

Perspectives of general practitioners towards evaluation and treatment of cardiovascular diseases among older people

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ABSTRACT

INTRODUCTION: Risk of cardiovascular disease (CVD) events increases with age. With treatment, individuals with highest risk accrue greater absolute risk reduction. New Zealand's CVD guidelines provide no upper age limit for risk assessment. Guidance for treating those over 75 years is limited. Little is known about GPs' attitudes regarding assessing and managing cardiovascular risk among older people.

METHODS: A 39-item questionnaire including three cases representing various risk was developed and administered to 500 GPs randomly selected from a registry.

RESULTS: Of the GPs, 379 were eligible; 86 (22%) responded to the questionnaire. Most were male (57%), between 40 and 59 years of age (74%), of European ethnicity (57%), had a medical degree from NZ (60%), and had been practising for at least 10 years (98%). Respondents were less likely to assess risk with increasing patient age and more likely to manage risk according to individual risk factors, rather than absolute risk. Marked variation occurred in intent to assess risk for a patient aged 78 years, according to living environment, co-morbidity, and functional status. In general, respondents indicated that they would usually assess risk for a 78-year-old community-dwelling patient without dementia but not for such a patient living in residential care or with dementia.

DISCUSSION: This is New Zealand's first report of GPs' perspectives about assessing and managing CVD risk for older patients. Findings are consistent with international studies. More support and training in lifestyle assessment is needed, as well as clearer guidance for assessing and managing risk among older patients.

KEYWORDS: Cardiovascular diseases; risk assessment; preventive medicine; geriatrics; public health

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Introduction

Despite many opportunities for primary and secondary prevention, cardiovascular disease (CVD) remains New Zealand's (NZ's) leading cause of morbidity and disability for older people.¹ Initial evaluation and management of CVD are the responsibility of the general practitioner (GP), who may use paper-based or computerised decision-support tools for assessing risk and preventing or delaying CVD or its complications. The New

Zealand Guidelines Group (NZGG) has published detailed, evidence-based guidelines for the management of CVD risk using the Framingham Heart Study CVD risk equation as the basis for treatment decisions.² Higher CVD risk indicates the need for more intensive management recommendations. Adverse cardiovascular outcomes have been found to be associated with the following seven risk factors: older age; male gender; higher blood pressure; smoking; higher ratio of

total to HDL cholesterol (TC/HDL); diabetes mellitus; and left ventricular hypertrophy.³

Those who have established genetic lipid disorders, diabetes mellitus with nephropathy, or prior CVD are considered clinically to be at high risk; the Framingham risk prediction equation does not apply to them. Although NZ's CVD guidelines specify adjustments for many factors, such as for people of Maori, Pacific, or Indian background, the guidance given for the oldest ages is less clear. Indeed, in a variety of medical disciplines, developing clinical guidelines about older patients is often complex. For example, from the perspectives of both patients and their health care providers, increasing comorbidity with age complicates and alters the prioritisation of preventive care and medical treatment. Increasing death rates with age may decrease benefit-to-risk ratios for many procedures.

Debate about the place of prevention in the care of older people has gained international attention,⁴ and there is evidence of ageism in management of health promotion and prevention for older people.^{5,6} Scientific evidence is also more limited among older groups. The Framingham Heart Study, for example, examined and followed individuals from 30 to only 74 years of age. Due to this limitation in the risk prediction equation, NZ guidelines advise GPs to assess their patients who are 75 or more years of age as if they were 75 years of age. Therefore, the actual CVD event risk accruing for the elderly is unknown, and current guidelines could be underestimating their risk. However, this estimate of a future CVD event taking into account all the standard risk factors is much more accurate than using single risk factors on their own.⁷ In addition, while recommending a CVD risk-based approach to treatment decisions, the guidelines recommend clinical judgement for those over 75 years taking into account the CVD risk, the benefits and risk of treatment, and the patient's values.² No other specific advice is given.

