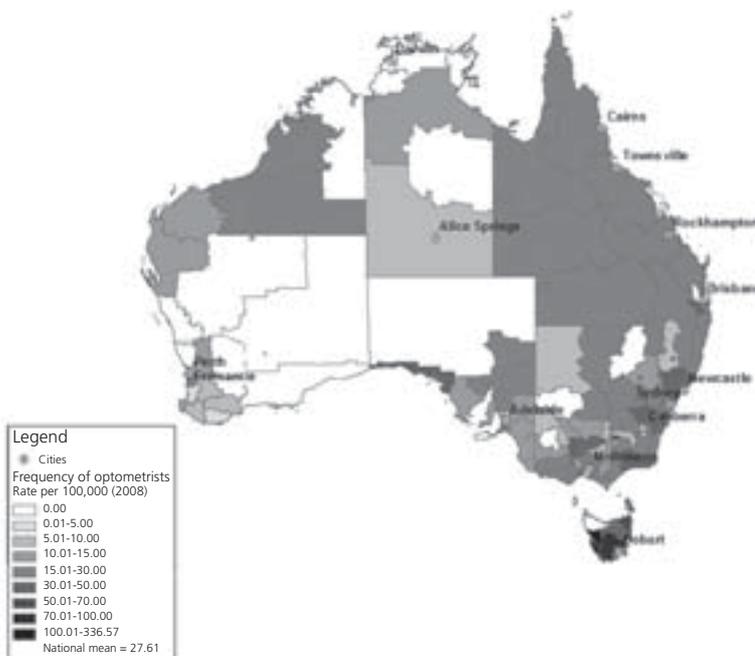


Figure 2: The frequency of optometrist offices by SLA per 100,000 residents in 2008.

Table 1 shows that the supply of ophthalmologists decreases markedly as the proportion of Indigenous people living in an area increase. This effect was relatively unchanged when the remoteness of areas was taken into account. However, the pattern changed markedly when SEIFA indices were included in the analysis and the negative association between supply of ophthalmologists and the proportion of the population in an area that was Indigenous was no longer apparent. This suggests that the apparent disadvantage of areas with higher proportions of Indigenous people is due to more general socioeconomic disadvantage than Indigenous status per se.

The supply of optometrists also decreased as the proportion of Indigenous people living in an area increased. However, once remoteness was taken into account these differences only remained significant for areas with low, low medium and very high Indigenous populations compared to the reference group. When SEIFA indices were taken into account the supply of optometrists was greater in areas with low medium to high Indigenous populations compared to the reference areas. This suggests that areas with greater Indigenous populations may be better serviced than other areas with similar socioeconomic status and lower Indigenous populations. However, this effect must be interpreted in the context of overall socioeconomic disadvantage in access to optometrists.

It should be noted that both measures of supply of eye health professionals reflect the location of an office or practice address that may function only on a part-time basis and do not take into account the amount of time working spent in any particular site. It would be expected that the availability of eye health professionals in these analyses would therefore be overestimated.

Table 1: Poisson regression for ophthalmologists and optometrists by the Indigenous population in an area in 2008.

Percent Indigenous	IRR (95%CI)	IRR (95%CI) controlling for remoteness	IRR (95%CI) controlling for remoteness and SEIFA
Ophthalmologist			
Very low (0-1%)	1.00	1.00	1.00
Low (1.1-3.0%)	0.62 (0.54-0.71)*	0.6 (0.52-0.69)*	0.89 (0.77-1.03)
Low medium (3.1-6.0%)	0.4 (0.34-0.48)*	0.4 (0.33-0.47)*	1.19 (0.95-1.48)
High medium (6.1-10.0%)	0.54 (0.4-0.72)*	0.59 (0.44-0.79)*	1.81 (1.3-2.53)*
High (10.1-20.0%)	0.3 (0.18-0.49)*	0.37 (0.22-0.62)*	1.16 (0.68-1.97)
Very high (>20%)	0.03 (0-0.23)*	0.06 (0.01-0.43)*	0.21 (0.03-1.54)
Optometrist			
Very low (0-1%)	1.00	1.00	1.00
Low (1.1-3.0%)	0.82 (0.77-0.87)*	0.79 (0.75-0.84)*	0.96 (0.9-1.03)
Low medium (3.1-6.0%)	0.82 (0.77-0.88)*	0.8 (0.75-0.86)*	1.27 (1.17-1.38)*
High medium (6.1-10.0%)	0.87 (0.78-0.97)*	0.96 (0.85-1.07)	1.58 (1.39-1.79)*
High (10.1-20.0%)	0.75 (0.64-0.87)*	0.95 (0.81-1.11)	1.5 (1.27-1.77)*
Very high (>20%)	0.37 (0.28-0.48)*	0.72 (0.53-0.97)*	1.36 (0.99-1.86)

*p<0.05

4. Primary care through eye exams

4.1 Optometrists

Table 2 shows the number of consultations provided by optometrists nationally by year. Overall the level of service provision increased marginally over the time period studied.

Table 2: Optometrist consultations per 1000 residents by year from 2004/05-2007/08.

Year	Consultations per 1000 residents						
	Total	New	Repeat	Less than 15 minutes	Progressive disease	New complications	Vision loss (>2 lines)
2004/05	249	138	112	3	8	5	15
2005/06	252	137	115	3	8	5	16
2006/07	262	141	121	3	10	6	17
2007/08	268	141	126	3	11	7	18
Average	258	139	118	3	9	6	16

Figure 3 shows that the level and distribution of coverage for eye exams provided by optometrists reflect the geographic distribution of optometrists. Table 3 shows the results for the relationship between the percentage of Indigenous people living in an area and consultations by an optometrist. The total number of optometry consultations was lower in areas where greater than one percent of the population was Indigenous. However, differences were relatively small and there was little variability between areas. The difference between consultation rates was smaller for new consultations than repeat consultations (see Table 3). This is suggestive of differential levels of continuity of care.

People living in areas with a very high Indigenous population were more likely than people living in reference areas to receive consultations of less than 15 minutes (see table 3). In areas with low and low medium Indigenous populations the rate of receiving consultations less than 15 minutes long was lower than for the reference area. The rate of consultations for progressive disease increased with the proportion of Indigenous people living in an area (see Table 3). The only exception was for areas with low Indigenous populations: the rates of receiving consultations for progressive disease in these areas were lower than for the reference areas.

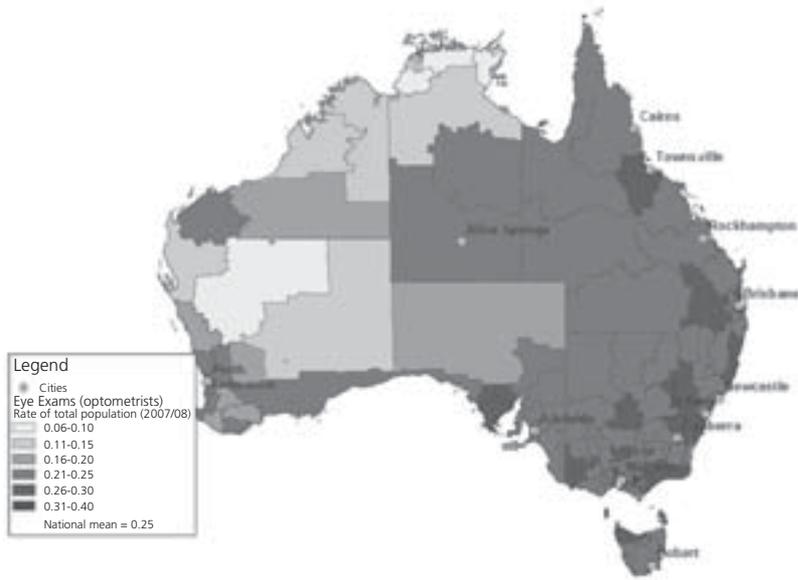


Figure 3: Age standardised rates for eye exams provided by optometrists in 2007/2008.

Overall there was a trend for consultations to increase over time with total examinations increasing annually at an average rate of 4% (see Table 3). However, there was a significant interaction with the percentage of the population that was Indigenous. Rates of consultations in areas with high or very high Indigenous populations were significantly lower and tended to decrease or stay the same relative to the reference population. In contrast, consultations increased over time relative to the reference population in areas with low or low medium Indigenous populations.

Table 3: Panel poisson regression for optometrist consultations by percent Indigenous population from 2004/05-2007/08.

Optometrist consultations 2004/05-2007/08 (IRR 95%CI)#					
	Total	New	Repeat	<15 minutes	Progressive disease
Year					
Linear trend	1.04 (1.04-1.04)*	1.02 (1.02-1.02)*	1.08 (1.07-1.08)*	1.12 (1.1-1.13)*	1.23 (1.22-1.24)*
Percent Indigenous					
Very low (0-1%)	1.00	1.00	1.00	1.00	1.00
Low (1.1-3.0%)	0.89 (0.89-0.9)*	0.91 (0.9-0.91)*	0.88 (0.87-0.88)*	0.88 (0.86-0.89)*	0.98 (0.97-0.99)*
Low medium (3.1-6.0%)	0.87 (0.86-0.87)*	0.9 (0.89-0.9)*	0.84 (0.83-0.84)*	0.86 (0.84-0.88)*	1.04 (1.02-1.05)*
High medium (6.1-10.0%)	0.89 (0.89-0.89)*	0.94 (0.94-0.95)*	0.85 (0.85-0.86)*	0.84 (0.81-0.87)*	1.1 (1.08-1.13)*
High (10.1-20.0%)	0.9 (0.89-0.9)*	0.95 (0.95-0.96)*	0.86 (0.86-0.87)*	1.01 (0.96-1.06)	1.15 (1.12-1.18)*
Very high (>20%)	0.89 (0.88-0.9)*	0.92 (0.91-0.93)*	0.87 (0.86-0.88)*	1.21 (1.12-1.31)*	1.14 (1.09-1.19)*
Interactions					
Year* Low (1.1-3.0%)	1.01 (1.01-1.01)*	1.01 (1.01-1.01)*	1.01 (1.01-1.02)*	1.05 (1.03-1.06)*	1.02 (1.01-1.03)*
Year* Low medium (3.1-6.0%)	1.00 (1.00-1.00)	0.99 (0.99-0.99)*	1.01 (1.01-1.01)*	1.02 (1.00-1.04)*	1.05 (1.04-1.06)*
Year* High medium (6.1-10.0%)	1.00 (1.00-1.01)	1.00 (0.99-1.00)	1.01 (1.00-1.01)*	0.98 (0.96-1.01)	1.06 (1.04-1.07)*
Year* High (10.1-20.0%)	0.98 (0.97-0.98)*	0.98 (0.98-0.99)*	0.97 (0.96-0.98)*	0.96 (0.93-1.00)*	1.01 (0.99-1.03)
Year* Very high (>20%)	1 (0.99-1)	0.99 (0.99-1.00)	1.00 (1.00-1.01)	0.95 (0.90-1.00)*	1.03 (1.00-1.05)

*p<0.05, #Adjusted for age, remoteness and socioeconomic status

Table 4 shows that areas where the proportion of the Indigenous population was very high received eye exams from optometrists at rates more than one standard deviation below the national average.

Table 4: Statistical subdivisions where optometrist's visits were more than 1 standard deviation below the mean by percent Indigenous population in 2007/08.

Percent Indigenous	Frequency	Percent below one standard deviation	
	Below one standard deviation	Total	
Very low (0-1%)	0	31	0.00
Low (1.1-3.0%)	0	62	0.00
Low medium (3.1-6.0%)	0	51	0.00
High medium (6.1-10.0%)	0	25	0.00
High (10.1-20.0%)	0	17	0.00
Very high (>20%)	3	22	13.6

Table 5 shows the results of the poisson regression for the relationship between consultations for new complications and consultations for vision loss and the percentage of Indigenous people living in an area.

