Cardiovascular risk assessment and management in mental health clients:
Perceptions of mental health and general practitioners in New Zealand

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ABSTRACT

INTRODUCTION: People with mental illness have higher rates of morbidity and mortality, largely due to increased rates of cardiovascular disease (CVD). Metabolic syndrome is well recognised but rarely expressed as a need to assess and manage cardiovascular risk factors; furthermore there is confusion about whose role this is. This study explores health practitioners' knowledge, attitudes, barriers/solutions towards cardiovascular risk assessment and management in mental health patients.

METHOD: A survey of mental health practitioners (MHPs n=421) and general practitioners (GPs n=232) was undertaken in a health service in Auckland.

RESULTS: Three-quarters of respondents agreed mental illness predisposes to CVD. Fifty-five percent of MH doctors agreed they could effectively assess CVD risk compared to 67% of GPs. Only 21% of MH doctors agreed they could effectively manage CVD risk compared to 57% of GPs. Seventy-nine percent of MHPs believed that assessing CVD risk was a joint responsibility between GP and MHP, compared to 33% of GPs; 62% of GPs believed it was their sole responsibility. Forty-six percent of MHPs believed managing CVD risk was a joint responsibility compared with 29% of GPs; 58% of GPs saw this as their role. Only 13% of MHPs and fewer than 4% of GPs agreed that MH services were effectively assessing and managing CVD risk. MHPs identified lack of knowledge and skills (58%) and poor communication between primary–secondary care (53%) as the main barriers. GPs identified barriers of poor communication (64%) and patient compliance with health care management (71%). The top two solutions proposed by MHPs were provision of GP subsidies (47%) and training (43%). GPs also identified provision of a subsidy (66%) and collaborative management between GPs and MH (44%) as solutions.

CONCLUSION: There is widespread recognition of increased risk of CVD in MH patients. MHPs do not believe they have the knowledge and skills to manage this risk. GPs believe this is their responsibility. Both groups recognise communication with, and access to, primary care for MH patients as key barriers.

KEYWORDS: Mental health, cardiovascular risk, risk reduction

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Introduction

People with serious mental illness have increased rates of a variety of comorbid physical illness.[1-3] The NZ Mental Health Survey found that people with mental disorder had higher prevalence rates of chronic physical conditions, including chronic pain, cardiovascular disease, hypertension and respiratory illness; 68% with a mental disorder had at least one chronic physical condition compared with 53% without mental disorder.[3]

Serious mental illness is associated with excess mortality.[4-6] This excess mortality cannot

be explained by self-harm or other injury.[7] A meta-analysis demonstrated a 1.5–fold increase in age-adjusted mortality for people with schizophrenia;[8] similar increases have been found in cohorts with bipolar and major depression.[4] Cardiovascular disease (CVD) is one of the dominant factors in this excess mortality[9-12] and there is evidence of an excess of obesity, hypertension, metabolic syndrome and type II diabetes that underpins this greater cardiovascular morbidity and mortality.[13-18]

Compounding this increased prevalence of CVD risk factors are the medications for mental illness, particularly second-generation antipsychotics and mood stabilisers. These agents are associated with the development of insulin resistance, abdominal obesity, the metabolic syndrome and overt diabetes.[19-26] Such metabolic changes translate directly into an atherogenic risk factor profile.[10,27]

The NZ Health Strategy has highlighted significant health inequalities and the need to improve the health status of people with mental illness as one of its 13 goals for improvement.[28] A document that recognises the importance of effectively assessing and managing risk factors for metabolic syndrome in people with mental illness has been developed and disseminated by a national mental health (MH) metabolic working group. However, there is incomplete linkage of this to CVD risk and inconsistent implementation of the recommendations of this initiative throughout the country.[29] There also appears to be confusion over role boundaries, with health professionals being unsure of whose responsibility it is to assess and manage the physical health of patients with a serious mental illness. This is particularly a problem for people whose only access to the health system is through their psychiatrist or MH provider.

This study aimed firstly to determine health practitioners' attitudes and knowledge about the assessment and management of cardiovascular risk in patients with a mental illness and, secondly, to identify the barriers and possible solutions to addressing this issue. There is a particular focus on whom health professionals believe should be responsible for monitoring and managing the physical health of secondary care MH patients.

