The impact of a cardiovascular risk awareness campaign on statin prescribing – good news / bad news

Barry Gribben
Rod Jackson
Bruce Arroll
Scott Metcalfe
Felicity Goodyear-Smith

Corresponding author: Dr Barry Gribben
CBG Health Research Ltd
P.O.Box 34432
Birkenhead
Auckland New Zealand
Tel +64 09 4181158
Email barry.gribben@cbg.co.nz

Aim: To assess the effectiveness of the pilot PHARMAC Cardiovascular Risk Awareness Campaign in improving access to statins for high risk patient groups.

Methods: Statin prescribing of 24 doctors in the two intervention sites (Gisborne and Porirua) and 34 doctors in a set of control practices were compared before and after the PHARMAC campaign. Total statin prescription volumes, rates of new statin prescriptions, and the five year cardiovascular risk of patients starting statins were used to measure campaign effectiveness. Maori and Pacific patients starting statins were compared in intervention and control sites.

Results: There was 100% recruitment of all practices meeting inclusion criteria. Practice registers represented 52% of Gisborne District, 33% of southern Porirua populations and 66% of the control populations. There were significant increases in numbers of Māori patients (an extra 6.4 per 1000 per annum, $p<0.05$) and Pacific patients (17.4 per 1000 per annum, $p<0.05$) starting statins in the intervention compared with control sites following the campaign. There was no overall increase in the number of patients (all ethnicities) starting statins, and the five-year cardiovascular risk of patients starting statins was lower after the campaign launch.

Conclusion: The pilot PHARMAC Cardiovascular Risk Awareness Campaign led to an increase in statin prescribing in the targeted ethnic groups. Overall statin prescribing did not increase. Community awareness campaigns may have difficulty improving access to statins for high risk individuals.

Key words: Health promotion, Cardiovascular disease, Risk, Anticholesteremic Agents

Cardiovascular disease (CVD) is the leading cause of death in New Zealand (NZ). It accounted for 40% of all deaths in 2000 - 22% from coronary heart disease (CHD), 8% from diseases of the heart and circulation and 10% from cerebrovascular disease(stroke).[1] Men have greater than twice the death rate from CHD as women and Māori have the highest death rate at all ages, followed by Pacific people.[1] For Māori aged <75 years, the death rate from CHD is two to three times the rate for non-Maori and up to twice as high for Pacific peoples. Māori and Pacific people also have a higher risk of strokes than NZ Europeans.[2]

Modifiable CVD risk factors include smoking, elevated blood pressure, obesity, physical inactivity, raised lipid levels, diabetes and atrial fibrillation.[3] Risk factors interact rather than working in isolation and the absolute risk of an individual having a cardiovascular event can be determined using formulae that combine a wide range of factors.[4-6] The NZ Health Strategy identifies increasing awareness of CV risk factors and implementing interventions to reduce risk as a major role of primary health care professionals.[7] The Strategy also identifies reducing the differences in health status between ethnic groups as a key goal.

In April 2003 PHARMAC implemented a pilot Cardiovascular Risk Awareness Campaign ('One Heart Many Lives') primarily aimed at Maori and Pacific men aged over 40, living in Gisborne and Porirua. The campaign aimed to increase awareness of CVD, the risks of being affected by it and encourage people to make lifestyle changes to reduce risk. A variety of "social marketing" techniques were employed for the campaign in each site, using radio, newspaper, poster and billboard advertising to encourage people to visit their health professionals to discuss their cardiovascular risk. Advertising depicted Māori and Pacific men and was displayed in public places such as bus shelters and on the backs of buses. In Gisborne Māori were further targeted through work and sports places and iwi radio. In Porirua the campaign provided brochures in Samoan, Tongan and Cook Island Māori, advertised on local Pacific radio and had a church-based community focus. The campaign in Gisborne included Green Prescriptions in conjunction with Sport and Recreation New Zealand (SPARC) and the National Heart Foundation.

PHARMAC contracted CBG Health Research Ltd to undertake a retrospective evaluation of the impact of the campaign on rates of statin prescribing, particularly for Maori and Pacific patients, and to measure the 5 year cardiovascular risk of patients starting statins.