Despite the importance of GPs' evaluation and management of CVD and the availability of tools to improve evaluation and management, little is known about NZ GPs' perspectives regarding assessing and managing cardiovascular risk, especially among older patients. How would a

WHAT GAP THIS FILLS

What we already know: Management of cardiovascular disease (CVD) is a main responsibility of primary care. Older people are at the highest risk of morbidity and could benefit from intervention the most.

What this study adds: This study shows that the age of older people, residential status, and dementia influence risk assessment and guideline-based care, with more attention paid to individual risk factors than absolute CVD risk.

GP approach an older patient with dementia or living in residential care? Would evaluation differ between patients of 75 years of age and those of 85 years? Observed differences could have important implications for clinical outcomes and patients' access to care. We sought to determine the perspectives of a sample of GPs regarding their approaches to assessing and managing CV risk for older patients with varying degrees of risk and disability. We hypothesised that GPs' reports would vary substantially and would vary according to patients' profiles.

Methods

Design and preparation of questionnaire.

To assess GPs' perspectives, we designed a 39-item questionnaire including three hypothetical cases representing various CVD risk categories (Table 1). The NZGG's colour charts for assessing CVD risk and benefit of treatment² would place the cases into the following risk groups: more than 30% for case #1, 20% to 25% for case #2, and 5% to 10% for case #3. For each case, items addressed whether the GP would conduct a CVD risk assessment, the importance of physical activity and nutritional assessment, and whether drugs would be used to reduce cholesterol, blood pressure, or the probability of thrombotic events. In addition to the cases, we developed five basic scenarios that combined functional status and residential situation (community vs institution) and asked which conditions would lead to CVD risk assessment. Additional items asked about respondents' demographics and medical practice. A cheque or gift voucher for \$25 was offered to respondents. The instrument was reviewed for language and easy completion within approximately 10 minutes.

Article to introduce topic

A brief article about CVD risk and CVD among older patients was written and published in *NZ Doctor* magazine, which was distributed free to all NZ GPs.⁸ This article introduced the topic and issues of complexity of making medical decisions among older patients. The article provided a Web address of an online version of the questionnaire.

Recruitment of participants and administration of questionnaire

To identify eligible GPs, we used a registry of 1089 GPs in the Auckland region held by the Department of General Practice and Primary Health Care at the University of Auckland. This registry contains names, telephone numbers, and facsimile (fax) numbers. To maximise efficiency and minimise costs, we chose to target a random sample of 500 GPs from the registry. We first excluded 258 members whose registry records indicated that the individual was not a GP, worked outside Auckland, was not interested in research, had a missing fax number, did not participate in surveys, or required personal telephone or face-to-face communication (prohibited by our Ethics Committee) before participation. Among

the 831 eligible GPs, a computer-based algorithm identified a random sample of 500. A one-page invitational document introducing the study and providing contact information was faxed to the targeted GPs. This included options for the GP to decline the survey or to receive, complete, and submit the survey online or by post or fax. Participants also had the option to reply anonymously. At intervals of one to two weeks, for up to nine rounds, non-respondents received additional fax invitations to participate. In a few cases, completed questionnaires were accepted from GPs who had taken the place of others who had retired or moved from the practice. When faxes failed (i.e. non-delivery), surgeries were called by telephone, to verify fax numbers with the nurses or clerical staff when possible.

