

Where you live determines how well you can see

Access to Avastin for Age-related macular degeneration in New Zealand in 2015

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Introduction

The purpose of this report is to highlight the need for equitable access to Avastin for all New Zealanders across the 20 District Health Boards in New Zealand.

Definition

Macular degeneration (MD), also called age-related macular degeneration (ARMD or AMD), is a chronic eye disease affecting people over the age of 45 years that results in progressive loss of central vision while leaving the peripheral vision intact.

Forms of MD

There are 2 forms of MD, dry and wet. The dry form is the more common of the 2, is slowly progressive and causes gradual loss of vision over several years. Five to 10 percent of people with dry MD can develop the more aggressive wet form. The wet form is more severe and characterised by the growth of blood vessels from the choroid (the highly vascular layer below the retina that provides nutrients to the retina and removes its waste products) underneath and into the retina that leak fluid and blood. Fluid and haemorrhage underneath and into the retina may occur over weeks or months without treatment and result in the sudden vision loss that characterises the wet form of MD. Wet MD, if left untreated causes blindness in 75% of patients after 3 years, with 50% blind at 3 months.¹

Treatment

There is little in the way of effective treatment for the dry form. However, effective treatment is available for the wet form of MD and has been since the introduction of bevacizumab (Avastin) to New Zealand in 2005. Avastin is 1 of 3 currently available anti-Vascular Endothelial Growth Factor (anti-VEGF) agents that is used to treat wet MD. The other 2 are ranibizumab (Lucentis) and aflibercept (Eylea).

The outcomes of anti-VEGF treatment for wet MD has shown that of affected persons:

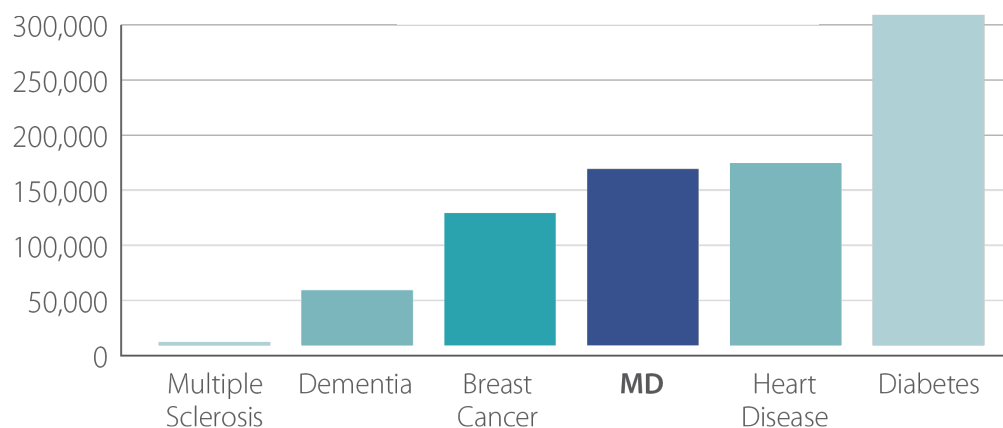
- 95% achieve stable vision
- 40% retain driving vision, and
- 30 %gain 3 lines of vision.²⁻⁴

Treatment of wet MD with anti-VEGF agents has resulted in reductions in cases of registrable blindness of up to 59% in developed countries.²⁻⁴

Prevalence

MD is the leading cause of vision loss in persons over the age of 50 years and accounts for 48% of registrable cases of blindness in New Zealand.⁵ MD has a prevalence higher than many chronic diseases such as multiple sclerosis and dementia and is about half as common as diabetes (Figure 1).⁶