Methods

Questionnaire development

A semi-structured interview was conducted with eight key informants to explore knowledge, experience, current practice and attitudes in assessing and managing cardiovascular risk in people with a serious mental illness. The key informants included MH practitioners, GPs and a consumer advisor. Based on the preliminary findings, a questionnaire was developed addressing the important areas of the study. A draft questionnaire was piloted with another eight MH and primary care practitioners, who provided feedback on the questionnaire's content and format; changes were made accordingly.

Two final questionnaires were developed. One, for MH practitioners, consisting of 35 questions and the other, for GPs, omitted three questions and some questions were amended slightly to ensure audience relevancy. Each questionnaire took five to 10 minutes to complete. The first section collected demographic data (years of experience, age, ethnicity) as well as information profiling the patients the participant provided care for. The second section consisted of attitudinal questions. Participants were asked if they were concerned about psychotropic medications increasing cardiovascular risk and to indicate (using a 6-point Likert scale) whether they agreed or disagreed with statements ranging from strongly agree to strongly disagree, or how often they referred patients to particular interventions, ranging from always to never. There was also a series of questions assessing the practitioner's level of knowledge of cardiovascular risk assessment. The final part of the survey asked participants to identify (from a list generated from key informant interviews and pilot) the three most important barriers and solutions to assessment and management of cardiovascular risk in people with a serious mental illness. Further comments could be made at the end of the survey. (A copy of the questionnaire can be requested from corresponding author).

Ethics approval was obtained from the University of Auckland Human Participants Ethics Committee (2006/L/020).

Participants

The anonymous questionnaire was distributed to MH practitioners and GPs providing care within the Waitemata District Health Board catchment area. This service is the largest in NZ and provides both primary and secondary health care to north and west Auckland [2006 population of 481 611 making up 12% of total population[30]] and includes forensic, acute and community MH services. The questionnaire was distributed by email to 421 MH practitioners (83 senior medical officers [psychiatrists and medical officers], 93 psychiatric trainees, seven house officers, six MH pharmacists and 231 MH nursing staff). An email reminder was sent two weeks later; the researchers also attended medical education and team meetings to encourage participation. Participants were asked to return anonymous questionnaires in the internal mail.

Questionnaires were also disseminated to 232 GPs across six Primary Health Organisations

> ### WHAT GAP THIS FILLS
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> **What we already know:** People with serious mental health disorders have an excess of morbidity and mortality due to physical health problems, including cardiovascular disease. Mental health medicines increase the risk of metabolic syndrome contributing to the excess cardiovascular disease seen in this group.
>
> **What this study adds:** There is a gap between knowledge and action in cardiovascular disease (CVD) risk assessment and management for mental health patients. Primary health care providers are best placed to manage CVD risk, but shared care between primary care and specialist mental health services, and mechanisms to improve access to primary care for this vulnerable group, are needed.

(PHOs) located in the health service catchment area. This was done using methods chosen at the discretion of the PHO and included emailing the questionnaire to a central contact who distributed the questionnaire to GPs; posting the question-

Table 1. Participant demographics

Professional role						
	SMO n (%)	**MH nurse** n (%)	**MH pharmacist** n (%)	**House officer** n (%)	**Psychiatric trainee** n (%)	**GP** n (%)	**Total*** n (%)
Response rate						
	22/83 (27)	52/231 (22.5)	6/6 (100)	3/7 (43)	23/93 (25)	90/232 (38.8)	203/611 (33.2)
Years experience						
0–5	Nil	5/52 (9.6)	1/6 (16.7)	2/3 (66.7)	6/23 (26.1)	5/90 (5.5)	19/198 (9.6)
5–10	2/22 (9.1)	7/52 (13.5)	2/6 (33.3)	Nil	9/23 (39.1)	7/90 (7.8)	27/198 (13.6)
10–15	4/22 (18.2)	10/52 (19.2)	3/6 (50)	1/3 (33.3)	3/23 (13.0)	16/90 (17.8)	37/198 (18.7)
15+	16/22 (72.7)	30/52 (57.7)	Nil	Nil	5/23 (21.7)	62/90 (68.9)	115/198 (58.1)
Ethnicity						
NZ European	12/22 (54.5)	32/52 (61.5)	5/6 (83.3)	1/3 (33.3)	9/23 (39.1)	72/90 (80.0)	132/198 (66.7)
Other**	10/22 (45.5)	20/52 (38.5)	1/6 (16.7)	2/3 (66.6)	14/23 (60.9)	18/90 (20.0)	66/198 (33.3)

*   Seven MH participants did not disclose their professional role and five participants did not disclose their ethnicity or answer the clinical experience question.