Analysis

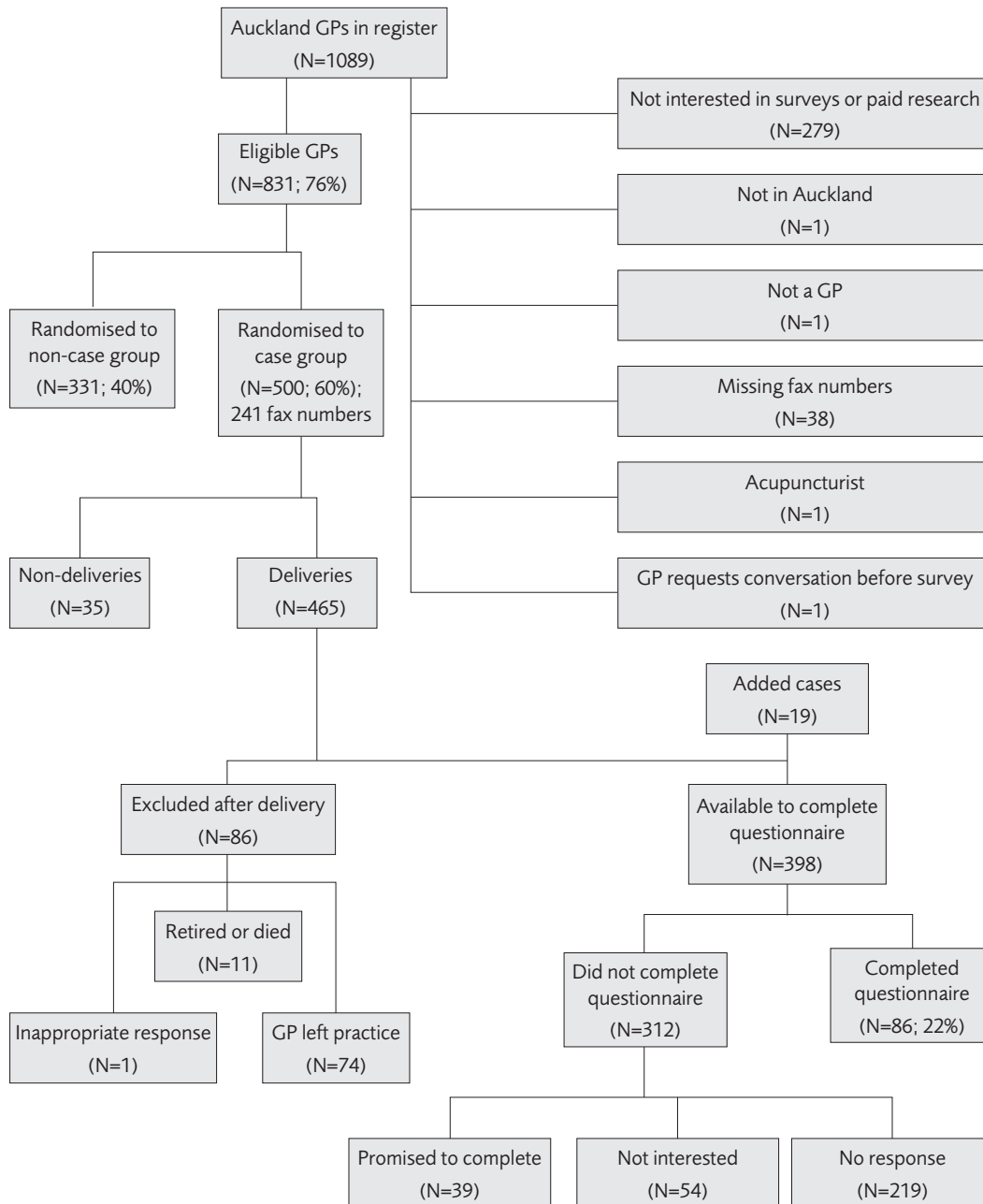
All responses were tabulated. Narrative comments were summarised and grouped into key themes identified from the comments.

Ethical approval for this study was granted by the University of Auckland Human Ethics Committee.