Consultations for new complications were greater in areas where a high medium, high or very high proportion of the population was Indigenous compared to reference areas. The rate of new consultations also increased at a faster rate over time in these areas compared to reference areas.

Consultations for vision loss were lower in all areas than the reference area. The rate of consultations was decreasing over time in all areas relative to the reference area.

Table 5: Panel poisson regression for optometrist consultations by percent Indigenous population from 2004/05-2007/08.

Optometrist consultations 2004/05-2007/08 (IRR 95%CI)#		
	New complication	Vision loss > 2 lines
Year		
Linear trend	1.23 (1.22-1.24)*	1.14 (1.14-1.15)*
Percent Indigenous		
Very low (0-1%)	1.00	1.00
Low (1.1-3.0%)	0.91 (0.9-0.92)*	0.8 (0.79-0.8)*
Low medium (3.1-6.0%)	0.92 (0.9-0.93)*	0.75 (0.74-0.76)*
High medium (6.1-10.0%)	0.94 (0.92-0.97)*	0.78 (0.76-0.79)*
High (10.1-20.0%)	1.09 (1.05-1.13)*	0.82 (0.8-0.84)*
Very high (>20%)	1.18 (1.11-1.25)*	0.85 (0.82-0.88)*
Interactions		
Year* Low (1.1-3.0%)	1 (0.99-1.01)	0.98 (0.98-0.99)*
Year* Low medium (3.1-6.0%)	1.01 (0.99-1.03)	0.98 (0.97-0.99)*
Year* High medium (6.1-10.0%)	0.99 (0.96-1.02)	0.9 (0.89-0.92)*
Year* High (10.1-20.0%)	1.04 (1.01-1.08)*	0.87 (0.86-0.89)*
Year* Very high (>20%)	1 (0.99-1.01)	0.98 (0.98-0.99)*

*p<0.05, #Adjusted for age, remoteness and socioeconomic status

4.2 Ophthalmologists

Figure 4 shows the age standardised distribution of eye exams through Medicare. The patterning of results strongly reflects the distribution of ophthalmologists.

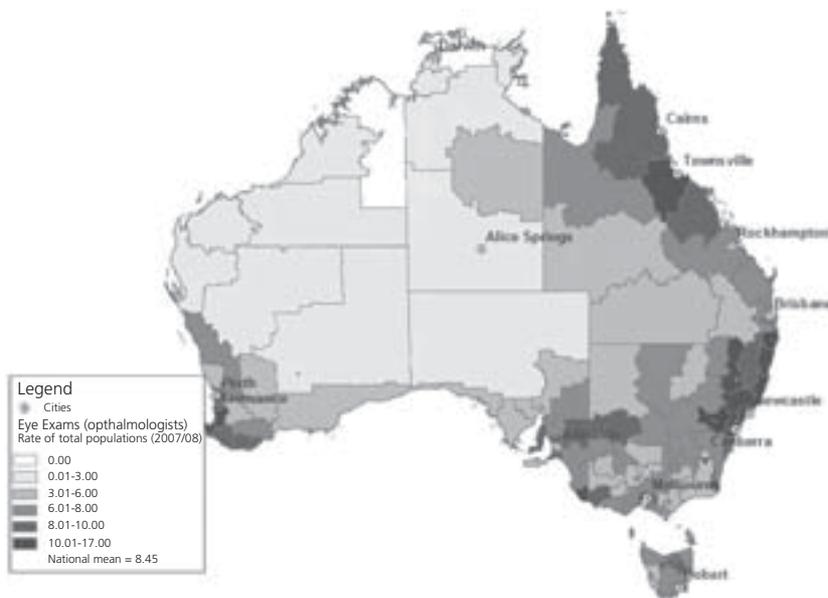


Figure 4: Age standardised rates for eye exams provided by ophthalmologists in 2007/2008.

However, eye exams provided by ophthalmologists can either be provided to outpatients in eye clinics or through Medicare. Table 6 shows the proportion of eye exams provided in each sector. The service mix varies considerably between states and territories, highlighting the importance of considering both data sources in any analysis of equity.

Table 6: Eye exams by sector in 2007/08.

State		Eye Exams Medicare	Eye Exam Outpatients	Total
NSW	n	886682	173481	1060163
	%	84	16	
VIC	n	525662	94087	619749
	%	85	15	
QLD	n	344338	76481	420819
	%	82	18	
SA	n	174726	73599	248325
	%	70	29	
WA	n	183213	21761	204974
	%	89	11	
TAS	n	48967	6158	55125
	%	89	11	
NT	n	6984	11844	18828
	%	37	63	
ACT	n	30485	914	31399
	%	97	3	
Total	n	2201057	458325	2659382
	%	83	17	

Figure 5 shows that the percentage of the population receiving eye exams by ophthalmologists decreases as the percentage of Indigenous people living in an area increases. Areas that have a very high Indigenous population have approximately half the eye exam rates of the reference population.

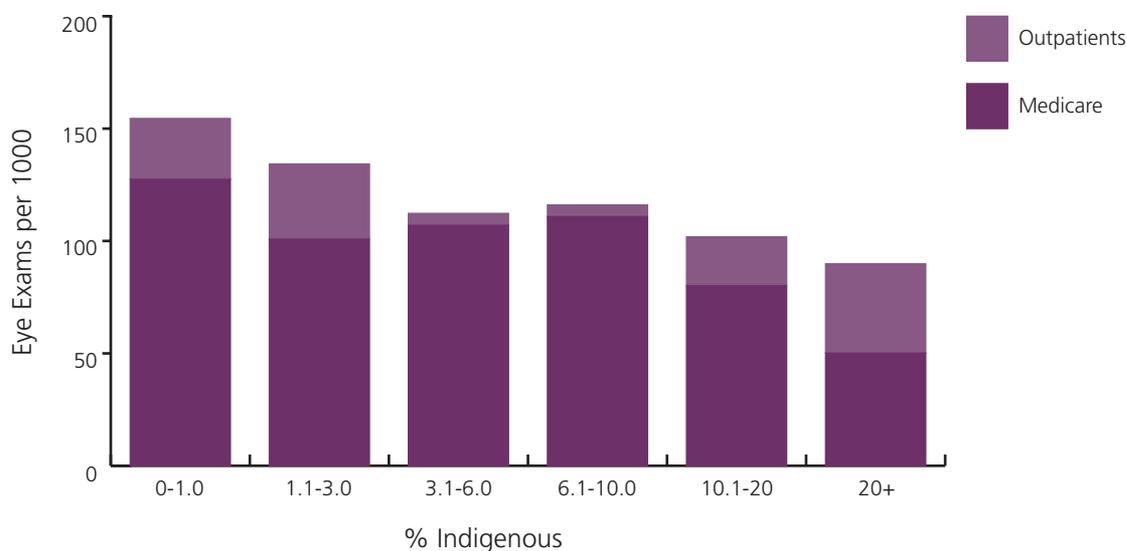


Figure 5: The relationship between Indigenous Area Composition rates of Medicare and outpatient eye exams by ophthalmologists in 2007/08 by sector.

Table 7 verifies these results and shows that the likelihood of receiving an eye exam from an ophthalmologist decreased as the percentage of Indigenous people living in an area increased.

Table 7: Poisson regression for eye exams in all sectors by ophthalmologists in 2007/08

Percent Indigenous	Eye Exams per 1000		IRR 95% CI
	Medicare	Outpatients	
Very low (0-1%)	127.44	27.06	1.00
Low (1.1-3.0%)	100.81	33.42	0.93 (0.93-0.93)*
Low medium (3.1-6.0%)	106.95	5.32	0.97 (0.97-0.98)*
High medium (6.1-10.0%)	110.86	5.16	0.99 (0.99-1)*
High (10.1-20.0%)	80.15	21.69	0.80 (0.79-0.81)*
Very high (>20%)	50.15	39.69	0.45 (0.44-0.46)*

*p<0.05, #Adjusted for remoteness and socioeconomic status

Evidence of substantial inequity in access to eye exams provided ophthalmologists is emphasized by the fact that all communities that fell significantly below the mean for eye exams (more than 1 standard deviation) had a significant Indigenous population.

Table 8: Statistical subdivisions where eye exams provided by ophthalmologists were more than 1 standard deviation below the mean by percent Indigenous population in 2007/08

Percent Indigenous	Eye exams per 100 per year	Frequency		Percent below one standard deviation
		Below one standard deviation	Total	
Very low (0-1%)	42.32	0	31	0
Low (1.1-3.0%)	40.86	0	62	0
Low medium (3.1-6.0%)	37.15	0	51	0
High medium (6.1-10.0%)	38.37	1	25	4.00
High (10.1-20.0%)	35.48	3	17	17.65
Very high (>20%)	27.75	12	22	54.55

4.3 Optometrists and Ophthalmologists

Table 9 and Figure 6 show that when all eye exams by optometrists and ophthalmologists are considered together there was still a significant disparity in the services provided in areas with low to high Indigenous populations compared to areas with very low Indigenous populations. The difference between areas was substantially reduced for areas with low to high medium Indigenous populations once remoteness and the socioeconomic position of the area were taken into account. However, the rates of eye exams in areas with high and very high Indigenous populations 10% and 34% lower respectively than areas with very low Indigenous populations were even taking remoteness and socioeconomic position of the area into account.

Table 9: Poisson regression for eye exams in all sectors by optometrists and ophthalmologists in 2007/08.

Percent Indigenous	IRR (95%CI)	IRR (95%CI) controlling for remoteness	IRR (95%CI) controlling for remoteness and SEIFA
Very low (0-1%)	1.00	1.00	1.00
Low (1.1-3.0%)	0.97 (0.96-0.97)*	0.98 (0.97-0.98)*	0.99 (0.99-0.99)*
Low medium (3.1-6.0%)	0.88 (0.88-0.88)*	0.91 (0.91-0.91)*	0.97 (0.97-0.97)*
High medium (6.1-10.0%)	0.91 (0.9-0.91)*	0.99 (0.98-0.99)*	1.00 (1-1)
High (10.1-20.0%)	0.84 (0.83-0.84)*	0.92 (0.92-0.93)*	0.9 (0.89-0.9)*
Very high (>20%)	0.66 (0.65-0.66)*	0.79 (0.79-0.8)*	0.66 (0.65-0.67)*

*p<0.05

Figure 6: The relationship between Indigenous Area Composition rates of Medicare eye exams by optometrists and ophthalmologists in 2007/08.

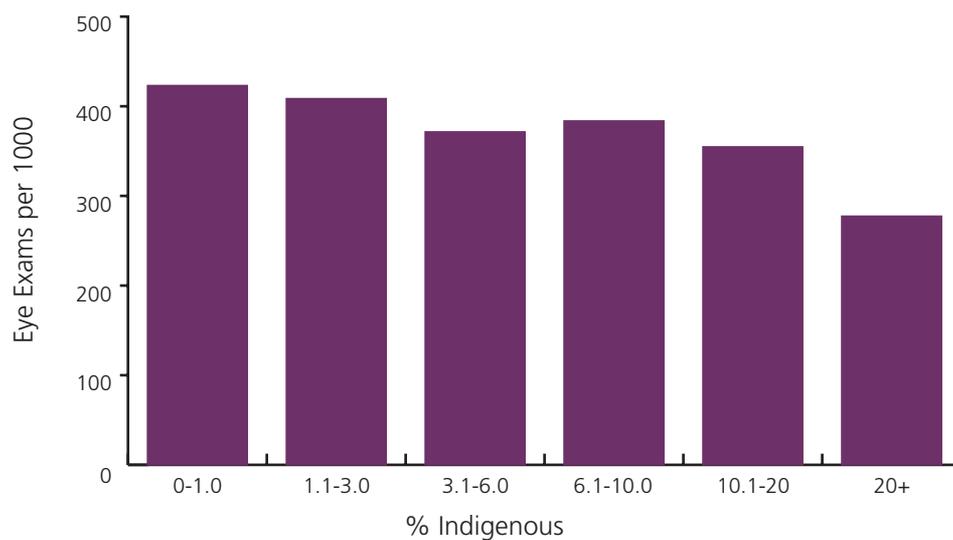


Table 10 shows that over two-thirds of areas with very high Indigenous populations were more than one standard deviation below the mean for eye exams. This compares to around three percent in the reference areas.

