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FULL RESEARCH PAPER

Socioeconomic disparities in the management of coronary heart disease in 438 general practices in Australia

George Mnatzaganian[1]*, Crystal Man Ying Lee[2,3], Suzanne Robinson[4], Freddy Sitas[5,6], Clara K. Chow[7,8,9], Mark Woodward[9,10], and Rachel R. Huxley[9,11]

[1]La Trobe Rural Health School, La Trobe University, Australia; [2]School of Psychology and Public Health, La Trobe University, Australia; [3]Boden Collaboration for Obesity, Nutrition, Exercise and Eating Disorders, University of Sydney, Australia; [4]School of Public Health, Curtin University, Australia; [5]Centre for Primary Health Care and Equity, School of Public Health and Community Medicine, University of New South Wales, Australia; [6]Menzies Centre for Health Policy, School of Public Health, University of Sydney, Australia; [7]Westmead Applied Research Centre, University of Sydney, Australia; [8]Department of Cardiology, Westmead Hospital, Sydney, Australia; [9]The George Institute for Global Health, University of New South Wales, Australia; [10]The George Institute for Global Health, University of Oxford, UK; and [11]Faculty of Health, Deakin University, Australia

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Background This population-based cross-stional and panel study investigated disparities in the management of coronary heart disease (CHD) by level of socioeconomic status.

Methods CHD patients (aged ≥18 years), treated in 438 general practices in Australia, with ≥3 recent encounters with their general practitioners, with last encounter being during 2016–2018, were included. Secondary prevention prescriptions and number of treatment targets achieved were each modelled using a Poisson regression adjusting for demographics, socioeconomic indicators, remoteness of patient's residence, comorbidities, lifetime follow-up, number of patient–general practitioner encounters and cluster effect within the general practices. The latter model was constructed using the Generalised Estimating Equations approach. Sensitivity analysis was run by comorbidity.

Results Of 137,408 patients (47% women), approximately 48% were prescribed ≥3 secondary prevention medications. However, only 44% were screened for CHD-associated risk factors. Of the latter, 45% achieved ≥5 treatment targets. Compared with patients from the highest socioeconomic status fifth, those from the lowest socioeconomic status fifth were 8% more likely to be prescribed more medications for secondary prevention (incidence rate ratio (95% confidence interval): 1.08 (1.04–1.12)) but 4% less likely to achieve treatment targets (incidence rate ratio: 0.96 (0.95–0.98)). These disparities were also observed when stratified by comorbidities.

Conclusion Despite being more likely to be prescribed medications for secondary prevention, those who are most socioeconomically disadvantaged are less likely to achieve treatment targets. It remains to be determined whether barriers such as low adherence to treatment, failure to fill prescriptions, low income, low level of education or other barriers may explain these findings.

Keywords Coronary heart disease • health targets • management • socioeconomic gradients

Introduction

Coronary heart disease (CHD) remains the leading cause of death and disability globally despite significant advances in its diagnosis and management over the past decades. In Australia alone, in 2017–2018 more than 580,300 adults (approximately 312 cases per 10,000 population) have self-reported CHD, which, in turn, accounted for 12% of all deaths and more than 160,438 hospitalisations

* Corresponding author. George Mnatzaganian, La Trobe Rural Health School HS1 2.39, La Trobe University, PO Box 199, Bendigo, VIC 3552, Australia.
Email: G.Mnatzaganian@latrobe.edu.au

(approximately 166 admissions per 10,000 public and private hospital separations).[1,2] In Australia, as in the USA and UK,[3,4] CHD disproportionately affects the most socially-disadvantaged and those living in the more remote geographic locations.[5] For example, the corresponding rates for prevalence, hospitalisation and death from CHD in the lowest socioeconomic areas are 2.2, 1.3 and 1.6 times that of the highest socioeconomic areas.[2] Similarly, the rates for CHD hospitalisation and CHD death in remote or very remote areas are 1.5 and 1.4 times that of major cities. These differences are partly due to the socioeconomic gradient in the prevalence of cardiovascular risk factors such as smoking and obesity.[2] Moreover, geographical disparities in both access to treatment and its affordability are likely contributors to the variation in the CHD burden in the Australian and other populations. A recent survey in Australia reported that of people who received a prescription for any medication in the past 12 months, 7% delayed getting or did not get the prescribed medication due to cost.[6] Moreover, a systematic review found that over half of the studies that focused on access to drug treatment for the secondary prevention of CHD reported lower treatment rates for patients with low compared with those with high socioeconomic status (SES).[7]

