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More about cardiovascular disease and lipid management in New Zealand

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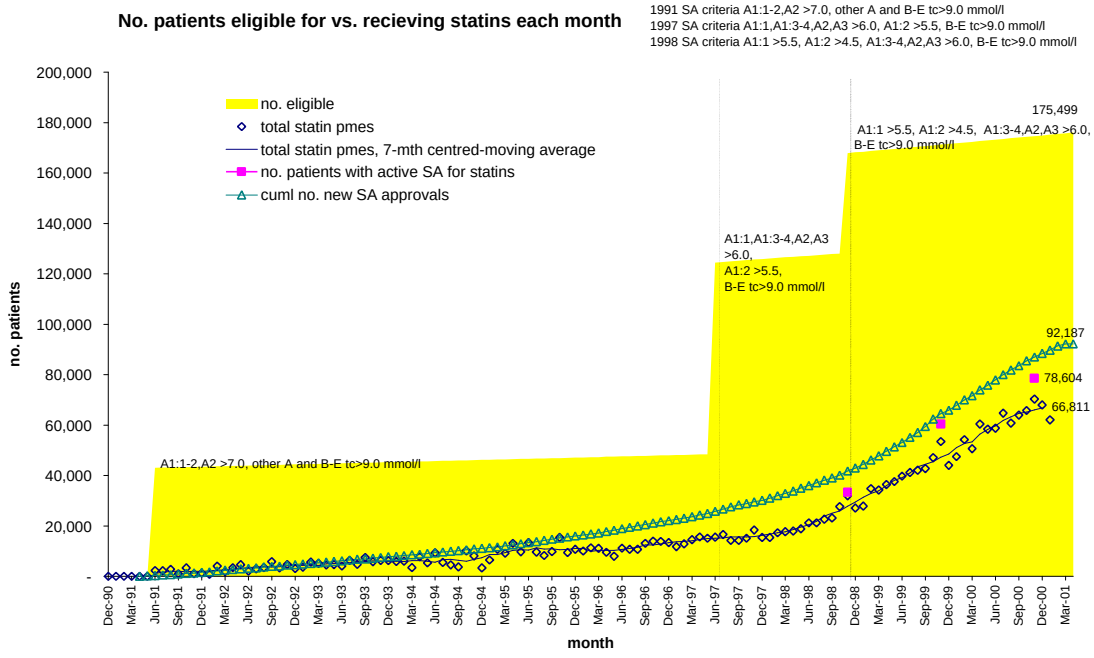
Dr Chris Ellis and Professor Russell Scott have recently summarised the clinical evidence supporting increased access to statins for patients at high risk of cardiovascular outcomes.[1] They note that increasing the number of people using lipid-modifying agents should improve patient outcomes for cardiovascular disease in New Zealand. They also refer to how recent changes to statin access, coupled with impending updated guidelines, should allow most high-risk patients to be more effectively treated.