Table 1. Cases

Case #	Cardiovascular risk	Description of case
1	> 30%	J.J. is a 76-year-old European woman with a 12-year history of diabetes mellitus and chronic heart failure, peripheral vascular disease, osteoarthritis, and hypertension. She had a transient ischaemic attack a year ago. J.J. walks slowly at home for 15 minutes daily and is independent with daily activities. She eats a regular diet. Her body mass index is 20kg/m ² . She takes a daily multivitamin tablet, Nurofen (ibuprofen) prn, bendroflumethiazide (bendrofluazide) 2.5mg daily for hypertension, and glipizide 5mg daily for diabetes. Her HbA1c stays about 7.2%. She smokes one or two cigarettes daily. Pulse is regular, and blood pressure is 130/80mm Hg. Ratio of total cholesterol to HDL-C (TC/HDL ratio) is 5 (Normal <4.5). You advise J.J. to stop smoking.
2	20% to 25%	K.K. is an 83-year-old European woman with osteoarthritis and hypertension. She walks slowly at home for 15 minutes daily and is independent with daily activities. She eats a regular diet. Her body mass index is 20kg/m ² . K.K. takes a daily multivitamin tablet, Nurofen (ibuprofen) prn, and bendroflumethiazide (bendrofluazide) 2.5mg daily for hypertension. She smokes one or two cigarettes daily. Pulse is regular, and blood pressure is 140/88mm Hg. TC/HDL ratio is 5. You advise K.K. to stop smoking.
3	5% to 10%	L.L. is a 67-year-old European man with osteoarthritis and hypertension. He walks slowly at home for 15 minutes daily and is independent with daily activities. He eats a regular diet. His body mass index is 20kg/m ² . L.L. takes a daily multivitamin tablet, Nurofen (ibuprofen) prn, and bendroflumethiazide (bendrofluazide) 2.5mg daily for hypertension. He does not smoke. Pulse is regular, and blood pressure is 120/75mm Hg. TC/HDL ratio is 6.

Figure 1. Eligibility and response status of general practitioners (GPs) in the study



Results

Figure 1 indicates responses according to the flow of data within the survey system. Of the 500 GPs, 35 GPs could not be contacted by fax, due to busy telephone numbers, unexpected disconnections, or non-answering. Of the 465 contacted, 86 were excluded when practice

personnel responded that the GP was unavailable due to death, retirement, leaving the practice, or other reasons. This left 379 eligible GPs from the original sample. For 18 of the 86 excluded cases, the practice identified a GP who would substitute for the excluded GP. The published magazine article led to one additional case, yielding a total

Table 2. Responses by New Zealand general practitioners about cardiovascular risk and care (N=85)

Item	Total responses			
Would do CV assessment		Yes N (%)	No N (%)	Not sure N (%)
Case #1	85	67 (79)	16 (19)	2 (2.4)
Case #2	86	45 (52)	33 (38)	8 (9.3)
Case #3	86	79 (92)	5 (5.8)	2 (2.3)
Would prescribe cholesterol-lowering drug (e.g. statin)		Yes N (%)	No N (%)	Not sure N (%)
Case #1	86	76 (88)	7 (8.1)	3 (3.5)
Case #2	86	21 (24)	47 (55)	18 (21)
Case #3	86	56 (65)	12 (14)	18 (21)
Would prescribe an antithrombotic drug (e.g. aspirin)		Yes N (%)	No N (%)	Not sure N (%)
Case #1	86	82 (95)	3 (3.5)	1 (1.2)
Case #2	86	48 (56)	29 (34)	9 (11)
Case #3	84	47 (56)	23 (27)	14 (17)
Would intensify pharmacologic treatment to lower BP		Yes N (%)	No N (%)	Not sure N (%)
Case #1	86	25 (29)	53 (62)	8 (9.3)
Case #2	86	40 (47)	40 (47)	6 (7.0)
Case #3	85	6 (7.1)	79 (93)	0 (0.0)
Recommendation to increase physical activity		Not important N (%)	Somewhat important N (%)	Moderately important N (%)
Case #1	86	1 (1.2)	13 (15)	27 (31)
Case #2	86	4 (4.7)	17 (20)	34 (40)
Case #3	86	1 (1.2)	4 (4.7)	30 (35)
Formal nutritional assessment		Not important N (%)	Somewhat important N (%)	Moderately important N (%)
Case #1	85	3 (3.5)	11 (13)	23 (27)
Case #2	85	13 (15)	25 (29)	22 (26)
Case #3	84	8 (9.5)	16 (19)	26 (31)
Would conduct CV assessment for 78-year-old patient under the specified conditions:*		Never or occasionally N (%)	About ½ time or more often N (%)	Not sure N (%)
Independent, living in community, good health	86	25 (29)	60 (70)	1 (1.2)
Independent, living in community, with hypertension and chronic pulmonary disease	86	13 (15)	72 (84)	1 (1.2)
Living in community; needs full-time caregiver (e.g. spouse) for daily assistance with many activities, due to dementia	86	56 (65)	29 (34)	1 (1.2)
In residential care (e.g. rest home/private hospital), multiple joint replacements for osteoarthritis, no dementia	83	45 (54)	36 (43)	2 (2.4)
In residential care (e.g. rest home/private hospital), with dementia, needs daily assistance with many activities	86	69 (80)	15 (17)	2 (2.3)