Primary care is an important component in the secondary prevention of CHD. General practitioner (GP) visits, preparation of a chronic disease management plan and use of cardiovascular medications after hospitalisation for CHD have been shown to reduce the risk of emergency readmission and death from cardiovascular disease.[8,9] Guidelines for the management of all patients with CHD in primary care have been available in Australia since 2012.[10] However, as we have shown in a recent report, their adoption is not yet universal and significant disparities exist in their application such that men are more likely than women to receive a general practice management plan from their GP.[11] The aim of the current study was to investigate in a large national general practice dataset, MedicineInsight, whether disparities in the management of CHD exist based on socioeconomic indicators and remoteness of patient's residence.

Methods

MedicineInsight is a large-scale Australian national general practice database of longitudinal de-identified electronic health records established by NPS MedicineWise with core funding from the Australian Government Department of Health.[11–13] Adults (aged ≥18 years) with CHD who had had ≥3 encounters with their GPs, with last encounter being during 2016–2018, were included in this population-based study (Supplementary Material *Figure 1* online). Patients with CHD were identified through an algorithm developed by NPS MedicineWise,[11] which utilised information from relevant coded entries or free-text terms recorded in at least one of three fields – diagnosis, reason for encounter, and reason for prescription (Supplementary *Table 1*).

The general practice management plan for CHD is a tool developed in Australia for the secondary prevention of CHD in primary care.[14] The recommendations that this study investigated have been published.[11] Secondary prevention prescriptions were considered if these were prescribed during the study period. Missing data or lack of documentation of the measurement of risk factors were considered as non-assessment during the study period. The SES was based on the Socio-Economic Indexes for Areas – Index of Relative Socio-Economic Disadvantage (SEIFA-IRSD),[15] which is a residential postcode-based composite score that ranks geographic areas across Australia according to their relative socio-economic advantage or disadvantage. This study's SEIFA-IRSD scores were based on patients' most recent residential addresses as these were recorded in the last patient–GP encounter during the two-year study period. We further categorised the Australian Bureau of Statistics SEIFA-IRSD deciles into five groups.

Statistical analysis

The proportions of patients (a) with secondary prevention prescriptions during 2016–2018; (b) assessed for risk factors; and (c) who had achieved treatment targets were reported by SEIFA-IRSD fifths (i.e. first (most disadvantaged), second, third, fourth and fifth (least disadvantaged) and by residential remoteness (i.e. major city, inner regional, outer regional, and remote or very remote). The direct standardisation method was used to estimate age- and sex-standardised proportions utilising the prevalence of CHD in the Australian standard population as reported in the National Health Survey 2017–2018.[1] Differences by SES and remoteness in the age- and sex-standardised figures were evaluated, respectively, using chi-square tests. Spearman's rho correlation coefficient tested for monotonic changes in the relationship between SEIFA-IRSD and other variables.

Secondary prevention prescriptions and number of treatment targets achieved were each modelled using a Poisson regression. To account for variations in achieving treatment targets during the study period, we ran the latter model using the Generalised Estimating Equations approach while accounting for three possible measurements of risk factors related to treatment targets shown in Supplementary *Table 2*. For each patient in the two-year study period, the baseline available, randomly selected and last available measurements were used. Single measurements per patient per study period were carried over to all three.

The models adjusted for age, sex, residential remoteness, SES, indigenous status, state and territory, body mass index (BMI), smoking status, acute myocardial infarction, heart failure, diabetes, hypertension, stroke, chronic kidney disease, depression, anxiety, lifetime years of follow-up and number of patient–GP encounters during the two-year study period. The standard errors were adjusted for correlation within 438 general practices using the cluster sandwich estimator. In the treatment targets model, diabetes, hypertension, BMI and smoking were excluded as these were incorporated in the targets.

The dose–response effects of different levels of socioeconomic disadvantage on number of secondary prevention prescriptions or number of treatment targets achieved were tested using likelihood ratio tests, with nested regression models being compared to determine whether a model was rich enough to capture data trends. The nested models that assessed treatment targets were based on the randomly selected measurements.