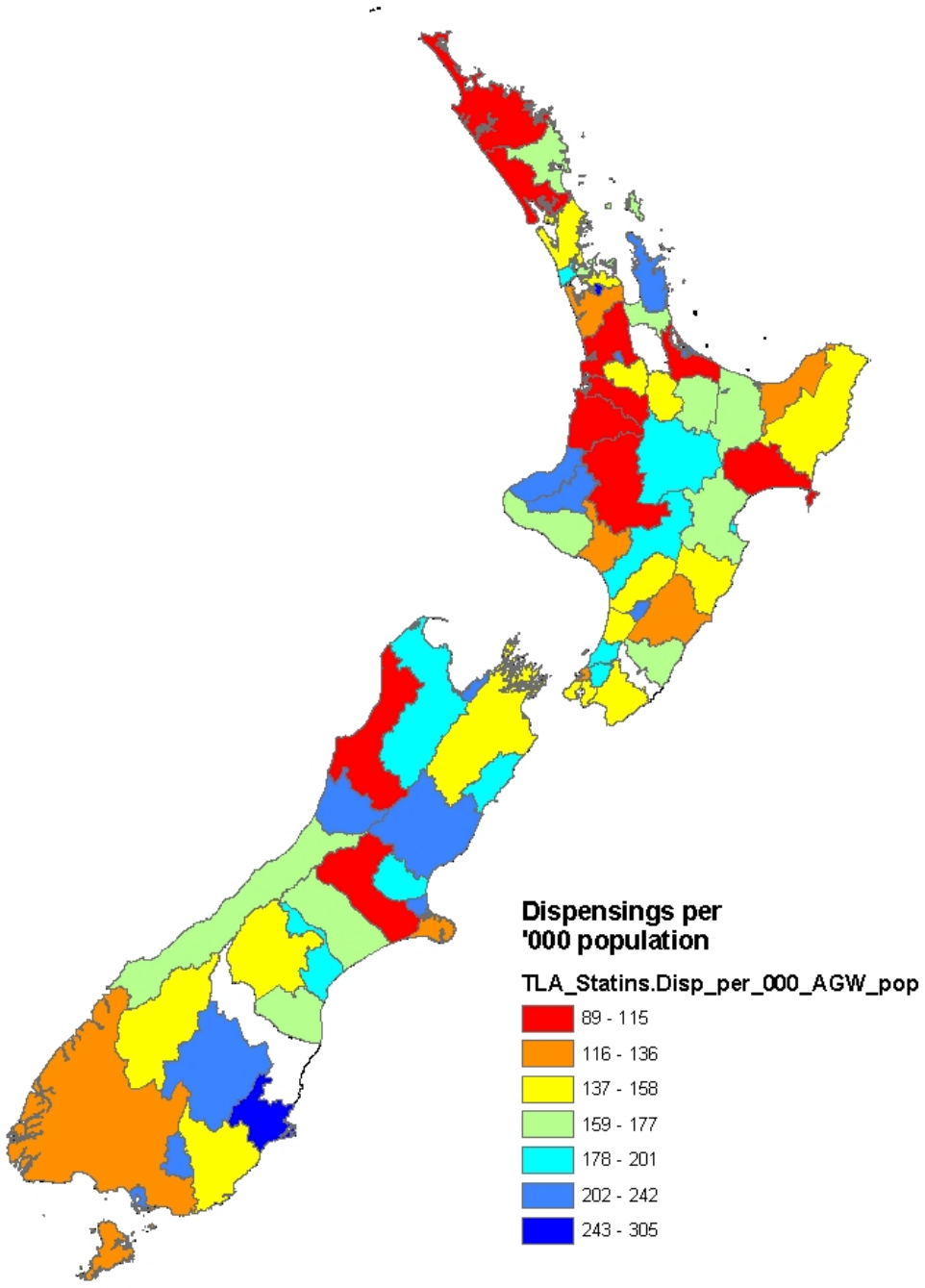
PHARMAC has looked at statin Special Authority approvals data and dispensing claims data compiled by Health Benefits Ltd (HBL, now HealthPAC) and compared these with epidemiological estimates of statin eligibility. Time trend analyses for the ten-year period July 1991 to June 2001 indicate a significant non uptake of statins amongst eligible patients. For instance, by April 2001 there were an estimated 175 500 patients eligible for statins under the old Special Authority criteria, but the equivalent of 67 000 people being dispensed them – less than 40% of those eligible (Figure 1).

Figure 1. Time trends in dispensings and eligibility for statins in NZ, December 1990 – March 2001



SA=Special Authority

Figure 2. Age- and sex-standardised dispensing rates* for statins in year 2000, by territorial local authority population



*monthly dispensing, where twelve dispensings are equivalent to one person-year. Blank areas denote missing data. 'Disp per '000 GGW pop' = no. dispensings per 1000 age-/gender-weighted population.

Similarly, preliminary analysis of direct age-standardised rates of statin dispensings for the calendar year 2000 suggest very wide inter-regional variations of statin prescribing within New Zealand. The statin dispensing rate from pharmacies serving the Northland District Health Board (DHB) population (11.3 person-year equivalent (pye) dispensings per 1000 (95% CI 10.7–11.8)) was 61% of that for Otago DHB after adjusting for age and gender (18.6 pyes per 1000 (18.0–19.2)). By territorial local authority (TLA), dispensings for the Ruapehu District population were 29% of that of the Papakura District. The degree of variation can be seen in Tables 1 and 2, and in Figure 2 [Tables 1 and 2 appear at the end of this article].