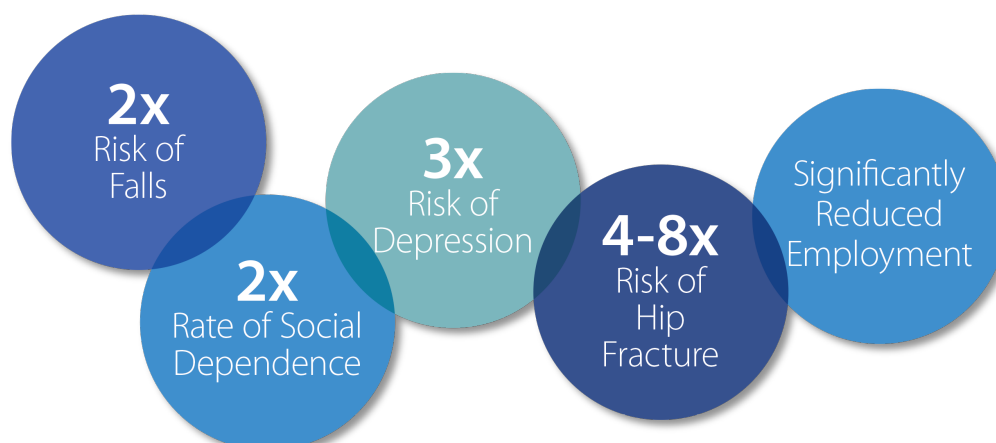
Figure 1. The prevalence of MD related to other chronic diseases.



The impact of MD

MD has a significant impact on individuals living with the condition with double the risk of falls, 3 times the risk of depressions and 4 to 8 times the risk of hip fracture (Figure 2).⁷ These consequences result in a 7 times increased healthcare utilisation cost for patients with wet MD compared to healthy individuals.⁸

Figure 2. The impact of MD on an individual living with the condition.



Inadequate funding and inequitable access

NZ has the lowest public funding of anti-VEGF drugs of all the OECD countries.⁹ Unlike ranibizumab and aflibercept, Avastin is not licensed by its manufacturer (Genentech) for injection into the eye. As such, Medsafe do not approve it for this indication. Consequently, funding for Avastin is determined autonomously by each of the 20 District Health Boards (DHB) in New Zealand rather than by the Ministry of Health directly.

DHBs vary in the number of Avastin procedures they fund with a range of 40 to 140 per 10,000 population.¹⁰ Furthermore, supply is not meeting demand and this will only worsen as the prevalence of MD is expected to increase by 12.9% by 2026 due to demographic ageing.¹¹

Prior to 2014 Avastin numbers were recorded differently by each DHB. This created difficulties in determining equal patient access to Avastin across all DHBs. Avastin volumes are now tracked nationally using a specific Purchase Unit code S40004 and this allows more direct access to data enabling comparisons to be made across DHBs.

Standardised intervention rate

DHBs loosely adhere to a standardised intervention rate (SIR) of 40 injections per 10,000 population. This is not an endpoint but a move towards more equitable access to Avastin across all DHBs.

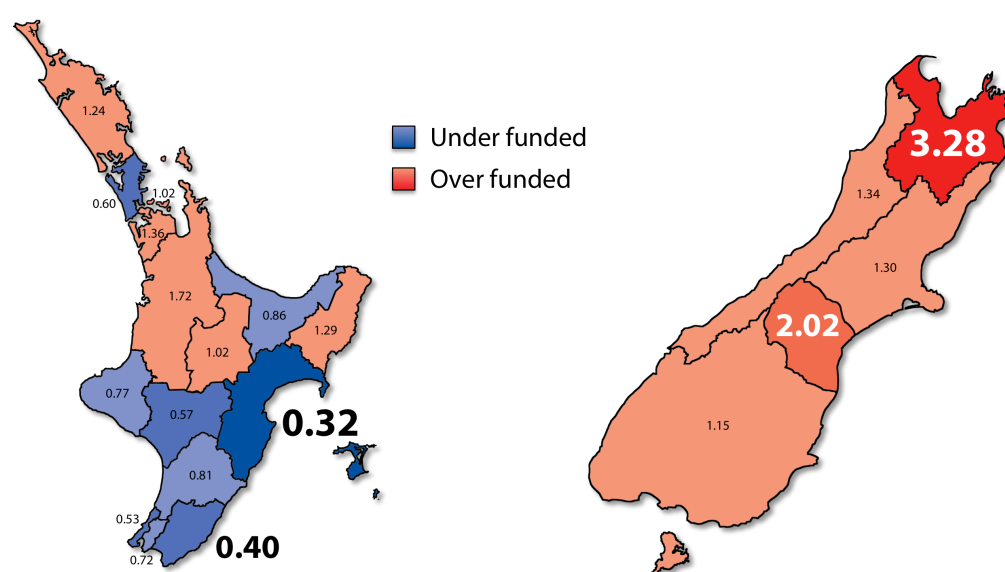
The number of funded Avastin treatments was requested from each DHB under the Official Information Act and is shown in Table 1. Where data was incomplete or unavailable for the 2015 financial year the number of funded treatments for the 2014 financial year was used. Dividing the number of treatments per DHB by the SIR gives an index that demonstrates under- and overfunding of Avastin treatments per DHB. Population data is taken from the 2013 Census district health board tables.¹²

Table 1. Number of funded Avastin treatments for 2015 and total population per DHB.