Table 10: Statistical subdivisions where eye exams provided by ophthalmologists and optometrists were more than one standard deviation below the mean by percent Indigenous population in 2007/08.

Percent Indigenous	Eye exams per 100 per year	Frequency	Percent below one standard deviation	
		Below one standard deviation	Total	
Very low (0-1%)	42.32	1	31	3.23
Low (1.1-3.0%)	40.86	0	62	0.00
Low medium (3.1-6.0%)	37.15	0	51	0.00
High medium (6.1-10.0%)	38.37	4	25	16.00
High (10.1-20.0%)	35.48	2	17	11.76
Very high (>20%)	27.75	15	22	68.18

Figure 7 shows that the most common reasons for not attending eye services when there was a problem were due to the cost, availability and accessibility of services, perceptions around the severity of the problem and other priorities. This may indicate that for this population, cost and lack of accessibility are barriers that preclude seeking care unless the problem is relatively severe.

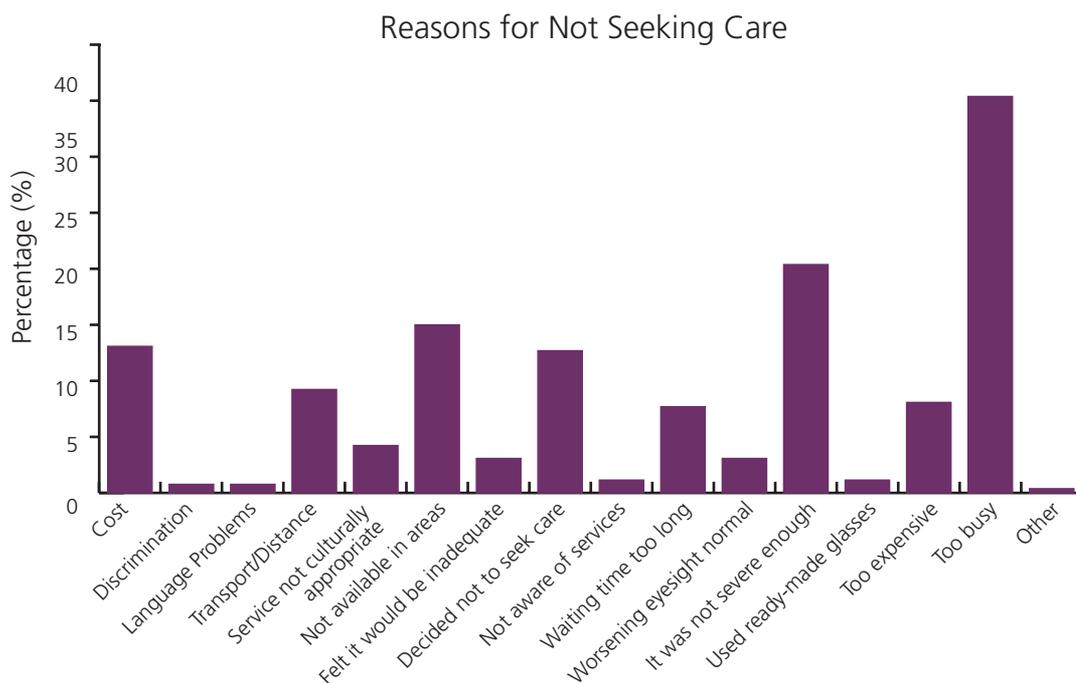


Figure 7: Reasons for not seeking care for an eye problem (National Indigenous Eye Health Survey)(1)

5. Eye procedures

Table 11 shows the rate of cataract, retinal and glaucoma operations for Indigenous and non-Indigenous populations by state. In the table, 'other' includes non-Indigenous and non-identified. It is expected that the Indigenous rate will be underestimated due to under-identification.

In all cases there seemed to be a significant disparity between rates of surgery for Indigenous Australians and other Australians. The extent to which this is attributable to an actual disparity in need or the well-documented problems of under-identification is not clear. However current estimates suggest that the level of under-identification is unlikely to account for the disparity.⁽²¹⁾

Table 11: Hospitalisation rates by state/territory and Indigenous status for 2005/06^b

Financial Year 2005/06											
State	Population	Cataract		Retinal procedures		Glaucoma		Eyelid		Trauma	
		w	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000
NSW	Other	50238	7539.39	4613	692.29	1153	173.03	4554	683.43	2217	332.71
	Indigenous	35	229.23	21	137.54	2	13.10	2	13.10	4	26.20
	Total	50273	7375.64	4634	679.86	1155	169.45	4556	668.42	2221	325.85
VIC	Other	40617	7975.03	2352	461.81	1018	199.88	3209	630.08	797	156.49
	Indigenous	33	984.57	4	119.34	0	0.00	5	149.18	1	29.84
	Total	40650	7929.32	2356	459.57	1018	198.57	3214	626.93	798	155.66
QLD	Other	69174	17530.05	4829	1223.76	1298	328.94	6251	1584.13	3880	983.27
	Indigenous	456	3147.32	64	441.73	6	41.41	38	262.28	56	386.51
	Total	69630	17020.67	4893	1196.07	1304	318.76	6289	1537.31	3936	962.13
SA	Other	12796	8309.99	565	366.92	148	5275.35	1106	718.26	235	152.61
	Indigenous	8	285.15	3	106.93	0	0.00	0	0.00	0	0.00
	Total	12804	8166.40	568	362.27	148	94.39	1106	705.41	235	149.88
WA	Other	15297	7693.06	1179	592.93	360	181.05	1534	771.47	260	130.76
	Indigenous	162	2282.78	38	535.47	1	14.09	15	211.37	77	1085.03
	Total	15459	7506.62	1217	590.95	361	175.30	1549	752.17	337	163.64
TAS	Other	724	364.11	114	57.33	87	43.75	55	27.66	51	25.65
	Indigenous	12	169.10	3	42.27	9	126.82		0.00	5	70.46
	Total	736	357.39	117	56.81	96	46.62	55	26.71	56	27.19
NT	Other	*	*	*	*	*	*	*	*	*	*
	Indigenous	*	*	*	*	*	*	*	*	*	*
	Total	367	2402.35	*	*	18	85.46	48	227.89	99	470.03
ACT	Other	3125	9474.38	146	442.64	67	203.13	240	727.63	80	242.54
	Indigenous	7	1634.75	1	233.54	0	0.00	1	233.54	2	467.07
	Total	3132	9373.91	147	439.96	67	200.53	241	721.30	82	245.42
Total	Other	191971	9583.18	13798	688.80	4131	206.22	16949	846.09	7520	375.40
	Indigenous	713	1567.68	134	294.63	18	39.58	61	134.12	145	318.81
	Aggregated	367	2402.35	*	*	18	85.46	48	227.89	99	470.03
	Total	193051	9567.07	13932	690.43	4167	206.50	17058	819.70	7764	384.76

^b WA procedures by Aboriginality were grouped in 5 years. Presented data are based on annual procedures data with 5-year proportions for Indigenous status applied. Data on Indigenous status by procedure for the NT was not available. ACT and Tasmanian was provided in full but the Indigenous identifier is considered unreliable.²¹ Australian Institute of Health and Welfare. Indigenous identification in hospital separations cat no. HSE 85. Canberra Australian Institute of Health and Welfare; 2010.

Table 12: Hospitalisation rates by state/territory and Indigenous status for 2006/07^a

Financial Year 2006/07											
State	Population	Cataract		Retinal procedures		Glaucoma		Eyelid		Trauma	
		n	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000
NSW	Other	Other	51367	7629.88	7459	1107.93	1199	178.10	4956	736.15	2257
	Indigenous	Indigenous	35	224.84	35	224.84	4	25.70	4	25.70	4
	Total	Total	51402	7462.53	7494	1087.98	1203	174.65	4960	720.09	2261
VIC	Other	Other	39561	7651.23	2793	540.18	1153	222.99	3350	647.90	1044
	Indigenous	Indigenous	65	1895.93	8	233.35	0	0.00	2	58.34	1
	Total	Total	39626	7613.32	16966	538.15	825	221.53	3352	644.02	1045
QLD	Other	72091	17876.24	7509	1861.99	1404	348.15	6562	1627.16	4136	103
	Indigenous	432	2906.19	74	497.82	18	121.09	36	242.18	88	59
	Total	72523	17344.06	7583	1813.49	1422	340.07	6598	1577.93	4224	101
SA	Other	12961	8331.92	732	470.56	181	6325.80	1245	800.34	261	17
	Indigenous	12	419.39	0	0.00	0	0.00	0	0.00	0	0
	Total	12973	8189.01	732	462.06	181	114.25	1245	785.89	261	16
WA	Other	14671	7213.27	1444	709.97	846	415.95	1562	767.99	283	14
	Indigenous	148	2049.07	46	636.87	3	41.54	15	207.68	83	115
	Total	14819	7036.16	1490	707.46	849	403.11	1577	748.77	366	17
TAS	Other	598	294.02	132	64.90	66	32.45	88	43.27	65	3
	Indigenous	8	110.76	4	55.38		0.00		0.00	2	3
	Total	606	287.73	136	64.57	66	31.34	88	41.78	67	3
NT	Other	*	*	*	*	*	*	*	*	*	*
	Indigenous	*	*	*	*	*	*	*	*	*	*
	Total	467	2824.19	*	*	13	60.49	57	265.20	121	56
ACT	Other	3149	9389.49	194	578.46	60	178.90	223	664.93	88	26
	Indigenous	16	3647.97	0	0.00	0	0.00	0	0.00	0	0
	Total	3165	9315.37	194	570.99	60	176.59	223	656.34	88	26
Total	Other	194398	9559.73	20263	996.46	4909	241.41	17986	884.48	8134	1
	Indigenous	716	1540.98	167	359.42	25	53.81	57	122.68	178	18
	Aggregated	467	2824.19	*	*	13	60.49	57	265.20	121	56
	Total	195581	9547.58	20430	997.32	4947	241.50	18100	883.58	8433	2

^a National data rather than data obtained from the states and territories were used for the estimate of averages to enhance replicability. These data vary slightly because of differences in classification.