** Other ethnicities included Other European, Maori, Pacific, Asian, African, Middle Eastern, North American, and not specified. These were grouped to protect participants' identity within small health professional groups.

SMO = Senior Medical Officer (psychiatrists and medical officers)

Table 2. Practitioners' views about psychotropic treatments increasing cardiovascular risk

	MH practitioners expressing concern n (%)	General practitioners expressing concern n (%)
Schizophrenia		
Clozapine	97/112 (86.6)	37/88 (42.0)
Olanzapine	92/112 (82.1)	35/88 (39.8)
Risperidone	70/112 (62.5)	31/88 (35.2)
Quetiapine	64/112 (57.1)	28/88 (31.8)
Typical antipsychotics	72/112 (64.3)	25/88 (28.4)
Bipolar disorder		
Lithium	59/107 (55.1)	24/87 (27.6)
Sodium Valproate	40/107 (37.4)	11/88 (12.5)
Carbamazepine	31/107 (29.0)	7/88 (8.0)
Lamotrigine	11/107 (10.3)	5/88 (5.7)
Atypical antipsychotics	82/107 (76.6)	29/88 (33.0)
Typical antipsychotics	63/107 (58.9)	19/88 (21.6)
SSRIs	21/107 (19.6)	19/88 (21.6)
TCAs	59/107 (55.1)	55/88 (62.5)
MAOIs	35/107 (32.7)	33/88 (37.5)
Depression		
SSRIs	24/106 (22.6)	17/89 (19.1)
TCAs	63/106 (59.4)	60/89 (67.4)
MAOIs	39/106 (36.8)	35/89 (39.3)
Venlafaxine	48/106 (45.3)	20/89 (22.5)
Atypical antipsychotics	74/106 (69.8)	28/89 (31.5)
Typical antipsychotics	65/106 (61.3)	21/89 (23.6)

SSRIs = Selective serotonin reuptake inhibitors; TCAs = Tricyclic antidepressants;
MAOIs = Monoamine oxidase inhibitors

Table 3. Proportion of respondents identifying cardiovascular risk management targets correctly

	MH practitioner n (%)	General practitioner n (%)
BP (< 140/85mmHg)	2 /111(1.8)	7/89 (7.9)
FPG (< 6mmol/L)	25/108 (23.1)	29/89 (32.6)
Total Cholesterol (<4.0mmol/L)	10/109 (9.2)	7/89 (7.9)
LDL Cholesterol (<2.5mmol/L)	3/104 (2.9)	15/90 (16.7)

BP= Blood pressure; FPG= Fasting plasma glucose; LDL=Low density lipoprotein

naire directly to GPs, and by direct distribution to GPs attending Continuing Medical Education (CME) meetings. Questionnaires were returned anonymously by mail or fax.

Analysis

Survey data was entered into SPSS (Version 15) and descriptive analysis undertaken. Analysis for between group differences was undertaken using the appropriate non-parametric tests, as described in the text.

Results

A total of 203 questionnaires were returned; 113 (27%) from MH practitioners and 90 (39%) from GPs. Table 1 shows a summary of respondents' professional roles and demographics. Most respondents were NZ European (66.7%) and had over 10 years' clinical experience (76.8%).

Attitudes towards CVD and mental illness

Just less than three-quarters of MH practitioners and GPs (72.9% and 69.7% respectively) agreed, or strongly agreed, that mental illness predisposes patients to CVD; conversely about half of MH practitioners and GPs (45.1% and 53.3%) agreed or strongly agreed that CVD predisposes patients to mental illness.