District Health Board	Number of funded Avastin treatments	Total population
Northland	753	151,692
Waitemata	1,258	525,558
Auckland	1,780	436,344
Counties Manukau	2,560	469,293
Waikato	2,470	359,310
Lakes	400	98,187
Bay of Plenty	708	205,995
Tairāwhiti	225	43,653
Taranaki	340	109,755
Hawkes Bay	195	151,695
Whanganui	138	60,120
Midcentral	526	162,564
Hutt	396	138,378
Capital and Coast	600	283,704
Wairarapa	66	41,112
Nelson/Marlborough	1,800	136,995
West Coast	172	32,148
Canterbury	2,500	482,178
South Canterbury	450	55,626
Southern	1,372	297,423

Figure 3 highlights the inequity of access to Avastin across the DHBs with the most overfunded being Nelson-Marlborough (3.28) and South Canterbury (2.02) and the most underfunded being Hawkes Bay (0.32) and Wairarapa (0.40) DHBs.

Figure 3. Standardised intervention rate of Avastin treatments per DHB.



Population adjusted intervention rate

A major limitation of the current funding arrangements is that the SIR fails to account for differences in the rate of MD between DHBs. The rate of MD in each DHB is determined by the numbers of people at risk of MD and the ethnic composition of the population of each DHB. Consequently, a population adjusted intervention rate is more appropriate in terms of determining the number of funded treatments required by each DHB.

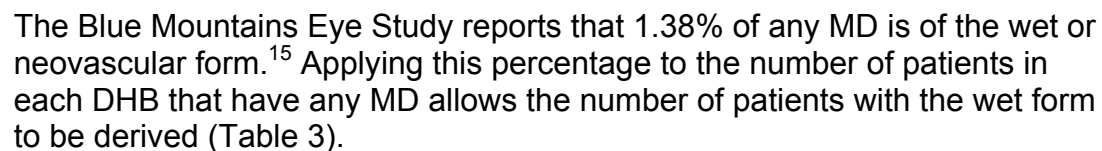
The number of people over the age of 45 years affected by MD for each DHB was obtained from the 2013 District Health Board tables.¹² MD prevalence has been shown to vary with ethnicity with 12.33% of Europeans and 7.38% of Asians affected.¹³ The prevalence of MD in Maori and Pacific persons is assumed to be 0% as there is no published case of wet MD in these ethnic groups. Anecdotal cases of MD may exist in Maori and Pacific persons but the numbers are expected to be small and inconsequential in the data analysis.

Population adjustments were made by applying a correction factor (at risk population multiplied by 1.14)¹⁴ to the at risk population for each DHB in order to account for the over representation of MD in the over 85 years age group (Table 2). There is no prevalence data for this age group due to low numbers in this age group in epidemiological studies.

Table 2. Total population, numbers at risk of MD (age greater than 45 years) and numbers with any MD (dry or wet) per DHB.

District Health Board	Total population	Population > 45 years	Numbers with any MD
Northland	151,692	71,277	8,004
Waitemata	525,558	203,286	24,535
Auckland	436,344	148,914	16,386
Counties Manukau	469,293	161,988	16,011
Waikato	359,310	143,646	17,124
Lakes	98,187	40,248	4,343
Bay of Plenty	205,995	93,021	11,084
Tairāwhiti	43,653	17,385	1,611
Taranaki	109,755	47,028	5,930
Hawkes Bay	151,695	66,702	7,892
Whanganui	60,120	27,507	3,269
Midcentral	162,564	68,496	8,465
Hutt	138,378	54,486	6,396
Capital and Coast	283,704	103,128	12,403
Wairarapa	41,112	19,776	2,519
Nelson/Marlborough	136,995	66,132	8,764
West Coast	32,148	15,048	1,978
Canterbury	482,178	200,850	26,294
South Canterbury	55,626	27,546	3,719
Southern	297,423	125,304	16,541

Figure 4. MD prevalence per DHB.