Table 13: Hospitalisation rates by state/territory and Indigenous status for 2007/08^a

Financial Year 2007/08											
State	Population	Cataract		Retinal procedures		Glaucoma		Eyelid		Trauma	
		n	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000	n	Rate 1,000,000
NSW	Other	48989	7197.07	11454	1682.73	1291	189.66	4973	730.59	2424	356.11
	Indigenous	57	359.08	41	258.29	1	6.30	6	37.80	8	50.40
	Total	49046	7041.24	11495	1650.27	1292	185.48	4979	714.81	2432	349.15
VIC	Other	40528	7717.12	4379	833.82	28146	5359.41	3572	680.16	1069	203.55
	Indigenous	57	1624.95	5	142.54	120	3420.95	2	57.02	3	85.52
	Total	40585	7676.70	4384	829.24	28266	5346.54	3574	676.03	1072	202.77
QLD	Other	76580	18562.45	10917	2646.20	1400	339.35	7034	1704.99	4412	1069.44
	Indigenous	796	5219.60	69	452.45	12	78.69	28	183.60	74	485.24
	Total	77376	18086.81	10986	2568.00	1412	330.06	7062	1650.76	4486	1048.61
SA	Other	13249	8430.16	1016	646.47	218	7469.33	1245	792.18	301	191.52
	Indigenous	15	513.95	1	34.26	0	0.00	0	0.00	0	0.00
	Total	13264	8285.83	1017	635.31	218	136.18	1245	777.73	301	188.03
WA	Other	13801	6630.18	1407	675.94	3382	1624.76	1690	811.90	294	141.24
	Indigenous	125	1700.03	45	612.01	10	136.00	17	231.20	86	1169.62
	Total	13926	6461.97	1452	673.76	3392	1573.96	1707	792.09	380	176.33
TAS	Other	625	300.26	95	45.64	93	44.68	58	27.86	69	33.15
	Indigenous	6	81.60	4	54.40	3	40.80	1	13.60		0.00
	Total	631	292.80	99	45.94	96	44.55	59	27.38	69	32.02
NT	Other										
	Indigenous										
	Total	546	3216.11	*	*	24	109.02	42	190.79	114	517.85
ACT	Other	1492	4389.57	285	838.49	28	82.38	117	344.22	34	100.03
	Indigenous	7	1558.67	0	0.00	0	0.00	2	445.34	1	222.67
	Total	1499	4352.65	285	827.55	28	81.30	119	345.54	35	101.63
Total	Other	195264	9453.03	29553	1430.71	34558	1673.01	18689	904.76	8603	416.48
	Indigenous	1063	2239.08	165	347.55	146	307.53	56	117.96	172	362.30
	Aggregated	546	3216.11	*	*	24	109.02	42	190.79	114	517.85
	Total	196873	9460.46	29718	1428.06	34728	1668.81	18787	902.78	8889	427.15

^a National data rather than data obtained from the states and territories were used for the estimate of averages to enhance replicability. These data vary slightly because of differences in classification.

Further analysis was conducted for cataract surgery. Area level analysis was conducted because of concerns about under enumeration of Indigenous Australians and Table 14 shows that rates of cataract surgery in areas with high medium to very high Indigenous populations were less than half of those for reference areas. There was a trend for rates of cataract surgery to increase over time. However, this interacted with the Indigenous composition of the population such that rates of surgery were decreasing in areas with low and high to very high Indigenous populations compared to the reference area. Conversely, rates were increasing in areas where the Indigenous population was high medium compared to the reference areas.

Table 14: Panel poisson regression for cataract surgery in all sectors by percent Indigenous population 2005/06-2007/08

	IRR 95% CI#
Year	
Linear trend	1.03 (1.02-1.04)*
Percent Indigenous	
Very low (0-1%)	1.00
Low (1.1-3.0%)	1.06 (1.01-1.11)*
Low medium (3.1-6.0%)	1.04 (0.97-1.11)
High medium (6.1-10.0%)	0.49 (0.41-0.58)*
High (10.1-20.0%)	0.34 (0.27-0.41)*
Very high (>20%)	0.42 (0.24-0.73)*
Interactions	
Year* Low (1.1-3.0%)	0.97 (0.96-0.98)*
Year* Low medium (3.1-6.0%)	1 (0.98-1.02)
Year* High medium (6.1-10.0%)	1.12 (1.09-1.15)*
Year* High (10.1-20.0%)	0.95 (0.91-0.98)*
Year* Very high (>20%)	0.95 (0.91-0.99)*

*p<0.05, #Adjusted for age, remoteness and socioeconomic status

A number of areas had cataract surgery below the levels recommended by the WHO. Around 40 percent of areas with very high Indigenous populations had cataract rates below WHO recommended guidelines. This compares to around 6 percent in reference areas (Table 15). Around half of communities with very high and high medium Indigenous populations and over three quarters of communities with high Indigenous populations had rates of cataract surgery below the national average. The percentage of communities below the national average was 52 per cent in areas with very low Indigenous populations. In the remaining areas it was between 25 and 35 percent.

Table 15: Areas where the 2007/08 cataract rate is below WHO (3000 per million) and National Average (9072 per million)

Percent Indigenous	Frequency 2005/06-2007/08				
	Below WHO guidelines	Below National Average	Total	Percent below WHO guidelines	Percent below National Average
Very low (0-1%)	2	16	31	6.45	51.61
Low (1.1-3.0%)	0	22	62	0.00	35.48
Low medium (3.1-6.0%)	2	13	51	3.92	25.49
High medium (6.1-10.0%)	2	13	25	8.00	52.00
High (10.1-20.0%)	3	13	17	17.65	76.47
Very high (>20%)	8	11	22	36.36	50.00

Figure 8 shows the rates of procedures for diabetic retinopathy through Medicare. Despite the much higher incidence of diabetes among Indigenous Australians (28) there was a clear disparity in eye procedures for diabetic retinopathy. This disparity persists even when hospital data are included.

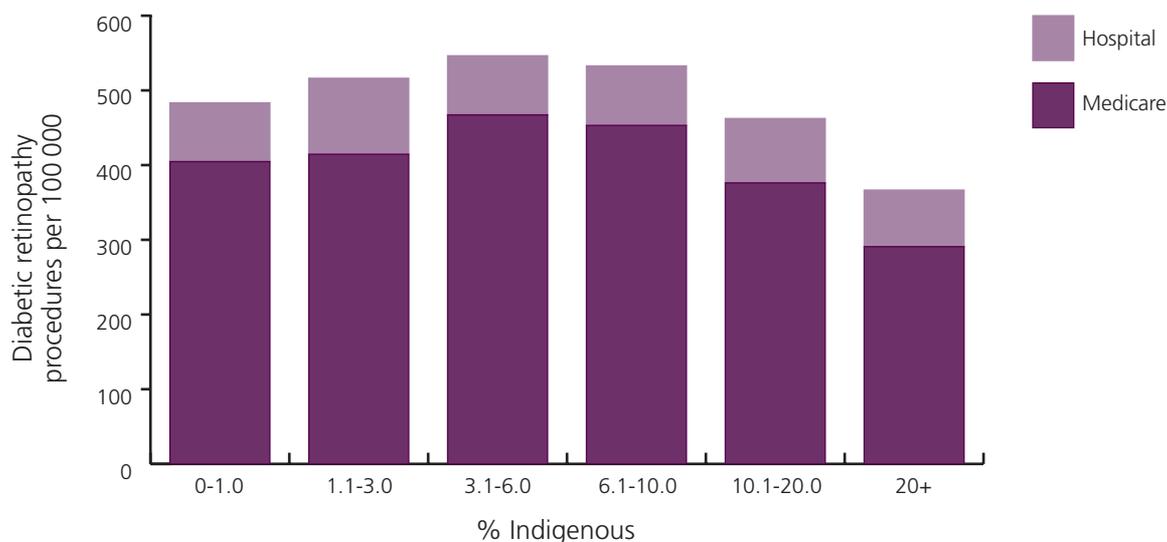


Figure 8: Medicare and hospital procedures for diabetic retinopathy^c

Table 16: Medicare and hospital procedures for diabetic retinopathy^c

Percent Indigenous	Medicare	Hospital *
Very low (0-1%)	405	79
Low (1.1-3.0%)	415	102
Low medium (3.1-6.0%)	467	79
High medium (6.1-10.0%)	453	80
High (10.1-20.0%)	376	86
Very high (>20%)	290	76

Table 17 shows that rates of procedures for diabetic retinopathy through Medicare were lower in areas with very high Indigenous populations compared to areas with very low Indigenous populations. Rates of diabetic retinopathy procedures were significantly higher than the reference group in all other areas. When hospital data were included there was no difference in the unadjusted rates of procedures for diabetic retinopathy between communities with very low and very high Indigenous populations. However once remoteness and SEIFA were taken into account rates were significantly higher among areas with very high Indigenous populations compared to areas with very low Indigenous population. This may in part be because any double counting in procedure numbers may have a greater effect in apparent rates in areas with smaller populations. Rates were higher in all other areas compared to the reference area. This may also be due to the 7 times higher prevalence of self-reported diabetes in Indigenous adults compared with other Australians^{(29) (30)}

^c Hospital data are based on the proportion of Medicare retinal procedures which are for diabetic retinopathy, please note this will represent an over count.

Table 17: Panel Poisson regression for diabetic retinopathy in all sectors by percent Indigenous populations 2005/06-2007/08.

Percent Indigenous	Medicare only		Medicare and Hospitals	
	IRR 95% CI	IRR 95% CI#	IRR 95% CI	IRR 95% CI#
Very low (0-1%)	1.00	1.00	1.00	1.00
Low (1.1-3.0%)	1.03 (1.02-1.04)*	1 (0.99-1.01)	1.03 (1.02-1.04)*	1.03 (1.02-1.04)*
Low medium (3.1-6.0%)	1.13 (1.12-1.14)*	1.02 (1.01-1.03)*	1.2 (1.18-1.22)*	1.13 (1.12-1.14)*
High medium (6.1-10.0%)	1.12 (1.11-1.14)*	1.06 (1.05-1.08)*	1.26 (1.23-1.29)*	1.28 (1.25-1.31)*
High (10.1-20.0%)	1.04 (1.01-1.06)*	1.02 (0.99-1.04)	1.2 (1.17-1.23)*	1.25 (1.22-1.28)*
Very high (>20%)	0.81 (0.78-0.83)*	0.96 (0.93-0.99)*	1.1 (1.04-1.17)	1.48 (1.4-1.56)*

**p<0.05, # Adjusted for remoteness and socioeconomic status

6. Relationship between primary care and procedures in eye health

In this section we examine the relationship between the provision of eye exams and the provision of cataract surgery by the percent of Indigenous people in the population. For the purposes of this analysis, the incidence of cataract is assumed to be equal in all population segments so it would be anticipated that given equity of service provision the relationship between eye exams and cataract surgery would be similar across areas.

Table 18 and Figure 9 shows that in general a higher proportion of eye exams resulted in cataract surgery in areas with more than a very low Indigenous population. However in areas where the Indigenous population was very high rates of cataract surgery were higher than in those areas where the proportion of Indigenous people was very low. This could either reflect a smoother transition from primary care to surgery or a serious surgical “back log”. Where surgery is keeping pace with demand it would be expected that the proportion of eye exams that result in surgery would reflect the incidence rate of cataract. However, if surgery provision is lagging behind demand then it would instead reflect the prevalence rate.

Table 18: Poisson regression for cataract surgery resulting from eye exams by optometrists and ophthalmologists in 2007/08.