Methods

Statin prescribing from 24 doctors in the two intervention sites and 34 doctors in a set of control practices was compared before and after the intervention. All GPs in the campaign (intervention) sites of Porirua East and Gisborne were contacted to establish their practice size and Practice Management Systems (PMS). Only practices using MedTech32 (MT32) were eligible for the study. MT32 is used by 75% of practices in NZ and allows straightforward collection of prescribing data through its query facility. Participating doctors were paid $250 to compensate for time and disruption associated with undertaking the study.

Two computerised queries produced a list of all statin prescriptions written since 1 Jan 2002 and an anonymous download of demographic and denominator data. Initial examination of these data indicated that statin prescribing had significantly increased in the three months following the PHARMAC widening of access to statins in April 2002 through changes in "Special Authority" eligibility criteria, allowing GPs to prescribe statins without having to complete an application for funding. To increase the sensitivity of the evaluation to the impact of the campaign the analysis of new statin prescriptions was chosen to start three months after this period (nine months before the campaign launch date 1 April 2003). To be counted as a new statin patient, a patient had to have no record of a statin prescription in the previous six months. No attempt was made to measure the appropriateness of statin prescribing.

People starting statins were identified from these records and random samples of patients starting statins before and after the campaign launch were drawn. Practice nurses at participating practices collected anonymous clinical data for these patients. Denominator data were collected through anonymous register downloads. Analyses were restricted to patients with a register code of "R" (registered) which removed casual and deceased patients from the data extracts.

A set of North Island control practices were selected following identical procedures. This convenience sample was designed to estimate background changes in the profile of the population using statins in

demographically similar, stable populations (Dargaville, Hastings and Pukekohe) in practices using MT32 PMS.

Power calculations indicated that a random sample of 250 patients starting statins in each study period was required to detect changes in proportions of 12% or more (95% CI; power = 80%), with rate estimates in each period having a maximum margin of error of 6%. The necessary sample size was achieved for risk calculations, which relied upon manual extraction of anonymous clinical data, and was easily exceeded with electronic data collection of prescribing and demographic data.

Total statin prescription volumes and the numbers of Maori and Pacific patients starting statins were compared in the intervention and control sites. Patient data were used to calculate five year CVD risk for patients starting statins before and after the campaign.

Results

All practices that met the inclusion criteria agreed to participate. In total 58 doctors participated with a combined patient population of 80,312. Based upon Statistics New Zealand Community Profiles from the 2001 Census, practice registers in Gisborne represented 52% of the Gisborne District population (16,444/31,719); based on 2001 populations for relevant census area units, practice registers represented 33% of the southern Porirua population relevant to the Campaign (9,524/28,803).

For the three control sites the registers represented 66% of the Statistics New Zealand "Community Profile" populations (54,344/82,494). These figures must be regarded as approximate because even in semi-rural areas people travel across Community Profiles boundaries to attend their usual practice. The intervention practices had larger proportions of Maori and Pacific patients than control practices, and were slightly younger. Analyses excluded the 2.5% of patients whose ethnicity was unknown.

In the nine months before the campaign was launched (1/7/2002 - 30/3/2003), 1333 people were started on statins; in the seven months after the campaign was launched (1/4/2003 - 31/10/2003, when data collection was completed) 1389 people started statins. The gender split was very close to 50% (maximum deviation from 50% was 47%) in both control and intervention areas, before and after the intervention. The mean age of all people starting statins was 61 years old; falling from 63.5 to 62.5 in the control group and from 60.5 to 59 in the intervention group. In both intervention and control groups there was an increase in the number of people starting statins after the date of the campaign launch (Table 1). For the targeted ethnic groups, Maori and Pacific, there was a greater increase in the number of people starting statins in the intervention areas than in the control areas. For people in the "Other" ethnic group the increase in the number of people starting statins was less in the control areas than the intervention areas (Figure 1). The increases in the number of Maori and Pacific patients starting statins in the intervention groups were statistically significant (χ^2 p<0.05). There was no significant change in overall numbers of new patients starting compared with the control areas. Statistical testing did not adjust for multiple comparisons.

Clinical data were requested for a random sample of the 2574 (unique) patients who started statins. There were 1955 patients in the sample. Of these, laboratory data prior to the date a statin was started was retrieved for 1507. "Pre" data was absent when statins had been commenced in hospital or by another provider. Full demographic and clinical data sets were available for 1255 patients (64% of the sample).