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Table 3. Numbers with wet MD, number of interventions needed and numbers funded per DHB.

District Health Board	Numbers with wet MD	Number of interventions needed	Number of interventions funded	Variance
Northland	110	740	753	+13
Waitemata	339	2,268	1,258	-1,010
Auckland	226	1,515	1,780	+265
Counties Manukau	221	1,480	2,560	+1,080
Waikato	236	1,583	2,470	+887
Lakes	60	402	400	-2
Bay of Plenty	153	1,025	708	-317
Tairāwhiti	22	149	225	+76
Taranaki	82	548	340	-208
Hawkes Bay	109	730	195	-535
Whanganui	45	302	138	-164
Midcentral	117	783	526	-257
Hutt	88	591	396	-195
Capital and Coast	171	1,147	600	-547
Wairarapa	35	233	66	-167
Nelson/Marlborough	121	810	1,800	+990
West Coast	27	183	172	-11
Canterbury	363	2,431	2,500	+69
South Canterbury	51	344	450	+106
Southern	228	1,529	1,372	-157

The number of funded Avastin treatments divided by the number of treatments needed gives an index demonstrating under- and overfunding. This is the population adjusted intervention rate (PAIR) (see Figure 5). Figures 6 and 7 compare the SIR and PAIR for the North and South Island DHBs.

Figure 5. Population adjusted intervention rate of Avastin treatments per DHB.

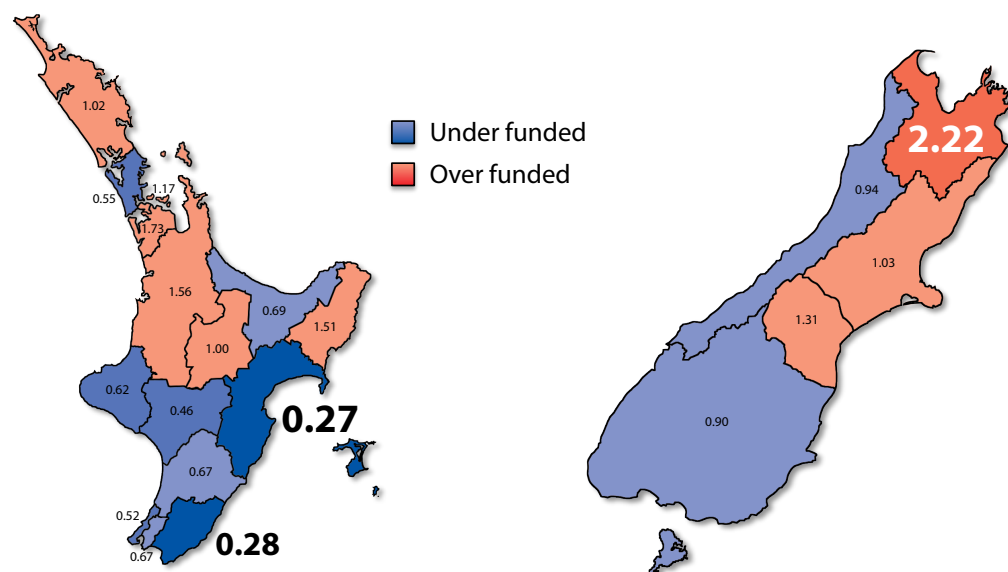


Figure 6. Standardised intervention rate (left) versus population adjusted intervention rate (right) of Avastin treatments per DHB for the North Island.