Sensitivity analysis

Sensitivity analyses were conducted by prevalent comorbidities. The forest plots, showing age-, sex- and SES-adjusted incidence rate ratios of study outcomes by condition, were constructed using random effect models.

We further used multiple imputation by chained equations to generate the missing data on the randomly selected measurements using the *mi* Stata command, with 50 imputed datasets and final estimates obtained using Rubin's rules.[16] The Poisson regression modelling treatment targets was re-run using the imputed dataset.

All analyses were performed using Stata/SE 15.0 (Stata Corp LP., College Station, Texas, USA).

Ethics clearance

This study was approved by the La Trobe University College Human Ethics Sub-Committee (approval number: S17-231). The need for

informed consent was waived by the ethical committee due to de-identified data being used.

Results

General practice records for 137,408 patients with CHD (46.6% women) were analysed. Of these records, 81.8% were from 2016–2018, 15.8% from 2015–2017 and 2.3% from 2014–2016.

Patient characteristics by SES and remoteness

Patient characteristics varied by SES (*Table 1*). Patients belonging to the most disadvantaged fifth group were the oldest (mean age 67.0, SD 16.1 years compared with 66.2, SD 16.8 years in all other groups combined, $p < 0.001$). This was reflected in a higher prevalence of comorbidities in this most disadvantaged fifth (Supplementary *Table 3*) and higher patient–GP encounters in the study period (*Table 1*). Socioeconomic disadvantage also varied by residential remoteness. Approximately 75% of individuals living in 'outer regional locations' belonged to the two lowest SES fifths compared with 58.4% in 'remote or very remote locations' and 56.7% in 'inner regional locations' (Supplementary *Table 4*). Patients residing in major cities were the least socioeconomically disadvantaged with approximately one-quarter of patients in the lowest two SES groups. The oldest patients resided in inner regional locations while the youngest were in remote or very remote locations. Prevalence of major comorbidities was lower in this latter subgroup (Supplementary *Table 4*).

Prescription of medications by SES and remoteness

Higher proportions of patients from the most disadvantaged group were prescribed with any of the five recommended medications compared with other socioeconomic groups (*Figure 1*). A significant monotonic association between SES and being prescribed all of the four medications recommended for daily use (i.e. excluding short-acting nitrates) was observed, with number of prescribed medications incrementally increasing as SES declined (Spearman rho = −0.106, $p < 0.001$). In the risk-adjusted model, patients in the most disadvantaged fifth were 8% more likely to be prescribed more secondary prevention medications compared with the least disadvantaged group (incidence rate ratio (IRR) 1.08, 95% confidence interval (CI) 1.04–1.12, $p < 0.001$) (*Table 2*).

The highest proportions of patients prescribed with any of the medications for secondary prevention were observed in inner regional areas and the lowest proportions were observed in remote or very remote areas (Supplementary *Figure 2*), aligning with the different respective ages of these groups. In the risk-adjusted model, prescriptions in major cities, and inner and outer regional locations were

Table 1. Characteristics of patients by Index of Relative Socio-Economic Disadvantage fifths, *n* (%).

	1st fifth (most disadvantaged)	2nd fifth	3rd fifth	4th fifth	5th fifth (least disadvantaged)
n (%)	26,966 (19.6)	31,527 (22.9)	30,410 (22.1)	22,819 (16.6)	25,686 (18.7)
Age categories, years					
<45	2654 (9.8)	3429 (10.9)	3598 (11.8)	3019 (13.2)	3093 (12.0)
45–54	2448 (9.1)	3018 (9.6)	2785 (9.2)	2395 (10.5)	2394 (9.3)
55–64	4819 (17.9)	5576 (17.6)	5161 (17.0)	3961 (17.4)	4569 (17.8)
65–74	7480 (27.7)	8564 (27.2)	8121 (26.7)	5834 (25.6)	6496 (25.3)
75+	9565 (35.5)	10,940 (34.7)	10,745 (35.3)	7610 (33.4)	9134 (35.6)
Female	12,126 (45.0)	15,190 (48.2)	14,222 (46.8)	10,625 (46.6)	11,849 (46.1)
Aboriginal/Torres Strait Islander status					
Yes	834 (3.1)	744 (2.4)	581 (1.9)	255 (1.1)	173 (0.7)
No	22,042 (81.7)	26,686 (84.6)	25,490 (83.8)	18,460 (80.9)	19,521 (76.0)
Unknown	4090 (15.2)	4097 (13.0)	4339 (14.3)	4104 (18.0)	5992 (23.3)
Geographic location					
Major city	9264 (34.4)	12,710 (40.3)	15,625 (51.4)	17,998 (78.9)	23,829 (92.8)
Inner regional	10,984 (40.7)	8365 (26.5)	10,003 (32.9)	3541 (15.5)	1253 (4.9)
Outer regional	5071 (18.8)	9614 (30.5)	3385 (11.1)	1027 (4.5)	488 (1.9)
Remote/very remote	1647 (6.1)	838 (2.7)	1397 (4.6)	253 (1.1)	116 (0.5)
Number of patient–GP encounters during two-year study period					
1–20	9526 (35.3)	13,147 (41.7)	12,655 (41.6)	10,056 (44.1)	12,328 (48.0)
21–40	6645 (24.6)	7790 (24.7)	7518 (24.7)	5574 (24.4)	6341 (24.7)
41–60	3756 (13.9)	4282 (13.6)	4101 (13.5)	2926 (12.8)	3056 (11.9)
61+	7039 (26.1)	6308 (20.0)	6136 (20.2)	4263 (18.7)	3961 (15.4)