Percent Indigenous	Eye Exams#
	IRR 95% CI
Very low (0-1%)	1.00
Low (1.1-3.0%)	0.95 (0.94-0.96)*
Low medium (3.1-6.0%)	0.82 (0.8-0.83)*
High medium (6.1-10.0%)	0.83 (0.81-0.85)*
High (10.1-20.0%)	0.6 (0.58-0.62)*
Very high (>20%)	1.14 (1.06-1.22)*

*p<0.05, # Adjusted for age, remoteness and socioeconomic status

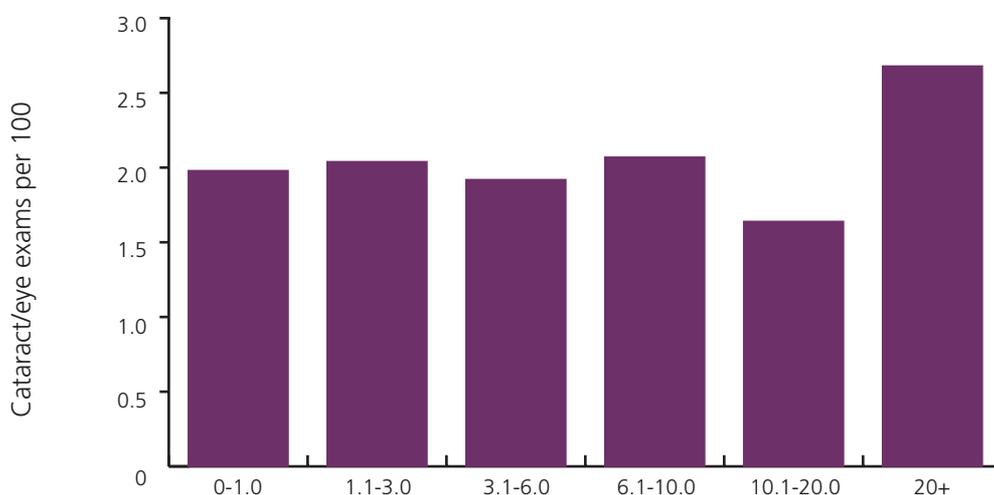


Figure 9: The relationship between Indigenous Area Composition and rates of cataract surgery by eye exams in 2007/08.

Figure 10 shows that the main reasons for not having cataract surgery were perceptions that the problem was not bothersome, concern about the costs of surgery and its failure. These reasons echo the ones given for not seeking care for an eye problem and demonstrate that even with access to eye exams, eye problems may be diagnosed but not adequately address or treated. ⁽¹⁾

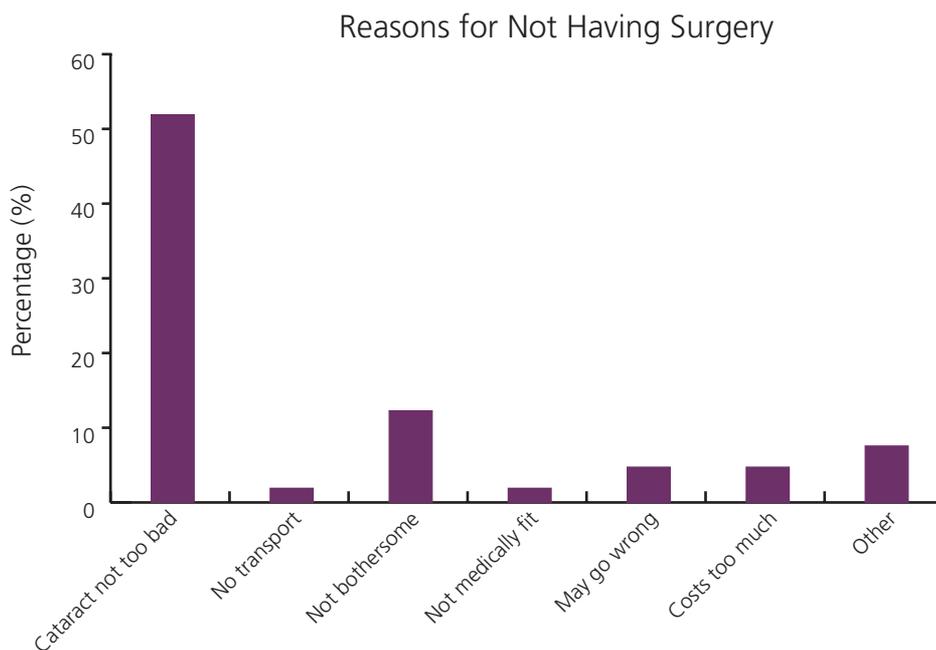


Figure 10: Reasons for not having cataract surgery (National Indigenous Eye Health Survey) ⁽¹⁾

7. Trachoma

Figure 11 displays the results of azithromycin doses supplied to remote area Aboriginal and Torres Strait Islander health services through PBS Section 100 services in States and Territories with remote areas. It also shows the rates of reported treatment with azithromycin in the Northern Territory, South Australia and Western Australia based on NTRSU ⁽²⁴⁾ data and recommended rates of treatment based on WHO ⁽²⁵⁾ and CDNA ⁽²⁶⁾ guidelines (see 2.5.3).

The results showed that using regional estimates of population, the doses of azithromycin expected based on WHO guidelines was significantly greater than the doses available through Section 100, 11 percent in the case of NT and 152 percent in the case of WA. Using community estimates of population, doses of azithromycin provided through Section 100 were less than the doses the required according to WHO in the NT but still exceeded the doses required in WA by 58 percent. When CDNA guidelines were applied to regional population estimates the doses required were lower than the number of doses provided through Section 100, 3 percent for NT and 29 percent for WA. The difference between doses available exceeded doses required to a much greater extent when community estimates of the population were used.

Overall the doses recommended by WHO exceeded the doses recommended by CDNA. It seems that in some cases doses of azithromycin provided from Section 100 would have been lower than doses required, particularly in WA.

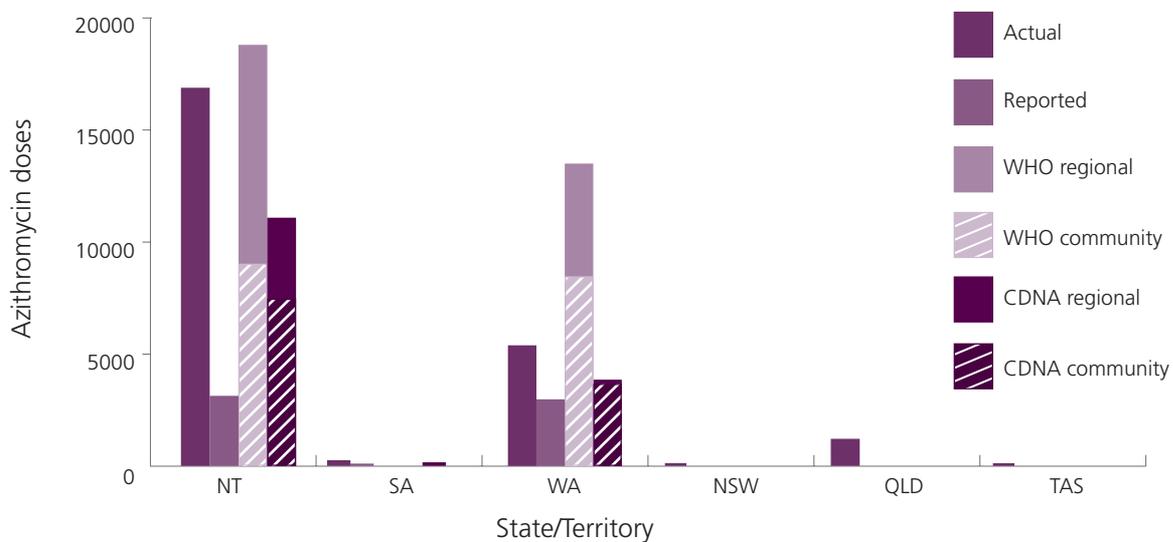


Figure 11: A comparison of actual azithromycin doses given through PBS S100, doses reported through NTRSU, WHO recommended and CDNA recommended doses based on NTRSU data using regional population estimates

Table 19: Azithromycin doses given through PBS S100, doses reported through NTSRU, WHO recommended and CDNA recommended doses based on NTSRU data using community population estimates

State	Actual	Reported	Based on Regional population		Based on community population	
			WHO	CDNA	WHO	CDNA
NT	16815	3069	18729	11017	8968	7407
SA	106	7		45		45
WA	5327	2917	13433	3793	8407	3614
NSW	16					
QLD	1150					
TAS	0					

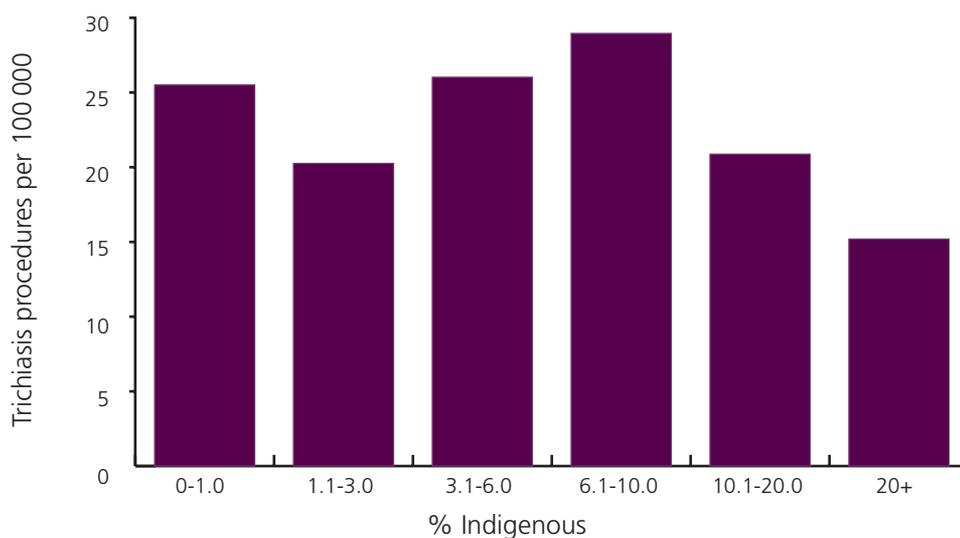


Figure 12: Trichiasis surgery procedures provided through Medicare 2007/08

Figure 12 shows procedures for Trichiasis provided through Medicare. The results suggest that the provision of Trichiasis through the uncapped public health system is lower in areas with very high Indigenous populations compared to other areas. This disparity could clearly be offset by increased activity in the public hospital system but nonetheless is somewhat surprising given the epidemiology of trachoma.

However, it must be noted not all the reported surgery would be for trichiasis from trachoma and many would be due to trichiasis from other causes such as senile entropion.

8 Key findings

The fragmented funding and service provision, a real understanding of health work force distribution and hence structures of the Australian health system creates a major challenge for health services research and any assessment of equity at a system level. In this report we have drawn together information across sectors to provide a comprehensive assessment of eye health services for Indigenous Australians. The data was limited in a number of ways that have been discussed throughout the report. These data limitations and recommendations to address them are summarised in Table 20.

The analysis of data for health professionals focused on offices rather than how much time was spent working in each site. Understanding how much time was spent in different sites is clearly crucial to understanding equity.

Access to hospital data at a national level was not possible because we were interested in the area in which services were provided. However, the need for geographic specificity was only a means to link area level data to the health data. If there were a method of providing these data delinked it would greatly assist in gaining consistent data at a national level. The analysis was also limited by variation in the data collected by Medicare and hospitals both in relation to procedures and Indigenous status, the data provided by different jurisdictions and the limitations of small cell numbers. The analyses conducted are necessarily a compromise between providing comprehensive coverage and the level of detail in the data. The data presented reflects the lowest level of aggregation possible to enable data to be presented at a national level.