Such wide differences are not readily explained by variations in demography (already partly accounted for by age/sex standardisation) or by the prevalence of cardiovascular disease. We will more fully describe these and other analyses in forthcoming publications.

Professor Rory Collins of the Heart Protection Study has described statins as the 'new aspirin'.[2] This description is in terms of statins' effects on heart attacks and strokes and their potential ubiquity. Others have ascribed further meaning to the term 'new aspirin' – that statins likewise protect against coronary heart disease by reducing blood coagulability, and the optimal cardioprotective dose may be lower than originally suspected.[3] In New Zealand, there is a yet another meaning. Like aspirin, not only are the statins highly effective at reducing cardiovascular events, but also they are now inexpensive. In short, most statin drugs available in New Zealand are now affordable and cost effective.[4]

We suggest that Dr Ellis' and Professor Scott's summary[1] could be enhanced by noting that statins have not always been so favourably priced. This was the main contributor to the "delays" in widening access criteria to statins.

Although effective, statins were priced so high that to treat everyone advocated by the 1996 NHF dyslipidaemia guidelines would have cost some $198.7 million each year* [endnotes appear at the end of this article]. This would have amounted to nearly 40% of all community pharmaceutical spending ($523.3 million for 1996/97) at that time.† From 1993–97, 137 300 patients met the NHF guideline recommendations for treatment, but not PHARMAC's Special Authority criteria. Treating these extra patients at that stage (137 300 patients at $146.9 million per year‡) would have meant not treating the 35 055 plus patients benefiting from all significant new investments PHARMAC has made in other (non-statin) areas ($73 million actual spending since 1996). Such investments have included atypical anti-psychotics (for treatment-resistant schizophrenia), cyclosporin A and tacrolimus, newer anti-epilepsy agents (treatment-resistant epilepsy), aldendronate (Paget's disease and severe osteoporosis), and treatments for refractory glaucoma, to name a few (Table 3) [Table 3 appears at the end of this article]. The remaining $73.9 million would have funded 4560 extra coronary bypass operations.§

Yet many patients at highest need (as defined by the Special Authority criteria) would still not have accessed statins for reasons beyond funding criteria, as seen in the above non uptake by eligible patients.

PHARMAC recognised that statins were effective in reducing coronary events by around one third (ie relative risk reduction). However, their effects overall are modified by the baseline degree of absolute cardiovascular risk,[5] and hence absolute risk reduction. What might be cost effective in one group will be less so in another with lower baseline absolute risk.[6,7,8] Both price and the range baseline cardiovascular risk have an impact on cost effectiveness.[9] Examples of the range of possible cost effectiveness can be seen in PHARMAC's cost-effectiveness analyses prior to widening access in 1997 and since, available on-line at PHARMAC's website.[10,11,12] Estimates take into account relevant clinical trial data.

In short, statins were effective but too expensive. However, the new lower prices mean such concerns have gone. As Drs Ellis and Scott state, all doctors have a responsibility to use this clinical resource efficiently and wisely.[1] 'Wisely' includes identifying people with high cardiovascular risk, implementing lifestyle modifications, and making sure that the remaining people who would get the most benefit from statins do get them.

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Conflicts of interest: Scott Metcalfe is externally contracted to work with PHARMAC for public health advice. PHARMAC will be launching a campaign to increase awareness of cardiovascular risk and increase the number of eligible patients taking statins.

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Endnotes:

* 185 800 estimate from NHF guidelines applied to (age/sex/Framingham CHD risk/total cholesterol and total:HDL cholesterol ratio) prevalence rates derived from unpublished data from the 1993/94 Fletcher Challenge-University of Auckland Heart and Health Study. $1069 average yearly cost for simvastatin in 1996. Unpublished data supplied by Rod Jackson and Roy Lay Yee, University of Auckland.