$p < 0.001$ in all.
GP: general practitioner

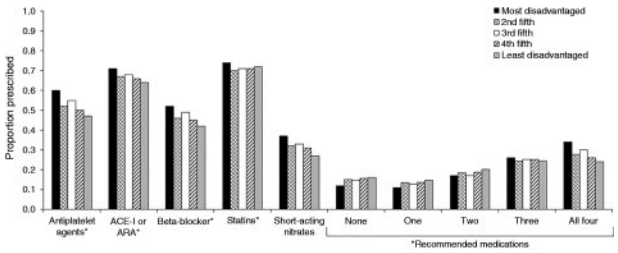

Figure 1 Age- and sex-standardised proportion of patients with secondary preventive prescriptions by socioeconomic status. $p < 0.001$ unless stated in the figure. ACE-I: angiotensin-converting enzyme inhibitor; ARA: angiotensin II receptor antagonist

alike whereas patients residing in remote or very remote areas were 12% less likely to be prescribed medications for secondary prevention than those in major cities (IRR 0.88, 95% CI 0.81–0.96, $p = 0.003$) (*Table 2*).

Assessment of risk factors by SES and remoteness

During the two-year study period, between 92% and 95% of individuals had their smoking status and blood pressure assessed by their GP whereas approximately 75% had their blood lipid profile tested and only 18–27% of individuals had their waist circumference (as a measure of central obesity) measured. A negative association between SES and risk factor assessment was observed, with factors being less evaluated as the SES rose ($p < 0.001$ in all) (Supplementary *Figure 3*). In contrast, the assessment of risk factors by remoteness varied by risk factor assessed with increased proportions assessed in patients living further away from major cities (Supplementary *Figure 4*).

Achievement of treatment targets by SES and remoteness

Of the patients who had their risk factors assessed, and using the last available measurements, targets were more likely achieved in patients belonging to higher socioeconomic classes (*Figure 2*), with similar patterns observed when treatment targets were based on first-, randomly-selected- or last-available measurements, as shown in Supplementary *Figure 5*. In the risk-adjusted model that accounted for three possible measurements per patient, the likelihood of achieving treatment targets dropped incrementally as SES declined. Individuals residing in remote or very remote locations were least likely to achieve risk factor targets (*Table 3*). A dose–response effect between SES and number of treatment targets achieved was found (likelihood-ratio test chi-square = 3.59, $p = 0.309$).

In all models, interaction between socioeconomic disadvantage and residential remoteness was tested by the introduction of interaction terms into the regressions. No evidence of interaction was found based on the non-significant regression-derived p value for the interaction term: $p > 0.05$ in all.

Sensitivity analyses

To test for consistency, we further separately tested study outcome measures by prevalent comorbidities while comparing low to high SES halves with results consistently supporting the study's main findings (*Figure 3*).

Results obtained following multiple imputation supported the study's main conclusions (Supplementary *Table 5*).