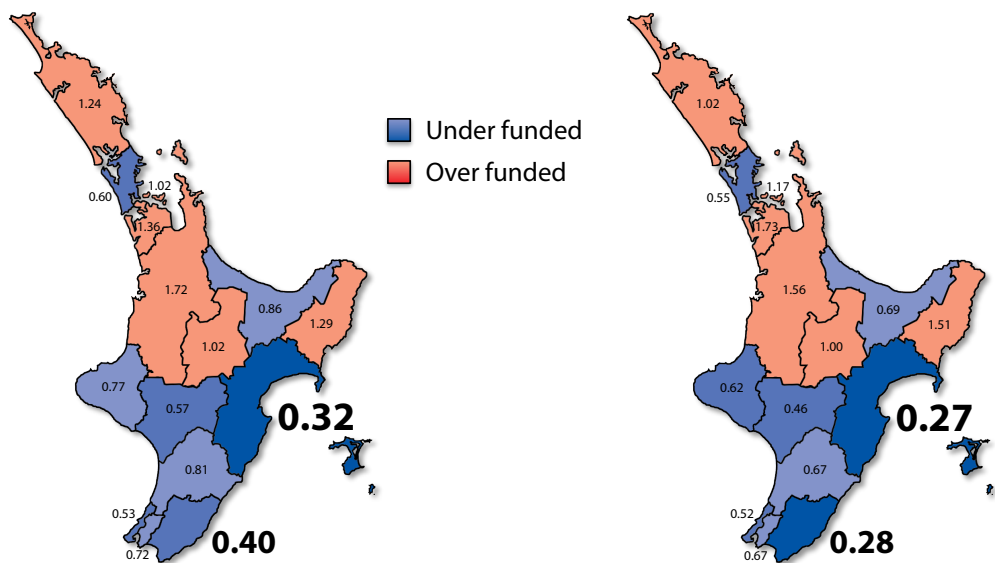
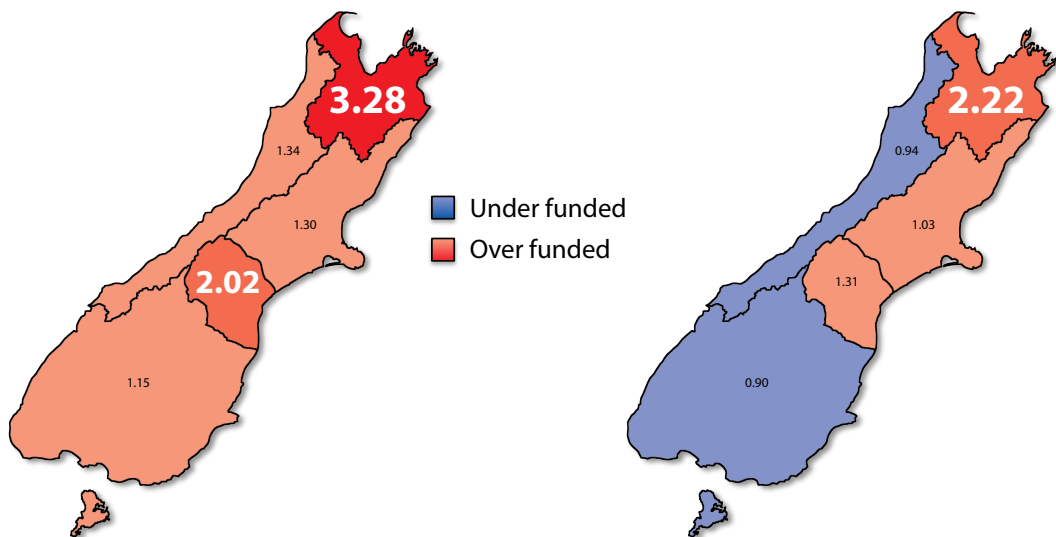


Figure 7. Standardised intervention rate (left) versus population adjusted intervention rate (right) of Avastin treatments per DHB for the South Island.



Summary and recommendations

There is considerable inequity of access to funded Avastin treatments for MD across all DHBs in New Zealand. This is largely because Avastin funding is determined autonomously by each DHB. The standardised intervention rate that is loosely adhered to by each DHB in order to determine its level of funding is inadequate and a population adjusted intervention rate would be more appropriate.

A desirable future is one in which every individual affected by MD has equal access to Avastin treatment for MD across all DHBs in New Zealand. Given the current model in which each DHB determines how much funding is allocated to Avastin, in order to ensure equitable access to Avastin for everyone it may be better to adopt a national planning strategy. This can only come from the Ministry of Health.

This report only considers equitability of access to Avastin treatment for MD and does not take into account Avastin treatment for other ophthalmic conditions that benefit from Avastin, such as retinal vein occlusion and diabetic macular oedema. These conditions will require additional funding if they are to be successfully treated and patient outcomes optimised.

Acknowledgements

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