† $198.7 million potential yearly statin spending / $523.3 million spending on the Pharmaceutical schedule for 1996/97 = 38%.

‡ 137 300 patients meeting NHF guideline recommendations but not PHARMAC's Special Authority criteria 1993–1997. $1069 average yearly cost for simvastatin in 1996.

§ ($146.9 million extra potential yearly spending on statins) minus ($73.0 million actual spending in 2001 on significant other new investments since 1996) / $16 176 volume-weighted average RHA price in 1995/96 for CABG. Uses $20 361 price for DRG 106 Coronary Bypass With Cardiac Catheterisation and $15 954 price for DRG 107 Coronary Bypass Without Cardiac Catheterisation.

Table 1. Age- and sex-standardised dispensing rates for statins in year 2000, by district health board (DHB) population

DHB	D	PYE	Age-/sex-standardised PYE			SDR (DHB/NZ)	Rank
			per 1000	-95% CI	+ 95% CI		
Northland	20 834	1736	**11.3**	10.7	11.8	0.7	21
Waitemata	69 461	5788	**15.1**	14.7	15.5	1.0	10
Auckland	56 952	4746	**14.5**	14.1	14.9	1.0	12
Counties Manukau	53 484	4457	**15.4**	15.0	15.8	1.0	8
Waikato	55 625	4635	**15.2**	14.8	15.7	1.0	9
Bay of Plenty	36 444	3037	**16.4**	15.8	17.0	1.1	4
Lakes	16 167	1347	**13.3**	12.6	14.0	0.9	15
Tairawhiti	6321	527	**12.1**	11.1	13.1	0.8	18
Taranaki	22 477	1873	**17.0**	16.2	17.8	1.1	2
Whanganui	9978	832	**11.7**	10.9	12.5	0.8	20
MidCentral	26 929	2244	**14.4**	13.8	14.9	1.0	11
Hawke's Bay	27 824	2319	**15.4**	14.8	16.1	1.0	5
Wairarapa	6027	502	**11.7**	10.6	12.7	0.8	19
Hutt	20 164	1680	**13.4**	12.7	14.0	0.9	16
Capital and Coast	36 644	3054	**13.8**	13.4	14.3	0.9	14
Nelson-Marlborough	25 268	2106	**15.3**	14.7	16.0	1.0	6
West Coast	6064	505	**12.6**	11.5	13.8	0.8	17
Canterbury	93 162	7764	**17.2**	16.8	17.6	1.1	3
South Canterbury	12 304	1025	**14.8**	13.8	15.8	1.0	7
Otago	43 393	3616	**18.6**	18.0	19.2	1.2	1
Southland	20 601	1717	**14.0**	13.3	14.7	0.9	13
Total	**666 123**	**55 510**	**15.1**	**14.9**	**15.2**		**21**

D = number of dispensings; PYE = number of person-year equivalents; SDR = standardised dispensing ratio

Table 2. Age- and sex-standardised dispensing rates for statins in year 2000, by territorial local authority (TLA) population