Using Framingham risk prediction equations the 5 year absolute cardiovascular risk was calculated.[8, 9] Following the most recent CVD management guidelines from the NZ Guidelines Group, 5% was added to the calculated risk for all Maori, Pacific and people meeting the relevant criteria for a family history of premature coronary heart disease or stroke.[3] This 5% extra risk can only be added once. In the absence of sufficient data on renal function no extra adjustment was made for diabetes. Many people with diabetes received a 5% extra risk from other criteria.

Patients with an absolute risk of less than 20% but with symptomatic CVD (including MI) were given a risk of 20%. Of the 558 patients with symptomatic CVD, 327 had their CVD risk increased to 20% (CVD risk for the other 231 was already ≥ 20%). For patients starting statins in the intervention areas, there were no significant changes in the mean values of 5-year CVD risk. The 5 year CVD risk of the "Other" ethnic group was less than Māori or Pacific, but no other inter-group differences were statistically significant (Figure 2).

The proportion of people with five-year CVD risk >15% ("high risk") who started a statin decreased slightly, from 71% to 62%. There were no consistent trends in the proportion of people who started statins by symptomatic CVD status.

Discussion

Principal findings

This study demonstrated a statistically significant increase in the number of Māori and Pacific patients starting statins in the intervention sites compared with the control sites. Thus this objective of the campaign was achieved. However, there was no overall increase in the number of patients starting statins, the age and gender profile of patients receiving statins was not significantly changed, and the cardiovascular risk of patients starting statins was lower after the campaign launch than before.

Strengths and weaknesses of the study

The strengths of this evaluation are the relatively large samples of both intervention and control populations, testing the campaign in the context of real world general practice (there was no pre-intervention recruitment or consenting process), and the utilisation of unequivocal outcome measures (changes in statin uptake rates and CVD risk). However, conclusions from this evaluation must be treated cautiously, for a number of reasons. The evaluation was a survey of historical practice records and data quality was not able to be investigated. Full demographic and clinical datasets were available for only 65% of the randomly selected patients, limiting the number of patients for whom CVD risk calculations were possible. Neither the intervention area nor the control area were randomly selected. The level of statin prescribing in the control area was already higher than that of the intervention area, and had smaller proportions of people in the target ethnic groups.

Implications of the findings

There has been consistent concern regarding the low level of uptake of statins for people that could benefit significantly from taking them regularly. Adding simvastatin to existing treatments has been shown to safely produce substantial additional benefit for a wide range of high-risk patients, irrespective of their initial cholesterol concentrations.[10] In 1997 there were fewer than 50,000 patients eligible in NZ for statins (uptake about 12,000), although the National Heart Foundation guidelines recommended access for about 186,000.[11] In 1997, PHARMAC widened access to statins by removing "Special Authority" requirements for fluvastatin. Fluvastatin was subsidised and all available statins reference priced to it.[12] In April 2002 PHARMAC also removed "Special Authority" requirements for simvastatin.

The PHARMAC campaign aimed to address ongoing non-uptake of statins among eligible patients,[11] in particular Māori and Pacific populations. The evaluation results suggest that the campaign was successful in this regard, and that a national roll-out would be expected to help to reduce differences in rates of statin uptake between ethnic groups, thus contributing to a national strategic health goal of "reducing inequalities".

However, although successful in increasing statin uptake in the targeted ethnic groups, overall statin uptake did not increase significantly as a result of the intervention. The study data also suggest that, rather than encourage previously untreated individuals with high cardiovascular risk to seek care, the overall impact of the campaign was to cause more lower risk people to seek care or, as an alternative explanation, to encourage doctors to generally increase their statin prescribing to patients in these groups. Under these circumstances the characteristics of the population of people starting statins will tend towards the mean, and one would expect to see falls in mean cardiovascular risk. The evaluation suggests that a national public awareness campaign similar to the pilot campaign may benefit from increased targeting to specific high risk individuals.