Table 20: Data limitations

Limitations	Recommendations
Professionals	
Level of ascertainment varies between professional organisations	Include data on how much time spent at different sites in membership records
Data does not show the amount of time health professionals spend working in any site	
Hospital data	
Provision of data at a national level not possible because of use of geographic classifiers	Development of a mechanism to link and de-identify hospital data at an area level Improvements to identification processes More detail on outpatient data collection is crucial to understanding the receipt of primary care, particularly in remote areas.
Concern about the level of identification of Indigenous status in some States and Territories	
AN-DRGs lack clinical clarity. Medicare and AN-DRG classifications not consistent.	
Provision of hospital data not possible in some states and territories because of privacy	
Outpatient data do not include patient characteristics	
Diabetes – Hospital retinal treatment data not specific for diabetic retinopathy	Specific reporting of hospital data for laser treatment of diabetic retinopathy
Medicare data	
Medicare lacks consistent Indigenous identifier	Introduction of a mechanism to enable access to data using the VII for investigator initiated projects. Inclusion of Indigenous governance in the mechanism
Access not possible to VII data for studies not sponsored by the Department of Health and Ageing	
Trachoma	
Section 100 data applies to the supply of medicines to health services and not individuals	
Geographic classifications used in the NTRSU do not necessarily map to Australian Standard Classifications	
Trichiasis Surgery not specific for trachoma	A specific item number for surgery to correct trichomatous trichiasis

Developing appropriate indicators of Indigenous status for the purposes of health services research is a perennial challenge. In this study we have studied variation in health service use as a function of the proportion of the population that is Indigenous, clearly a blunt measure of actual health disparity. Recent data suggests that the level of ascertainment in the Voluntary Indigenous Identifier (VII) has increased to the point that it is appropriate basis for the estimation of service use at a population level ⁽³¹⁾. The VII would provide a much finer level of estimation than the current project. However, the process for accessing data using the VII for research projects that are not government sponsored is not transparent nor is the crucial role of Indigenous governance in this process.

8.1 Eye health practitioners

The supply of optometrists and ophthalmologists was greater on the eastern seaboard and metropolitan areas of Australia. National coverage and equity of distribution of optometrists was greater than that for ophthalmologists, partly due to there being four times more optometrist than ophthalmologist practices. This is reflected in greater equity in the supply of eye exams by optometrists. The supply of optometrists and ophthalmologists decreased as the proportion of Indigenous people living in a community increased. However, this effect was largely due to the fact that Indigenous people live in socioeconomically disadvantaged areas. Once area socioeconomic status was taken into account disparities in the supply of health professional were no longer significant. This suggests that addressing socioeconomic disadvantage in access to eye health professionals more generally may assist in reducing disparities for Indigenous people. It should be noted that these data are likely to underestimate equity because they do not take into account the proportion of time optometrists and ophthalmologists spent working in different offices, particularly in more remote areas, where these offices are more likely to be satellite offices with only the periodic presence of the optometrist.

8.2 Primary care through eye exams

There was some evidence that Indigenous people were disadvantaged in terms of access to primary care provided by optometrists. The total number of optometry consultations was lower in areas where one percent or more of the population was Indigenous. For example, rates of total consultations in areas with very high Indigenous populations were 10 percent lower than in reference areas. However, areas with large Indigenous populations were the only areas where the rate of eye exams provided by optometrists was less than 1 standard deviation below the mean.

Areas where the Indigenous population was very high were 14 percent more likely to receive eye exams for progressive disease than areas where the Indigenous populations were very low and were 18% more likely to receive consultations for new complications. This may reflect some differences in billing practices but is consistent with higher rates of progressive disease among the Indigenous population ⁽¹⁾. Rates of consultations for vision loss were 15 percent lower for areas with a very high Indigenous population compared to areas with a very low Indigenous population. This seems relatively surprising given that rates of vision loss are much higher in Indigenous communities ⁽¹⁾. However, it may be the case that higher rates of co-morbidity means that other types of consultations are more common for Indigenous people.

Rates of eye exams provided by ophthalmologists in areas with a very high Indigenous population were less than half the rate of eye exams for communities with very low Indigenous populations. It is particularly concerning that 20 percent of areas where the Indigenous population was high and over half of areas where the Indigenous population was very high had rates of eye exams significantly (one standard deviation or more) below the national average.

The disparity in total number of eye exams provided in areas with low and high Indigenous populations persisted but decreased when eye exams provided by optometrists were included in the analysis. For example, the rate of

total eye exams provided in areas where the Indigenous population was very high was two-thirds of the rate of eye exams for areas where the Indigenous population was very low. Areas with very high Indigenous populations constituted about two-thirds of areas where the provision of eye health services was significantly below the national average.

There is little doubt that areas with a larger proportion of Indigenous Australians are the most disadvantaged in terms of access to eye health services at a primary care level. However, there is also some evidence that eye problems may have to be severe before help is sought. This is reflected in many of the reasons provided for not having eye problems attended to.

Broadening the range of health professionals able to obtain reimbursement through Medicare is a key strategy of the reform of the Australian health system ⁽²⁸⁾. Optometrists were one of the first groups of health professionals other than doctors to be able to access Medicare. These data suggest that this strategy may have reduced the gap in access to services, although it certainly has not closed it.

8.3 Eye procedures

Rates of cataract surgery in areas where the Indigenous population was high medium to very high were less than half of those for reference areas. This suggests that almost all areas with significant Indigenous populations are disadvantaged in terms of access to cataract surgery.

It is concerning that many areas had rates of cataract surgery that fell below the WHO guidelines. It is even more problematic that Indigenous communities were so strongly over represented in this category. Over a third of areas with very high Indigenous populations and 17 percent of areas with high Indigenous populations had cataract rates below the minimum levels recommended by WHO. Around half of communities with very high and high medium Indigenous populations and over three quarters of communities with high Indigenous populations had rates of cataract surgery below the national average. However, around half of communities with very low Indigenous populations were also below the national average. The level of disadvantage experienced by Indigenous populations is more severe than for other Australians, although there was evidence that a high proportion of Australians are disadvantaged in relation to cataract surgery.

There is currently heated debate around reduction in the Medicare reimbursement rates for cataract and its implications for service provision ⁽³²⁾. Increases in the out-of-pocket costs for cataract surgery may contribute to increasing disparities among Indigenous and other Australians.

The results also suggested that there was a disparity in the provision of procedures for diabetic retinopathy through Medicare for areas with very high Indigenous populations compared to areas with very low Indigenous population. Rates were significantly higher among areas with very high Indigenous populations compared to areas with very low Indigenous population when remoteness and SEIFA were taken into account. This differential effect may be due to biases in the estimation method used. Many services associated with diabetic retinopathy are only offered through Medicare. The results suggest that, given the higher incidence of diabetic retinopathy, areas with high Indigenous populations are under served.

8.4. Relationship between primary care and procedures in eye health

We also examined the relationship between the provision of eye exams and the provision of cataract surgery by Indigenous percentage of the population. If one were to assume that the incidence of cataract is approximately equal in all population segments it would be anticipated that given equity of service provision the relationship between eye exams and cataract surgery would be similar across areas.

However, compared to areas with a very low Indigenous population, areas with low, medium or high Indigenous population had significantly lower rates of cataract surgery as a proportion of eye exams. This suggests that even when people in these areas have their eyes checked they might be less likely to have surgery compared to reference areas. Most areas with low, medium or high Indigenous populations had similarly low levels of eye exams per capita in comparison to reference areas, suggesting that the difference in rates is not due to higher levels of screening outside of the reference areas, but lower levels of cataract surgery. This is reinforced by inpatient data where rates of admittance were also lower than in the reference areas.

A higher proportion of eye exams resulted in cataract surgery in areas with a very high Indigenous population compared to reference areas. It seems unlikely that this effect is due to a more efficient pathway from primary care due to lower overall rates of eye exams and cataract surgery compared to reference areas. It is more likely that this effect indicates a serious surgical “back log.” Where surgery is keeping pace with demand it would be expected that the proportion of eye exams resulting in surgery would reflect the incidence rate of cataract. However, if surgery is lagging behind demand, the rate of surgery would instead reflect the prevalence rate. Alternatively, the rates of surgery resulting from eye exams may reflect greater severity of presentations in areas with a very high Indigenous population. The data from the National Indigenous Eye Health Survey provides support for both these explanations by suggesting that the incidence and prevalence of cataract is higher among Indigenous people and that recent initiatives have attempted to redress the surgery backlog ⁽¹⁾.

8.5 Trachoma

Trachoma is known to occur within many remote Aboriginal communities. Both WHO ⁽²⁵⁾ and CDNA ⁽²⁶⁾ guidelines recommend controlling trachoma with the SAFE strategy that involves family or community-based treatment with azithromycin. In this study levels of azithromycin treatment recommended by WHO based on trachoma prevalence exceeded those suggested by CDNA. Levels of azithromycin provided through Section 100 fell below those recommended by WHO, for WA and for NT when regional estimates were used. The availability of azithromycin through Section 100 exceeded the demand suggested by the CDNA guidelines. This study uses Section 100 data which only addresses supply to health services and not to individuals. Therefore the data presented are likely to underestimate the real shortfall.

The introduction of the Section 100 arrangements for remote area Indigenous health services had a major impact on improving access to medicines for chronic disease. However, the supply of azithromycin did not change as a result of the program ⁽³³⁾. It was assumed that this is because little attention was given to trachoma control and the treatment of trachoma with azithromycin.

All aspects of the SAFE strategy are important in the eradication of trachoma. However, improving the supply and distribution of antibiotics is relatively easy to implement, fund and monitor. Increasing the supply of azithromycin up to WHO recommended levels would greatly assist in supporting more complex environmental interventions.

9 Conclusions

The results suggest that despite a number of government initiatives to improve Indigenous people's access to eye health services there remain significant inequities in access. While these are most marked for ophthalmic services there are also substantial disparities in optometry services. Even though Australia is a developed country, there was evidence that treatment for cataract and trachoma in some areas with large Indigenous populations fell below WHO guidelines developed for Africa. Developing a targeted co-ordinated approach to address these issues is a challenge in an environment of complex service provision. More extensive take up of existing Medicare provisions would be an important step in this process. The national health survey data suggest that along with improving access to health services, community education around the importance of eye health and the effectiveness of treatment might reduce reluctance in help seeking.

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12 Appendix A : Description of Medicare items

10900 – (Category 1 – PROFESSIONAL ATTENDANCES) – COMPREHENSIVE INITIAL CONSULTATION:

Professional attendance of more than 15 minutes duration, being the first in a course of attention – not payable within 24 months of an attendance to which item 10900, 10905, 10907, 10912, 10913, 10914 or 10915 applies. (See para 06 of explanatory notes to this category)

Fee: \$67.15 **Benefit:** 85% = \$57.10

10918 – (Category 1 – PROFESSIONAL ATTENDANCES) – SUBSEQUENT CONSULTATION: Professional attendance being the second or subsequent in a course of attention not related to the prescription and fitting of contact lenses, not being a service associated with a service to which item 10940 or 10941 applies. (See para 06 of explanatory notes to this category)

Fee: \$33.60 **Benefit:** 85% = \$28.60

10914 – (Category 1 – PROFESSIONAL ATTENDANCES): Professional attendance of more than 15 minutes duration, being the first in a course of attention, where the patient has a **progressive disorder** (excluding presbyopia) requiring comprehensive reassessment within 24 months of an initial consultation to which item 10900, 10905, 10907, 10912, 10913, 10914 or 10915 applies.