TLA	D	PYE	Age-/sex-standardised PYE			SDR	Rank
			per 1000	-95% CI	+ 95% CI	(DHB/NZ)	
Far North District	6383	532	**8.6**	7.9	9.4	0.6	68
Whangarei District	12 256	1021	**13.4**	12.6	14.3	0.9	41
Kaipara District	2195	183	**9.2**	7.8	10.6	0.6	65
Rodney District	13 682	1140	**12.6**	11.8	13.4	0.9	46
North Shore City	29 205	2434	**13.1**	12.6	13.6	0.9	43
Waitakere City	26 574	2215	**15.3**	14.7	15.9	1.0	29
Auckland City	56 952	4746	**14.3**	14.0	14.7	1.0	38
Manukau City	35 497	2958	**12.7**	12.3	13.1	0.9	51
Papakura District	11 417	951	**25.4**	23.9	26.9	1.7	1
Franklin District	6570	548	**11.1**	10.2	12.0	0.8	58
Thames-Coromandel Distr	8309	692	**17.4**	15.8	19.0	1.2	13
Hauraki District	3164	264	**14.1**	12.4	15.8	1.0	30
Waikato District	3890	324	**8.4**	7.5	9.3	0.6	69
Hamilton City	22 585	1882	**19.0**	18.3	19.8	1.3	9
Waipa District	5933	494	**12.1**	11.0	13.2	0.8	49
Otorohanga District	1042	87	**9.4**	7.4	11.3	0.6	61
South Waikato District	3291	274	**13.2**	11.7	14.6	0.9	40
Waitomo District	896	75	**8.3**	6.5	10.1	0.6	67
Taupo District	6010	501	**15.1**	13.8	16.5	1.0	26
Western Bay of Plenty Distr	5321	443	**9.4**	8.4	10.3	0.6	66
Tauranga District	23 100	1925	**18.4**	17.5	19.4	1.3	11
Rotorua District	10 157	846	**13.8**	12.9	14.7	0.9	39
Whakatane District	5356	446	**13.5**	12.3	14.7	0.9	37
Kawerau District	1421	118	**20.1**	17.0	23.3	1.4	2
Opotiki District	1246	104	**10.5**	8.5	12.5	0.7	55
Gisborne District	6321	527	**11.9**	10.9	12.9	0.8	52
Wairoa District	989	82	**8.8**	7.0	10.7	0.6	64
Hastings District	12 039	1003	**14.4**	13.5	15.3	1.0	34
Napier City	12 714	1060	**16.7**	15.7	17.8	1.1	19
Central Hawke's Bay Distr	2082	174	**13.1**	11.1	15.0	0.9	36
New Plymouth District	15 326	1277	**17.2**	16.3	18.2	1.2	17
Stratford District	2335	195	**19.8**	17.0	22.7	1.3	3
South Taranaki District	4816	401	**14.4**	13.0	15.8	1.0	31
Ruapehu District	1184	99	**7.4**	6.1	8.7	0.5	70
Wanganui District	6910	576	**11.3**	10.3	12.3	0.8	57
Rangitikei District	2979	248	**15.5**	13.5	17.4	1.1	20
Manawatu District	4010	334	**11.7**	10.4	12.9	0.8	53

TLA	D	PYE	Age-/sex-standardised PYE			SDR (DHB/NZ)	Rank
			per 1000	-95% CI	+ 95% CI		
Palmerston North City	13 688	1141	**17.5**	16.5	18.4	1.2	16
Tararua District	2299	192	**10.0**	8.6	11.4	0.7	60
Horowhenua District	5777	481	**12.6**	11.3	13.8	0.9	42
Kapiti Coast District	10 962	914	**16.0**	14.8	17.2	1.1	22
Porirua City	5304	442	**11.0**	10.1	12.0	0.7	59
Upper Hutt City	6534	545	**15.1**	13.8	16.3	1.0	27
Lower Hutt City	13 630	1136	**12.5**	11.8	13.2	0.8	50
Wellington City	21 533	1794	**13.0**	12.4	13.5	0.9	44
Masterton District	4405	367	**14.2**	12.7	15.8	1.0	32
South Wairarapa District	1622	135	**12.8**	10.5	15.2	0.9	35
Tasman District	8538	712	**15.8**	14.6	17.0	1.1	25
Nelson City	9713	809	**17.6**	16.4	18.9	1.2	14
Marlborough District	7017	585	**12.1**	11.1	13.2	0.8	48
Kaikoura District	775	65	**15.4**	11.3	19.4	1.0	10
Buller District	1308	109	**9.1**	7.3	10.9	0.6	62
Grey District	3201	267	**18.7**	16.4	20.9	1.3	6
Westland District	1555	130	**14.8**	12.2	17.4	1.0	21
Hurunui District	2427	202	**17.8**	15.1	20.4	1.2	7
Waimakariri District	7899	658	**16.8**	15.4	18.1	1.1	18
Christchurch City	72 405	6034	**18.1**	17.6	18.6	1.2	15
Banks Peninsula District	1225	102	**10.4**	8.1	12.6	0.7	54
Selwyn District	2913	243	**9.6**	8.4	10.8	0.7	63
Ashburton District	5518	460	**14.7**	13.2	16.2	1.0	28
Timaru District	10 072	839	**15.9**	14.7	17.1	1.1	23
Mackenzie District	607	51	**12.0**	8.7	15.4	0.8	33
Waimate District	1625	135	**14.4**	11.7	17.1	1.0	24
Central Otago District	4089	341	**17.9**	15.8	20.1	1.2	8
Queenstown-Lakes District	2269	189	**11.8**	10.2	13.5	0.8	45
Dunedin City	30 809	2567	**21.5**	20.7	22.4	1.5	4
Clutha District	2731	228	**11.8**	10.2	13.4	0.8	47
Southland District	4053	338	**11.1**	10.0	12.3	0.8	56
Gore District	3348	279	**19.5**	17.1	21.8	1.3	5
Invercargill City	11 965	997	**18.1**	17.0	19.3	1.2	12
Total*	**655 973**	**54 664**	**14.7**	**14.6**	**14.8**		**70**