Discussion

This nationwide study of general practices in Australia indicates that among those living with CHD, secondary prevention management is influenced by levels of both SES disadvantage and patient residential remoteness, but in opposing ways. Individuals with CHD residing in remote or very remote locations were significantly less likely to be prescribed medications for secondary prevention compared with those living in major cities. They were also less likely to achieve treatment targets. Conversely, the most socioeconomically disadvantaged individuals were more likely to be prescribed medications for secondary prevention and were more likely to be assessed for cardiovascular risk factors (but less likely to achieve risk factors targets) compared with those who were the least socioeconomically disadvantaged.

Australia provides universal health care, which includes subsidised healthcare services through the Pharmaceutical Benefits Scheme (PBS) and Medicare Benefits Scheme (MBS). Items listed on the PBS scheme usually involve a co-payment with a lower co-payment for low income earners and Indigenous Australians living with or at risk of chronic illness.[17] Despite these concessions a higher proportion of patients in the most disadvantaged groups do not fill prescriptions due to cost. SES disadvantaged patients with chronic diseases often struggle with out of pocket expenses negatively impacting on their health outcomes.[18] This may have contributed to the lower proportion who achieved targets in comparison with those in the least disadvantaged group. Patients from more disadvantaged areas are also likely to be at higher cardiovascular morbidity. An Australian study reported a dose–response relationship between socioeconomic disadvantage and admission to a coronary care unit or intensive care unit among patients presenting with non-traumatic chest pain.[19]

The socioeconomic disparities observed in the current study may be attributed to a range of socioeconomic determinants of health and health behaviours,[20] rooted in social rank as determined by knowledge of risk factors of disease,[21] SES-associated educational gradients,[22] health literacy and patient–physician communication,[23]

Table 2 Number of secondary prevention prescriptions: Poisson regression,[a] *N*=137,408.

	Incidence rate ratio (95% CI)	*p* value
Age, years		
18–44	1.00	
45–54	3.06 (2.85–3.29)	<0.001
55–64	3.91 (3.62–4.22)	<0.001
65–74	4.27 (3.93–4.63)	<0.001
≥75	4.43 (4.07–4.81)	<0.001
Female	0.88 (0.87–0.89)	<0.001
Indigenous status		
No	1.00	
Yes	1.13 (1.10–1.15)	<0.001
Unknown	0.99 (0.97–1.02)	0.695
Remoteness		
Major city	1.00	
Inner regional	1.02 (0.98–1.05)	0.303
Outer regional	0.98 (0.94–1.02)	0.314
Remote/very remote	0.88 (0.81–0.96)	0.003
Socioeconomic status		
5th fifth (least disadvantaged)	1.00	
4th fifth	1.02 (0.98–1.04)	0.238
3rd fifth	1.04 (1.01–1.07)	0.004
2nd fifth	1.04 (1.01–1.07)	0.015
1st fifth (most disadvantaged)	1.08 (1.04–1.12)	<0.001
Acute myocardial infarction	1.35 (1.33–1.38)	<0.001
Heart failure	1.09 (1.08–1.10)	<0.001
Diabetes mellitus	1.07 (1.06–1.09)	<0.001
Hypertension	1.45 (1.40–1.49)	<0.001
Stroke	1.08 (1.07–1.09)	<0.001
Kidney disease	1.02 (1.00–1.03)	0.027
Depression	1.01 (1.01–1.02)	<0.001
Anxiety	0.99 (0.99–1.01)	0.588
State/Territory		
Australian Capital Territory	1.00	
New South Wales	1.07 (0.91–1.27)	0.379
Northern Territory	1.19 (0.96–1.48)	0.100
Queensland	1.10 (0.93–1.29)	0.257
South Australia	0.96 (0.81–1.14)	0.683
Tasmania	0.99 (0.83–1.18)	0.913
Victoria	1.11 (0.94–1.31)	0.228
Western Australia	1.21 (1.03–1.43)	0.021
Smoking status		
No	1.00	
Current smoker	1.13 (1.11–1.14)	<0.001
Past smoker	1.09 (1.08–1.11)	<0.001
Unknown	0.93 (0.91–0.96)	<0.001
Body mass index, kg/m^2		
<24.9	1.00	
25.0–29.9	1.06 (1.04–1.07)	<0.001
30.0–34.9	1.09 (1.08–1.11)	<0.001
35.0–39.9	1.12 (1.10–1.13)	<0.001
40.0+	1.14 (1.12–1.16)	<0.001
Unknown	1.09 (1.07–1.12)	<0.001

[a]Model also adjusted for past years of follow-up, number of patient–GP encounters and cluster effect within 438 general practices.
CI: confidence interval; GP: general practitioner