Table 1. Changes in number of people starting statins, per 1000 population

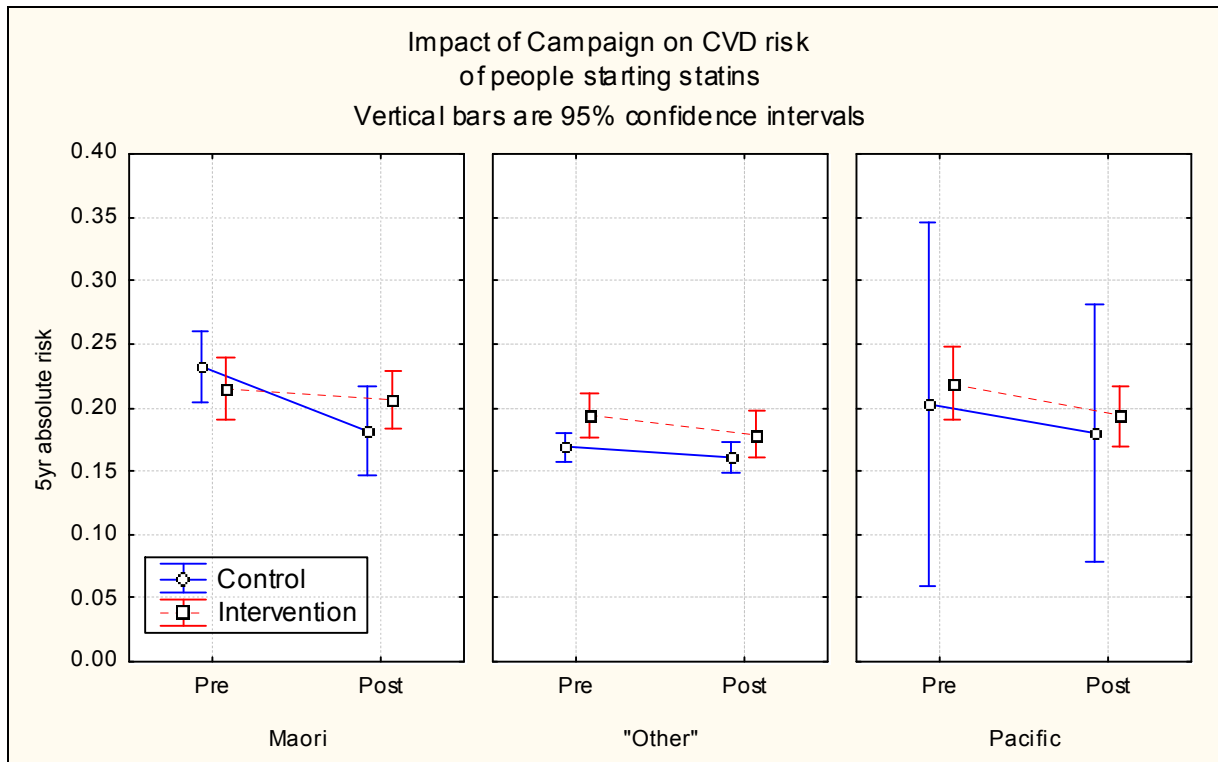| Group	Ethnicity	Patients	9m Pre	7m Post	Rate per 1000 per year			
					9m Pre	7m Post	Change*	Difference from control
Control	Maori	9245	127	103	18.3	19.1	0.8	
	Other	42388	745	844	23.4	34.1	10.7	
	Pacific	945	30	23	42.3	41.7	-0.6	
Control Total		*52578*	*902*	*970*	*22.9*	*31.6*	*8.8*	
Intervention	Maori	9405	78	100	11.1	18.2	7.2	6.4†
	Other	11314	178	164	21.0	24.8	3.9	-6.8
	Pacific	5039	55	91	14.6	31.0	16.4	17.0†
Intervention Total		*25758*	*311*	*355*	*16.1*	*23.6*	*7.5*	*-1.2‡*
Intervention sites								
Gisborne	Maori	6787	51	64	10.0	16.2	6.1	5.4
	Other	9208	143	110	20.7	20.5	-0.2	-10.9
	Pacific	391	3	2	10.2	8.8	-1.5	-0.9
Gisborne Total		*16386*	*197*	*176*	*16.0*	*18.4*	*2.4*	*-6.4*
Porirua	Maori	2618	27	36	13.8	23.6	9.8	9.0
	Other	2106	35	54	22.2	44.0	21.8	11.1
	Pacific	4648	52	89	14.9	32.8	17.9	18.5
Porirua Total		*9372*	*114*	*179*	*16.2*	*32.7*	*16.5*	*7.8*
Total with ethnicity		78336						
Ethnicity missing		1976						
Grand Total		80312						