D = number of dispensings; PYE = number of person-year equivalents; SDR = standardised dispensing ratio
*excludes Carterton and Waitaki Districts

Table 3. Usage (person-year equivalents) and total costs in year 2001 of significant Pharmaceutical Schedule funding decisions since 1996 (source: HBL dispensing claims data)

Rx class and/or (indication)	Pharmaceutical agent	Person-year equivalents*	Costs ($)
Rapid acting insulin analogues (diabetes)	insulin lispro	0.0	1 749078
(Liver disease)	ursodeoxycholic acid	141.5	392 633
(Gaucher's disease)	imiglucerase	0.0	1 021854
(Renal anaemia)	erythropoietin alpha	0.0	4 805 021
Anti-thrombotic agents	dipyridamole	7330.2	1 731 904
Statins (HMG CoA reductase inhibitors)	atorvastatin	45 332.7	26 646 422
(dyslipidaemia)	fluvastatin	2031.2	534 660
	pravastatin	105.3	54 671
	simvastatin	25 515.9	8 636 649
Anti-hypotensive agents	midodrine	75.7	58 265
(Paget's disease)	alendronate	152.4	237 666
(Osteoporosis)	alendronate	2748.4	2 113 149
Antibacterials	azithromycin	0.0	238 462
(Hepatitis B)	lamivudine	230.8	431 437
(HIV/AIDS)	efavirenz	63.2	386 535
	nevirapine	82.3	321 014
	abacavir	23.4	130 744
	didanosine (ddI)	61.7	266 793
	lamivudine	114.0	436 818
	stavudine (d4T)	147.0	877 887
	zalcitabine (DDC)	0.3	2553
	zidovudine	14.4	105 981
	indinavir	134.5	661 425
	nelfinavir	71.3	491 248
	ritonavir	17.3	192 570
	saquinavir	13.9	59 793
Newer anti-epilepsy agents	gabapentin	57.1	136 755
	topiramate	259.3	576 215
	lamotrigine	1747.5	3 997 582
Anti-parkinson agents	tolcapone	226.9	420 872
Atypical anti psychotics	clozapine	2688.3	7 290 761
	olanzapine	3242.3	11 217 692
	quetiapine	350.2	641 335
	risperidone	8841.5	11 716 673
Hormone antagonists (excess growth hormone)	octreotide	0.3	1 665 064
Hormone antagonists (advanced breast cancer)	anastrozole	112.8	324 414
	letrozole	224.5	628 695
Immunosuppressants	cyclosporin A	1839.7	7 605 868
	tacrolimus	227.1	2 399287
(Multiple sclerosis)	beta-interferon	0.0	3 295 663
Long acting beta-adrenoceptor agonists (asthma)	eformoterol	3815.2	1 636249
(Glaucoma)	brimonidine	0.0	452 648
	dorzolamide	0.0	336 598
	latanoprost	0.0	1 942 437
Total		**108 040.2**	**108 870 041**
Total excluding statins		**35 055.0**	**72 997 639**

*blank entries denote missing data