* p<0.001 by chi-square

CV: Cardiovascular

BP: Blood pressure

of 379+18+1=398 eligible GPs. Of these, 86 completed the questionnaire, a response rate of 22%. Sixty (70%) of the questionnaires were submitted online, with the remainder by fax or post.

Most of the responding GPs were male (57%), between 40 and 59 years of age (74%), and of European ethnicity (57%). Most also had a medical degree from NZ (60%) and had been practising for at least 10 years (98%). On average, practices were urban (93%) and had 4.0 GP full-time equivalents and 2.4 nurse equivalents.

One in seven GPs served a practice with over 50% high-needs patients (defined as Maori, Pacific, or being in the most deprived quintile of socioeconomic deprivation NZ Deprivation Index 9–10). On average, GPs estimated that 16% of their enrolled practice were 75 or more years of age. Personal counselling about lifestyle and diet was shared by doctor and nurse in 95% of practices; 58% equally between doctor and nurse, 29% mostly doctor, and 8% mostly nurse. Nearly two-thirds of doctors, however, reported a lack of confidence or being only somewhat confident in doing formal dietary assessments on their patients. In terms of NZ CVD guidelines' ability to help GPs look after their patients over 75 years of age, 7% responded with 'never', 35% 'occasionally', 32% 'most of the time or always', and 8% 'unsure'. The remaining 17% responded, 'about half the time'.

Responses to case scenarios are indicated in Table 2. Large variability in evaluation and management was seen across the three main cases with GPs less likely to conduct risk assessment with increasing patient age and more likely to manage according to individual risk factors, rather than absolute CVD risk. While over half of the GPs indicated that increasing physical activity was very or extremely important to recommend for the 67-year-old and 76-year-old case scenarios, only a third indicated the same for the 83-year-old. Conducting a formal nutritional assessment was regarded as very or extremely important by 38% of the GPs for the 67-year-old (five-year CVD risk 5–10%), 54% for the 76-year-old (five-year CVD risk over 30%) and 27% for the 83-year-old (five-year CVD risk 20–25%). There was marked variation in the intent to conduct a

CVD risk assessment for a hypothetical patient aged 78 years according to living environment, co-morbidity, and functional status levels. For these scenarios, GPs indicated that they would usually conduct CVD risk assessments for a 78-year-old patient living in the community without dementia, and they would usually not conduct CVD risk assessments for such a patient in residential care or with dementia.

Several illustrative narrative comments are provided in Table 3. These are grouped by three identified themes:

- Difficulties of risk assessment;
- Medical complexity; and
- Patients' views.

Several comments highlighted the complexity and difficulty of deciding whether to assess risk and how to manage the results of the assessment.