* In all cases people were still starting statins after the launch – a negative value in this column means that the rate of statin uptake was slowing; † sig difference from control area χ2 p<0.05; ‡ ns

Figure 1. Impact of Campaign on statin uptake by ethnicity

Change in statin uptake after Campaign
(new statin patients per 1000 per annum)
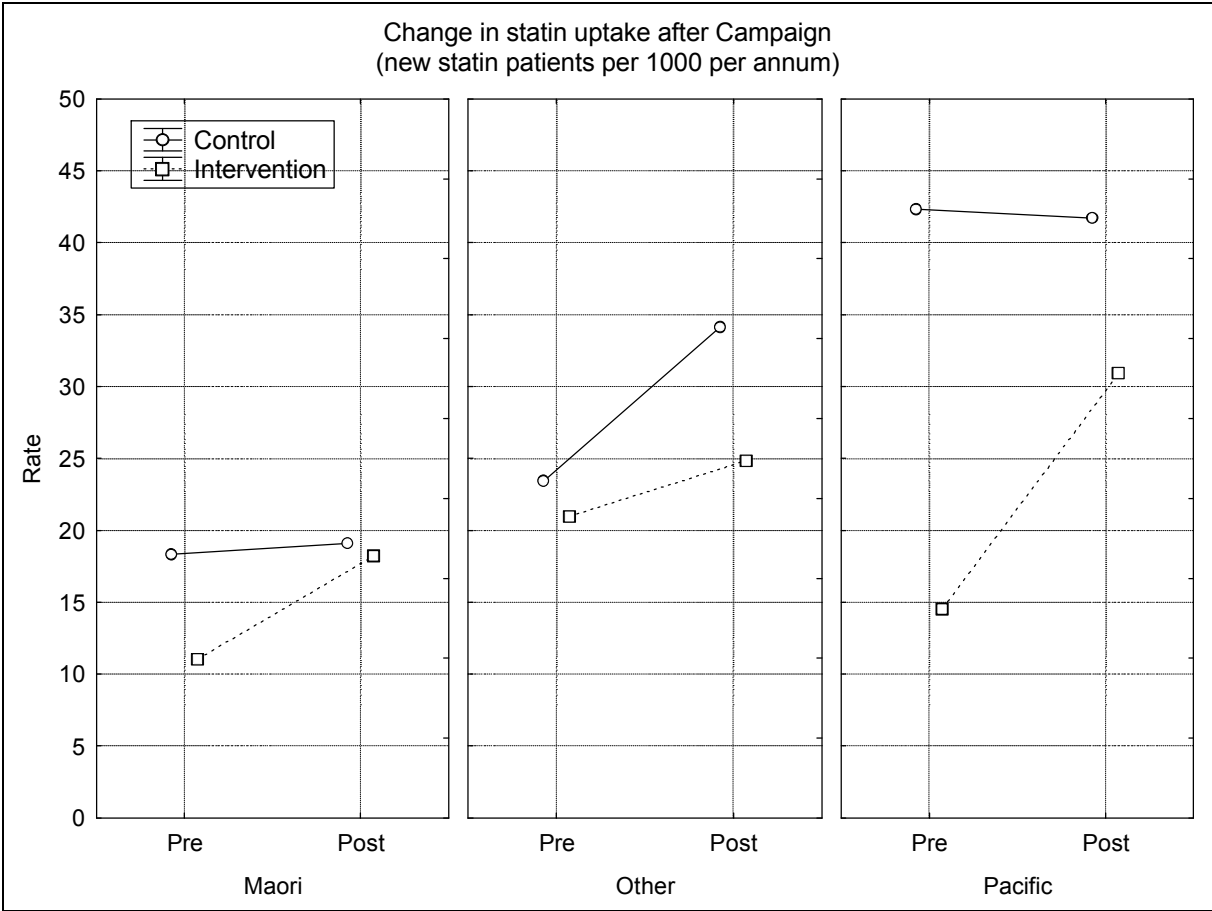
Note: Differences in increases in Maori and Pacific (control compared to intervention) significant, p<0.05, Changes in pooled data not significant.

Figure 2. Impact of Campaign on CVD risk of patients starting statins by ethnicity

Acknowledgements

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