(See para 06 of explanatory notes to this category)

Fee: \$67.15 **Benefit:** 85% = \$57.10

10913 – (Category 1 – PROFESSIONAL ATTENDANCES): Professional attendance of more than 15 minutes duration, being the first in a course of attention, when the patient has **new signs or symptoms**, unrelated to the earlier course of attention, requiring comprehensive reassessment within 24 months of an initial consultation to which item 100900, 10907, 10912, 10913, 10914 or 10915 at the same practice applies

(See para 06 of explanatory notes to this category)

Fee: \$67.15 **Benefit:** 85% = \$57.10

10915 – (Category 1 – PROFESSIONAL ATTENDANCES): Professional attendance of more than 15 minutes duration, being the first in a course of attention involving the examination of the eyes, with the instillation of a mydriatic, of a patient with diabetes mellitus requiring comprehensive reassessment

(See para 06 of explanatory notes to this category)

Fee: \$67.15 **Benefit:** 85% = 57.10

10912 – (Category 1 – PROFESSIONAL ATTENDANCES): OTHER COMPREHENSIVE CONSULTATIONS:

Professional attendance of more than 15 minutes duration, being the first in a course of attention, where the patient has suffered a **significant change of visual function** requiring comprehensive reassessment within 24 months of an initial consultation to which item 10900, 10905, 10907, 10912, 10913, 10914 or 10915 at the same practice applies

(See para 06 of explanatory notes to this category)

Fee: \$67.15 **Benefit:** 85% = \$57.10

10916 – (Category 1 – PROFESSIONAL ATTENDANCES) – BRIEF INITIAL CONSULTATION: Professional attendance, being the first in a course of attention, of not more than 15 minutes duration, not being a service associated with a service to which item 10931, 10932, 10933, 10940, 10941, 10942 or 10943 applies

(See para 06 of explanatory notes to this category)

Fee: \$33.60 **Benefit:** 85% = \$28.60

42698 – (Category 3 – THERAPEUTIC PROCEDURES) – LENS EXTRACTION: excluding surgery performed for the correction of refractive error *except for the anisometropia greater than 3 dioptres following the removal of cataract in the first eye*

(Multiple Service Rule)

(Anaes.)

Fee: \$572.20 **Benefit:** 75% = \$429.15; 85% = \$503.10

42701 – (Category 3 – THERAPEUTIC PROCEDURES) – ARTIFICIAL LENS: insertion of, excluding surgery performed for the correction of refractive error *except for the anisometropia greater than 3 dioptres following the removal of cataract in the first eye*

(Multiple Service Rule)

(Anaes.)

Fee: \$319.10 **Benefit:** 75% = \$239.35; 85% = \$271.25

42702 – (Category 3 – THERAPEUTIC PROCEDURES) – LENS EXTRACTION: excluding surgery performed for the correction of refractive error *except for the anisometropia greater than 3 dioptres following the removal of cataract in the first eye*

(Multiple Service Rule)

(Anaes.)

Fee: \$572.20 **Benefit:** 75% = \$429.15; 85% = \$503.10

104 – (Category 1 – PROFESSIONAL ATTENDANCES): SPECIALIST, REFERRED CONSULTATION – SURGERY OR HOSPITAL: (Professional attendance at consulting rooms or hospital by a specialist in the practice of his or her speciality where the patient is referred to him or her) - INITIAL attendance is a single course of treatment, not being a service to which ophthalmology items 106, 109 or obstetric item 16401 apply.

Fee: \$80.85 **Benefit:** 75% = \$60.65; 85% = \$68.75

105 – (Category 1 – PROFESSIONAL ATTENDANCES): Each attendance SUBSEQUENT to the first in a single course of treatment.

Fee: \$40.60 **Benefit:** 75% = \$30.45; 85% = \$34.55

106 – (Category 1 – PROFESSIONAL ATTENDANCES): INITIAL SPECIALIST OPHTHALMOLOGIST ATTENDANCE, REFERRED CONSULTATION in a single course of treatment, being an attendance at which the sole service provided is refraction testing for the issue of a prescription for spectacles or contact lenses not being a service to which items 104, 109 or 10801 to 10816 apply

Fee: \$67.15 **Benefit:** 75% = \$50.40; 85% = \$57.10

107 – (Category 1 – PROFESSIONAL ATTENDANCES): SPECIALIST, REFERRED CONSULTATION – HOME VISITS: (Professional attendance at a place other than consulting rooms or hospital by a specialist in the practice of his or her speciality where the patient is referred to him or her) - INITIAL attendance is a single course of treatment,

Fee: \$118.60 **Benefit:** 75% = \$88.95; 85% = \$100.85

108 – (Category 1 – PROFESSIONAL ATTENDANCES): Each attendance SUBSEQUENT to the first in a single course of treatment.

Fee: \$75.05 **Benefit:** 75% = \$56.30; 85% = \$63.85

109 – (Category 1 – PROFESSIONAL ATTENDANCES): INITIAL SPECIALIST OPHTHALMOLOGIST PAEDIATRIC ATTENDANCE, REFERRED CONSULTATION in a single course of treatment, being an attendance at which a comprehensive eye examination is performed on a child aged 8 years or under, or on a child aged 14 years or under with developmental delay, not being a service to which item 104, 106 or any of the items 10801 to 10816 applies

Fee: \$121.45 **Benefit:** 75% = \$91.10; 85% = \$103.25

11215 – (Category 2 – DIAGNOSTIC PROCEDURES AND INVESTIGATIONS): RENTINAL PHOTOGRAPHY, multiple exposures of 1 eye with intravenous dye injection

Fee: \$116.25 **Benefit:** 75% = \$87.20; 85% = \$98.85

11218 – (Category 2 – DIAGNOSTIC PROCEDURES AND INVESTIGATIONS): RENTINAL PHOTOGRAPHY, multiple exposures of both eyes with intravenous dye injection

Fee: \$140.60 **Benefit:** 75% = \$107.70; 85% = \$122.10

42725 – (Category 3 – THERAPEUTIC PROCEDURES) – VITRECTOMY by posterior chamber sclerotomy including the removal of vitreous, division of bands or removal of preretinal membranes where performed, by cutting and suction and infusion.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$1,265.00 **Benefit:** 75% = \$948.75

42809 – (Category 3 – THERAPEUTIC PROCEDURES) – RETINA, photocoagulation of, not being a service associated with photodynamic therapy with verteporfin.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$426.35 **Benefit:** 75% = \$319.80; 80% = \$362.4

42581 – (Category 3 – THERAPEUTIC PROCEDURES) – ECTROPION OR ENTROPION, tarsal cauterization of.

Multiple Services Rule

(Anaes.)

Fee: \$110.90 **Benefit:** 75% = \$83.20; 80% = \$94.30

42587 – (Category 3 – THERAPEUTIC PROCEDURES) – TRICHIASIS, treatment of by cryotherapy, laser or electrolysis – each eyelid

Multiple Services Rule

(Anaes.)

Fee: \$49.10 **Benefit:** 75% = \$36.85; 85% = \$41.75

42686 – (Category 3 – THERAPEUTIC PROCEDURES) – PTERYGIUM, removal of,

Multiple Services Rule

(Anaes.)

Fee: \$258.65 **Benefit:** 75% = \$194.00; 85% = \$219.90

42510 – (Category 3 – THERAPEUTIC PROCEDURES) – EYE, enucleation of, with insertion of hydroxy apatite implant or similar coralline implant.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$663.50 **Benefit:** 75% = \$497.65

42512 – (Category 3 – THERAPEUTIC PROCEDURES) – GLOBE, evisceration of.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$454.85 **Benefit:** 75% = \$341.15; 85% = \$386.65

42515 – (Category 3 – THERAPEUTIC PROCEDURES) – GLOBE, evisceration of and insertion of intrascleral ball or cartilage.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$575.65 **Benefit:** 75% = \$431.75

42551 – (Category 3 – THERAPEUTIC PROCEDURES) – EYEBALL, PERFORATING WOUND OF, not involving intraocular structures repair involving suture of cornea or sclera, or both, not being a service to which item 42632 applies.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$597.05 **Benefit:** 75% = \$477.80; 80% = \$527.95

42554 – (Category 3 – THERAPEUTIC PROCEDURES) – EYEBALL, PERFORATING WOUND OF, with incarceration or prolapse of uveal tissue repair.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$696.50 **Benefit:** 75% = \$522.40

42557 – (Category 3 – THERAPEUTIC PROCEDURES) – EYEBALL, PERFORATING WOUND OF, with incarceration of lens or vitreous repair.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$973.65 **Benefit:** 75% = \$730.25

42560 – (Category 3 – THERAPEUTIC PROCEDURES) – INTRAOCULAR FOREIGN BODY, magnetic removal from anterior segment.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$383.80 **Benefit:** 75% = \$287.85; 85% = \$326.25

42563 – (Category 3 – THERAPEUTIC PROCEDURES) – INTRAOCULAR FOREIGN BODY, nonmagnetic removal from anterior segment.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$490.45 **Benefit:** 75% = \$367.85; 85% = \$421.35

42566 – (Category 3 – THERAPEUTIC PROCEDURES) – INTRAOCULAR FOREIGN BODY, magnetic removal from posterior segment.

Multiple Services Rule

(Anaes.) (Assist.)

Fee: \$696.50 **Benefit:** 75% = \$522.40

42644 – (Category 3 – THERAPEUTIC PROCEDURES) – CORNEA OR SCLERA, removal of imbedded foreign body from – not more than once on the same day by the same practitioner (excluding aftercare)

Multiple Services Rule

(Anaes.)

(See para T8.80 of explanatory notes to this category)

Fee: \$68.15 **Benefit:** 75% = \$51.15; 85% = \$57.95

Assist - Addition/Deletion of (Assist.)
Anaes - Anaesthetic Values Amended

Category 3 – THERAPEUTIC PROCEDURES

T8.3 Multiple Operation Rule

The fees for two or more operations, listed in Group T8 (other than Subgroup 12 of that group), performed on a patient on the one occasion (except as provided in paragraph T8.2.3) are calculated by the following rule: -

100% for the item with the greatest Schedule fee
plus 50% for the item with the next greatest Schedule fee

plus 25% for each other item.

Note: Fees so calculated which result in a sum which is not a multiple of 5 cents are to be taken to the next higher multiple of 5 cents.

Where two or more operations performed on the one occasion have Schedule fees which are equal, one of these amounts shall be treated as being greater than the other or others of those amounts.

The Schedule fee for benefits purposes is the aggregate of the fees calculated in accordance with the above formula.

For these purposes the term "operation" only refers to all items in Group T8 (other than Subgroup 12 of that Group).

This rule does not apply to an operation which is one of two or more operations performed under the one anaesthetic on the same patient if the medical practitioner who performed the operation did not also perform or assist at the other operation or any of the other operations, or administer the anaesthetic. In such cases the fees specified in the Schedule apply.

Where two medical practitioners operate independently and either performs more than one operation, the method of assessment outlined above would apply in respect of the services performed by each medical practitioner.

If the operation comprises a combination of procedures which are commonly performed together and for which a specific combined item is provided in the Schedule, it is regarded as the one item and service in applying the multiple operation rule.

There are a number of items in the Schedule where the description indicates that the item applies only when rendered in association with another procedure. The Schedule fees for such items have therefore been determined on the basis that they would always be subject to the "multiple operation rule".

Where the need arises for the patient to be returned to the operating theatre on the same day as the original procedure for further surgery due to post-operative complications, which would not be considered as normal aftercare – see paragraph T8.2, such procedures would generally not be subject to the "multiple operation rule". Accounts should be endorsed to the effect that they are separate procedures so that a separate benefit may be paid.

T8.80 Imbedded Foreign Body – (Item 42644)

For the purpose of item 42644, an imbedded foreign body is one that is sub-epithelial or intra-epithelial and is completely removed using a hypodermic needle, foreign body gouge or similar surgical instrument with magnification provided by a slit lamp biomicroscope, loupe or similar device.

Item 42644 also provides for the removal of rust rings from the cornea, which requires the use of dental burr, foreign body gouge or similar instrument with magnification by a slit lamp biomicroscope.