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Discussion

In this first report of NZ GPs' perspectives regarding evaluation and treatment of CVD, a patient's CVD risk did not appear to be the most important factor in making decisions about subsequent management. The oldest patient, of 83 years but at high risk (20–25% five-year CVD risk), was least likely to get a cardiovascular risk assessment or a cholesterol-lowering drug for an abnormal TC/HDL ratio. Individual risk factors appeared to weigh more heavily than the five-year CVD risk in some cases: the patient with higher TC/HDL but low risk (5–10% five-year risk) was more likely to get a cholesterol-lowering drug, and the patient with lower blood pressure but higher risk was less likely to get a drug to lower blood pressure. These findings are perhaps consistent with medical training, but not with the approach to treatment based on CVD risk. The findings suggest that national CVD guidelines

Table 3. Illustrative narrative comments

Theme	Comments
General difficulties of risk assessment	'What is a [cardiovascular] assessment?' '[I] don't do cardiac risk assessments for lack of time and attempt to treat all risk factors regardless.' 'I do the assessment frequently but would not do one on every visit, even for the most high-risk person.' 'You should ask what system we use for [cardiovascular disease] assessment. [One system] cuts off at age 75; not sure about [others].'
Medical complexity	'Use of [ibuprofen] makes use of aspirin tricky and would compound any CHF risks.' 'The role [of] multivitamins is very important, as diet [is] often inadequate, and [it is] very difficult to get this age group to change. In saying that I sent a very motivated 83 year old to [a] dietitian.' 'I have not ever thought about how I actually approach each patient's care.' 'LDL is more informative than Total [cholesterol]:HDL [ratio].' 'A decision about whether to prescribe comes after you know the result of the risk assessment.'
Patient-focussed views	'The questions, 'would you prescribe...' depend upon many factors including [cardiovascular] risk and patient expectations.' 'Treatment is a result of negotiation with the patient.'

may need to provide GPs with clearer advice and consensus in this area.

Our work is consistent with findings from other countries that also identify age as an independent, pivotal factor in many decisions about CVD care. Doctors in the USA and Japan reported lower levels of intervention with warfarin for non-valvular atrial fibrillation in older patients.^{9,12} In a United Kingdom survey of 341 senior physicians,¹³ age was a key factor in decisions, with fewer patients over 70 years of age being treated for hypertension. Similarly, carotid artery disease is undertreated among those of older age,⁵ and lifestyle and anti-smoking messages are less likely to be delivered to those in later age,^{6,14} despite evidence to suggest increased effectiveness among this population.^{15,16} Residential care presents physicians with an additional unique challenge for making decisions. In our scenarios related to residential care and dementia, the individuals with dementia or residing in residential care even without dementia were least likely to undergo risk assessment. In a New York metropolitan survey of physicians,¹⁷ a quarter reported that 50-year-olds received better care than those over 75. Among primary-care physicians, 31% reported greater efforts in pursuing care for younger patients. In another survey of 182 physicians who provided primary care in long-term care facilities

in the US and Canada,¹⁸ only 47% reported that benefits of warfarin for atrial fibrillation greatly outweigh risks in this setting.

We consider that the goal of preventive medicine in the elderly to be to reduce time spent with morbidity and disability. Mangin, Sweeney, and Heath argued that treatment with cholesterol-lowering drugs in older people may simply change the cause of death, such as from CVD to cancer.⁴ They questioned the morality of doing this among people who have exceeded the average lifespan. Although we agree that evidence about risk among older populations is limited and that the overall death rate must be one per person, one difficulty with making decisions based on average lifespan is the steady and even accelerating increase in lifespan observed since the nineteenth century.¹⁹ Nearly all of this increase is 'attributable to the decline in death rates above age 70'.¹⁹ We thus suggest that medical management and lifestyle modification can improve not only quality of life and morbidity but possibly mortality for our older population. The compression of morbidity paradigm, hypothesised since the 1980s, holds that if chronic illness is postponed, and the delay in development is greater than increases in life expectancy, then individuals will not only live longer but experience a shorter period of morbidity and loss of independence at the end of life.²⁰