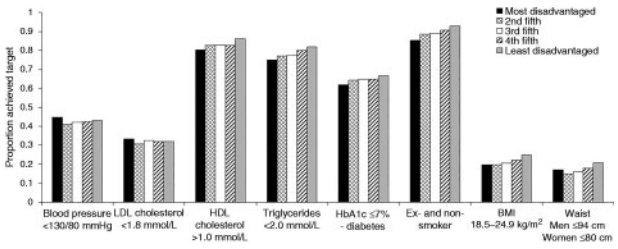

Figure 2 Age- and sex-standardised proportion of patients who achieved risk factors targets by socioeconomic status based on last available measurement. $p < 0.001$ unless stated in the figure. LDL: low-density lipoprotein; HDL: high-density lipoprotein; BMI: body mass index

occupational hierarchy and income. CHD is a multifactorial disease with clinical, genetic, behavioural and lifestyle risk factors often interacting and contributing to a higher level of coronary risk.[24] Of these, modifiable lifestyle and behavioural risk factors, such as poor diet, physical inactivity, smoking and obesity disproportionately affect individuals coming from the most disadvantaged groups. Similar to our findings, studies have consistently reported such disparities in cardiovascular health also in countries with universal access to health care and after stratifying by smoking, comorbidity and obesity.[25]

An Australian study on utilisation of health services in adults aged ≥45 years reported that a higher proportion of people in less disadvantaged groups did not fill a script compared with more disadvantaged groups of the population.[26] Paradoxically, however, patients from the least disadvantaged group were more likely to have achieved more treatment targets compared with those from the most disadvantaged group. It is possible that patients in the least disadvantaged group had their CHD managed by specialists rather than GPs: the same health service utilisation study reported that a higher proportion of people in the least disadvantaged group claimed the MBS service for specialist treatment compared with other socioeconomic groups (55% versus 48–49%).[26] Alternatively, individuals in the least disadvantaged groups may have opted to reduce risk factor levels by non-pharmacological means through the modification of lifestyle and behaviour.

In regard to CHD management by level of remoteness, dispensing rates for cardiovascular medication were generally higher in inner regional areas and lowest in remote or very remote areas despite the higher burden of CHD in rural populations, consistent with earlier reports.[27] Notably, our data do not suggest that this dispensing pattern is due to a lower SES status among those living in the most remote areas of the country; although major cities had the lowest proportion of the most disadvantaged individuals, there was little relation between SES status and remoteness. For example, in this sample, 75% of individuals living in 'outer regional locations' belonged to the two lowest SES fifths compared with 58% in 'remote or very remote locations' and 57% in 'inner regional locations'.

A key strength of the current study is that we used a large and contemporary national GP dataset in Australia. Nevertheless, our results may not be entirely representative at a regional level since general practices participating in MedicineInsight had to have had computerised records.[12] GP practices in locations that rely on paper-based records are not represented in this study. Our study utilised routinely collected data that are not intended for research purposes, hence there may have been errors in reporting and/or coding, and validation concerns. Missing information on blood pressure, smoking status and weight could be due to lack of documentation rather than lack of assessment.[13] We had no knowledge on contraindications which may have accounted for a small proportion of under-prescribing. We lacked information on specialist care, which may have contributed to the relatively lower prescription, but higher target achieved rates in the least disadvantaged group. We also lacked drug dispensing data which could have informed whether medication non-adherence or ineffective treatment led to non-achievement of treatment targets. Furthermore, any residential address changes over time were unknown to us and were unaccounted for.

This study identifies important implications for policy and clinical practice, notably that despite Australia's universal healthcare system, the level of CHD management received is influenced by SES and remoteness of residence with the widest management gap observed in individuals coming from disadvantaged backgrounds and patients coming from remote or very remote locations. The documentation rates we report imply a continued need for programmes of support to increase screening for risk factors for CHD and documentation of related clinical information, in accordance with the recommendations in the National Health and Medical Research Council guidelines.[10] More research is needed to understand clinical and patient behaviours and assess whether incentives of policy may help drive change in health behaviours.

Supplementary material

Supplementary material is available at *European Journal of Preventive Cardiology* online.