Where the imbedded foreign body is not completely removed, benefits are payable under the relevant attendance item.

Category 1 – PROFESSIONAL ATTENDANCES

Schedule Fees and Medicare Benefits

Schedule fees and Medicare benefits

Optometrists participating in the scheme agree not to charge more than the Schedule fees for services covered by Medicare, and also, that charges for appliances shall not include any amount related to consultation procedures for which benefits are payable. The only expectations are for Item 10907 and in relation to domiciliary visits.

The services provided by participating optometrists which attract benefits are set out in the Health Insurance Regulations,

Medicare benefits are payable at 85% of the Schedule fee for services rendered with a maximum gap payment for any one service of \$69.10 (indexed annually) between the Medicare rebate and the Schedule fee.

Where it can be established that payments of \$365.70 (effective from 1 January 2008 and indexed annually from 1 January each year) have been made by family or an individual during a calendar year regarding the difference between the Medicare benefit and the Schedule fee for out-of-hospital services, benefits will thereafter be paid for the rest of the year up to 100% of the Schedule fee. A family group includes a spouse and dependent children under 16 years of age dependent students under the age of 25.

Limiting rule for patient claims

Where a fee charged for a service is less than the Medicare benefit, the benefit will be reduced to the amount of the fee actually charged. In no case will the benefit payable exceed the fee charged.

Multiple attendances

Payment of benefit may be made for several attendances on a patient on the same day by the same optometrist provided that the subsequent attendances are not a continuation of the initial or earlier attendances. However, there should be reasonable lapse of time between the services before than can be regarded as separate attendances.

Where two or more attendances are made on the one day by the same optometrist the time of each attendance should be stated on the account (e.g 10.30 am and 3.15 pm) in order to assist in the payment of benefits, except where a perimetry item is performed in association with a consultation item where times do not need to be specified.

In some circumstances a subsequent consultation on the same day may be judged to be in continuation of an earlier attendance and a second benefit is not payable. For example, a preliminary eye examination may be concluded with the instillation of mydriatic or cycloplegic drops and some time later additional examination procedures are undertaken. These sessions are regarded as being one attendance for benefit purposes.

Referred comprehensive initial consultations (Item 10905) – Read in conjunction with 09.1 – 09.13

For the purposes of Item 10905, the referring optometrist, having considered the patients need for the referred consultation, is required to provide a written referral, dated and signed, and setting out the patient's condition and the reason for the referral.

Benefits will be paid at the level of Item 10905 providing the referral is received before the provision of the service, and providing the account, receipt or bulk-billing form contains the name and provider number of the referring optometrist. Referrals from medical practitioners do not attract benefit under item 10905.

The optometrist claiming the Item 10905 service is obliged to retain the written referral for a period of twenty-four months.

Referrals must be at "arms length". That is to say, no commercial arrangements or connections should exist between the optometrists.

Second comprehensive initial consultation within 24 months of a previous comprehensive consultation (Item 10907)

Where a patient receives a comprehensive initial consultation within 24 months of a previous comprehensive consultation provided by another optometrist an additional fee may be charged provided that the service is not direct-billed. The actual additional amount charged is a matter between the optometrist and the patient but it must not exceed an amount equal to the difference between the Schedule fees for Item 10900 and Item 10907.

In circumstances where an additional fee is charged the optometrist must inform the patient of the benefit payable for Item 10907 at the time of the consultation and that the additional fee will not attract benefits.

Where it is necessary for the optometrist to seek patient information from Medicare in order to determine appropriate itemization of accounts, receipts or bulk-billed claims, the optometrist must ensure that:

- the patient is advised of the need to seek the information and the reason the information is required;
- the patient's informed consent to the release of information has been obtained and
- the patient's records verify the patient's consent to the release of information

Significant change in visual function requiring comprehensive re-evaluation (Item 10912)

Significant changes in visual function which justify the charging of Item 10912 include documented changes of:

- vision or visual acuity of 2 lines (0.2 logMAR) or more (corrected or uncorrected)
 - visual fields or previously undetected field loss
 - binocular vision
 - contrast sensitivity or previously undetected contrast sensitivity loss.

New Signs of symptoms/progressive disorder requiring comprehensive re-evaluation (Items 10913 and 10914)

When charging Item 10913 and Item 10914, the optometrist must document the new signs or symptoms of the nature of the progressive disorder suffered by the patient on the patient's record card. Progressive disorders may include conditions such as maculopathy (including age related maculopathy) cataract, corneal dystrophies, glaucoma ect.

Examination of the eyes of patient with diabetes mellitus (Item 10915)

Where an examination of the eyes, with the instillation of a mydriatic, of a patient with diabetes mellitus is being conducted, where possible this item should be billed rather than item 10914 to assist in identifying whether such patients are receiving appropriate eye care.

Domiciliary visits

Where patients are unable to travel to an optometrist's practice for treatment, and where the request for treatment is initiated by the patient, a domiciliary visit may be conducted, which involves the optometrist travelling to the patient's place of residence, transporting the necessary equipment. Where possible, it is preferable that the patient travels to the practice so that the full range of equipment is available for the examination of the patient.

Benefits are payable under items 10931 – 10933 to provide some financial assistance in the form of a loading to the optometrist, in recompense for travel costs and packing and unpacking of equipment. The loading is in addition to the consultation item. For the purposes of the loading, acceptable places of residence for domiciliary visits are the patient's home, a residential aged care facility as defined by the *Aged Care Act 1997*, or an institution which means a place (other than a residential aged care facility or hospital) at which residential accommodation and/or day care is made available to any of the following categories: disadvantaged children, juvenile offenders, aged persons, chronically ill psychiatric patients, homeless persons, unemployed persons,

persons suffering from alcoholism, persons addicted to drugs, or physically or intellectually disabled persons.

Visits to a hospital are not covered by the new loading, but are covered by the previous arrangements, that is, where a visit to a hospital is provided at the patients request, an extra fee not exceeding the fee for item 10900 may be charged, in addition to the Schedule fee, providing the service is not bulk-billed. Benefits are not payable in respect of the private charge.

Items 10931 – 10933 may be used whether or not the optometrist chooses to bulk-bill but it is important that if the consultation is bulk-billed the loading is also, and no private charge can then be levied. If the consultation is not bulk-billed, the loading should also not be bulk-billed and a private charge may be levied. The additional private charge must be calculated so that the total charges for the basic service, loading and private charge do not exceed an amount which equals twice the fee for item 10900. The usual requirement that the patient must have requested the domiciliary visit applies.

The choice of appropriate item in the range 10931 – 10933 depends on how many patients are seen at the one location. Benefits are payable under item 10931 where the optometrist travels to see one patient at a single location. Item 10931 can be billed in addition to the consultation item. If the optometrist goes on to see another single patient **at a different location**, that patient can also be billed an item 10931 plus the consultation. However, if two patients are visited at a single location on the same occasion, each of the two patients should be billed item 10932 as well as the consultation item applying to each patient. Similarly, if three patients are visited at a single location on the same occasion, each of the three patients should be billed item 10933 as well as the consultation item applying to each patient.

Where more than three patients are seen at the same location, additional benefits for domiciliary visits are not payable for the fourth, fifth etc patients. On such occasions, the first three patients should be billed item 10933 as well as the appropriate consultation item, and all subsequent patients may only be billed the appropriate consultation item. Where multiple patients are seen at location on one occasion, there is no provision for patients to be 'grouped' into twos and threes for billing purposes.

Where a private charge is levied for a domiciliary visit, bulk-billing is precluded. Benefits are not payable in respect of the private charge and the patient should be informed of this. Private charges should be shown separately on accounts issued by optometrists and must not be included in the fees for the service.

Domiciliary visit loading items may not be claimed in conjunction with brief initial consultation item 10916, or with computerized perimetry items 10940 or 10941.

Release of prescription

Where a spectacle prescription is prepared for the patient, it becomes the property of the patient, who is free to have the spectacles dispensed by a person of the patient's choice. The optometrist will ensure that the patient is made aware that he or she is entitled to a copy of the spectacle prescription.

Contact lens prescriptions are excluded for the above provision, although the prescription remains the property of the patient and should be available to the patient at the completion of the prescription and fitting process.

Reminder notices

The optometrist will ensure that any notice sent to a patient suggesting re-examination is sent solely on the basis of the clinical needs of the patient.

Aftercare period following surgery

Medicare schedule items that apply to surgery include all professional attendances necessary for the post-operative treatment of the patient. The aftercare period includes all post-operative treatment, whether provided by a medical practitioner or an optometrist. The amount and duration of the aftercare may vary but includes all attendances until recovery from the operation. Attendances provided by an optometrist in the aftercare period do not attract a Medicare benefit.

The rebate for cataract surgery includes payment for aftercare attendance, so payment for aftercare services provided by an optometrist should not charge the patient. In the case of cataract surgery, the first visit following surgery for which the optometrist can charge a rebate fee is generally the attendance at which prescription for spectacles or contact lenses is written.

Medicare benefits are not available for refractive surgery, consultations in preparation for the surgery or consultations in the aftercare period. Charges for attendances by the optometrists may be made directly to the patient or to the surgeon depending on the arrangements made prior to surgery. Accounts and receipt issued to the patient should clearly indicate the fee is non-rebatable.

Computerised Perimetry Services (Items 10940 and 10941)

Benefit under items 10940 and 10941 is payable where full quantitative computerized perimetry (automated absolute static threshold but not including multifocal multichannel objective perimetry) has been performed by an optometrist on both eyes (item 10940) or one eye (item 10941) where indicated by the presence of relevant ocular disease or suspected pathology of the visual pathways or brain. Item 10940 for bilateral procedures cannot be claimed for patients who are totally blind in one eye. In this instance, item 10941 for unilateral procedures should be claimed, where appropriate.

These items can be billed either in association with comprehensive consultation items 10900, 10905, 10907, 10912, 10913, 10914 or 10915, or independently, but they cannot be billed with items 10916 or 10918. An assessment and report is required and, where referral to an ophthalmologist for further treatment is required, the printed results of the perimetry should be provided to the ophthalmologist to discourage repetition of perimetry unless clinically necessary. If Medicare benefits are to be claimed, a maximum of 2 perimetry services in any 12 month period may be provided.

Low Vision Assessment (Item 10942)

A benefit is payable under item 10942 where one or more of the tests outlined in the item description are carried out on a patient who has already been established during a comprehensive consultation as having low vision, as specifically defined in the item. This item is not intended for the patients expected to undergo cataract surgery in the near future who may temporarily meet the criteria for having low vision.

Item 10942 may be claimed on the same day as either a comprehensive initial consultation or a subsequent consultation, but only where the additional low vision testing has been carried out on an eligible patient. Item 10942 is not intended to be claimed with a brief initial consultation, or with any of the contact lens items.

Children's vision assessment (Item 10943)

Children aged 0 to 2 years, and 15 years and over, are not eligible for item 10943 and may be treated under appropriate attendance items.

A benefit is payable under item 10943 where one or more of the assessment and testing procedures outlined in the item description are carried out on a patient aged 3 – 14 years inclusive, and where a finding of significant binocular or accommodative dysfunction is the outcome of the consultation and assessment/testing. The conditions to be assessed under this item are primarily amblyopia and strabismus, but dysfunctions relating to vergences are also covered, providing well established and evidence based optometry practice is observed.

A benefit is not payable under item 10943 for the assessment of learning difficulties or learning disabilities.

Item 10943 may be claimed on the same day as either a comprehensive consultation or a subsequent consultation, but only where the additional assessment/testing has been carried out on an eligible child. Item 10943 is not intended to be claimed with a brief initial consultation, or with any of the contact lens items.

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