We also agree with Mangin et al. that single-disease models can be problematic. Attention to multiple clinical guidelines covering multiple conditions such as CVD and cancer could ultimately improve both mortality and quality of life. Indeed, prospective cohort studies have reported linking optimised risk factor status to delaying the onset of chronic illness and disability.²¹⁻²⁵ The recently published Physicians Health Study²³ followed a cohort of healthy male doctors with a mean age of 72 years for a further 25 years. The probability of reaching 90 years of age was 54% in the absence of smoking, diabetes mellitus, obesity, hypertension, and sedentary lifestyle. In addition, those without these risk factors delayed the occurrence of both heart disease and cancer. In other words, they gained years free of disease and disability.

Physicians report relative deficiencies in counselling, especially about diet. In our study, although 90% of respondents reported that their practices' doctors provide counselling about lifestyle or diet equally or more often than nurses, only 10% were very or extremely confident in doing formal dietary assessments. A 1998 report of surveying 170 Hungarian physicians similarly showed that 75% of doctors felt inadequately prepared to address patients' health education.²⁶ A US survey of physicians showed that respondents would provide counselling more often for medications and smoking than for exercise and diet, about which they felt ineffective as counsellors. Physicians also feel that interventions to improve diet have limited effectiveness.²⁷ Together, the findings suggest a greater need for GPs to receive training to improve confidence about counselling for preventive factors such as diet.

Making medical decisions is complex and involves weighing of many factors. For example, both Monette's study and the narrative comments from respondents in our study highlighted the concern of potential adverse drug events in medical decision-making for older patients. Current NZ CVD guidelines have scant advice for those caring for people over 75 years with respect to CVD risk assessment practice, CVD risk management, and balancing the assessed five-year CVD risk with life expectancy, co-morbidities, and the benefits and harms of CVD drug management.

We also received feedback indicating that data regarding the importance of LDL vs TC/HDL are mixed or confusing, and patients' expectations and preferences are important in making decisions about treatment.⁴ Lack of time is a common reason cited by physicians for not offering CVD risk-related counselling to older people.²⁸ Understanding societal expectations of care for older people along with time and other resource implications for providing preventive care requires further investigation.

This study has limitations. To keep the questionnaire relatively brief, we did not assess all combinations of physiologic factors. The response rate is low though consistent with rates found in other online surveys. For example, Doroodchi et al. surveyed primary-care physicians by fax and email and achieved a response rate of only 8.5%.²⁸ The perspectives of other GPs may differ from those reported here, but the age and gender of our sample were similar to recent workforce estimates.²⁹ Since some of the non-respondents had most likely moved to a different medical practice and did not receive our invitational letter, the true response rate is likely higher (i.e. lower denominator) than reported here, but we cannot quantify it further. Results of this predominantly urban study may not apply to more rural areas. This study does not examine actual practices, which may differ from perspectives or simulations about practice. Furthermore, the scenarios did not directly provide respondents with the estimated five-year CVD risk. GPs' computation of risk generally would have required accessing paper- or computer-based decision-support tools. Thus, some GPs' rapid assessments of risk may have explained failure to indicate that they would proceed with risk assessment. Nevertheless, studies report that these tools, while widely distributed, are under-utilised.³⁰⁻³² Although the article introducing the study may have biased the respondents towards more aggressive care, the true findings would then be even less aggressive than the observed ones, which are still less aggressive than guidelines would advise.

In conclusion, this first report of NZ GPs' perspectives regarding evaluation and treatment of CVD suggests that decisions often deviate from guidelines by depending more on individual risk

factors than on overall risk. In addition, GPs may be applying yet a different logic to patients in residential care. Thus, older patients or those in residential care may not be receiving CVD care at levels suggested by research. While this may be considered entirely appropriate, there is considerable variability in why and when therapy is offered to whom according to age alone. Further debate and research are needed to provide greater understanding of CVD risk, to support individualised decision-making for patients 75 or more years of age, and to develop accurate risk prediction equations for this age group.

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COMPETING INTERESTS

None declared.