Author contribution

GM analysed the data, co-drafted the manuscript and is guarantor of the study. CMYL conceived the design of the study, secured funding for the study, obtained the data and co-drafted the manuscript. FS and SR secured funding for the study. MW provided statistical oversight. CKC provided clinical advice. RRH conceived the design of the study and secured funding for the study. All authors

Table 3 Number of treatment targets achieved: Poisson utilising the Generalised Estimating Equations approach,[a] *N* = 59,789.

	Incidence rate ratio (95% CI)	p value
Age, years		
18–44	1.00	
45–54	0.94 (0.92–0.95)	<0.001
55–64	0.96 (0.94–0.96)	<0.001
65–74	1.01 (0.99–1.02)	0.159
≥75	1.07 (1.06–1.08)	<0.001
Female	1.04 (1.03–1.04)	<0.001
Indigenous status		
No	1.00	
Yes	0.94 (0.92–0.95)	<0.001
Unknown	0.99 (0.97–1.00)	0.070
Remoteness		
Major city	1.00	
Inner regional	0.99 (0.97–1.00)	0.085
Outer regional	0.97 (0.94–1.00)	0.103
Remote/very remote	0.97 (0.96–0.98)	<0.001
Socioeconomic status		
5th fifth (least disadvantaged)	1.00	
4th fifth	0.98 (0.97–1.00)	0.147
3rd fifth	0.98 (0.97–1.00)	0.060
2nd fifth	0.97 (0.96–0.99)	<0.001
1st fifth (most disadvantaged)	0.96 (0.95–0.98)	<0.001
Acute myocardial infarction	1.02 (1.01–1.02)	<0.001
Heart failure	1.01 (1.00–1.02)	0.042
Stroke	1.01 (1.00–1.02)	0.012
Kidney disease	0.97 (0.96–0.98)	<0.001
Depression	0.98 (0.97–0.98)	<0.001
Anxiety	1.00 (0.99–1.01)	0.810
State/Territory		
Australian Capital Territory	1.00	
New South Wales	1.01 (0.99–1.02)	0.357
Northern Territory	1.04 (1.01–1.07)	0.002
Queensland	0.99 (0.98–1.01)	0.603
South Australia	0.99 (0.98–1.01)	0.726
Tasmania	1.00 (0.98–1.02)	0.870
Victoria	0.89 (0.88–0.91)	<0.001
Western Australia	0.97 (0.96–0.98)	<0.001
Targets based on:		
Baseline available measurement in two-year period	1.00	
Randomly selected measurement in two-year period	1.01 (1.01–1.01)	<0.001
Last available measurement in two-year period	1.04 (1.03–1.04)	<0.001

[a]Model also adjusted for past years of follow-up, number of patient–general practitioner encounters and cluster effect within 438 general practices.
CI: confidence interval

contributed to the interpretation of the data and critical revision of the manuscript.

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Declaration of conflicting interests

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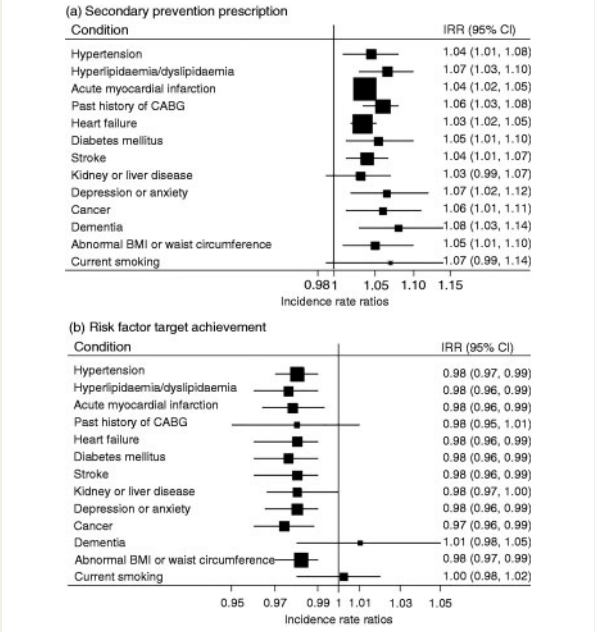

Figure 3 Treatment and target achievement by socioeconomic status, comparing low with high halves: sensitivity analysis based on last available measurement. Adjusted for age, sex and cluster effect within 438 general practices. CABG: coronary artery bypass grafting; CI: confidence interval; BMI: body mass index; IRR: incidence rate ratio

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