MH practitioners were more likely than GPs to agree or strongly agree that the psychotropic medications used to treat mental illness increase cardiovascular risk (92.9% vs 68.2%; chi^2=14.02, df=1, p<0.001). Second-generation antipsychotics, such as clozapine, were the treatment that caused most concern to MH practitioners treating patients with schizophrenia, bipolar disorder and depression (Table 2). In contrast, GPs were most concerned about increasing cardiovascular risk by treating patients with bipolar disorder or major depression with tricyclic antidepressants.

Just over half (55.3%) of MH doctors (SMO, PT and HO) agreed or strongly agreed with the statement that they could accurately and effectively assess cardiovascular risk compared to 65.5% of GPs. Only 21.0% of MH doctors agreed

or strongly agreed that they could accurately and effectively manage CVD risk compared to 54.4% of GPs.

Knowledge

Most participants were unable to correctly answer the target blood pressure, fasting plasma glucose, total cholesterol and low-density lipoprotein levels for a non-diabetic patient required to achieve a reduction in the five-year cardiovascular risk (Table 3).

Responsibility for cardiovascular risk assessment and management

Respondents' views on whose role it was to assess and manage cardiovascular risk were explored next, along with questions about their own current practice in such activities. Most MH practitioners (79.1%) believed that assessing cardiovascular risk was a joint responsibility between the GP and the MH practitioner, whereas only 31.8% of GPs agreed. In contrast, GPs were far more likely to believe it was their sole responsibility compared with MH practitioners (62.5% vs 17.3%).

Just less than half of MH practitioners (46.4%) believed that managing a patient's cardiovascular risk was the joint responsibility of the GP and MH practitioner compared with 28.4% of GPs. Again, GPs were more likely to see this as their role (56.8% vs 33.6%).

Finally, only 12.8% of MH practitioners and 6.9% of GPs agreed or strongly agreed that MH services effectively assess and manage cardiovascular risk in patients with serious mental illness.

Respondents considered dietary advice the most required service; most respondents agreed or strongly agreed their patients required referral for dietary advice (93.6% MH practitioners; 82.2% GPs). However, fewer than half of both practitioner groups (39.5% MH practitioners; 31.5% GPs) stated that they referred patients for dietary advice either always or most of the time.

Most participants agreed or strongly agreed that their patients required referral to exercise programmes (83.7% and 78.9% respectively), about

a third of practitioners stating they referred patients to these services either always or most of the time (36.9% compared with 36.4%). Exercise referrals included the Green Prescription, to gyms in the local community or to secondary care facilities. Just over 80% of participants believed that their patients required referral to smoking cessation programmes, such as Quitline, or for nicotine replacement therapy. GPs were more likely to refer patients to appropriate smoking cessation services (44.3% vs 27.8%; chi^2=3.07, df=1, p=0.08).

Figure 1. Barriers to cardiovascular risk assessment and management in mental health patients
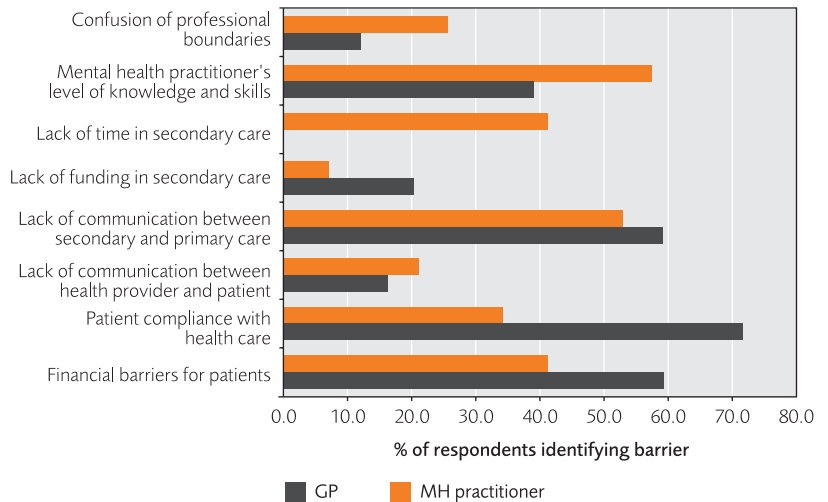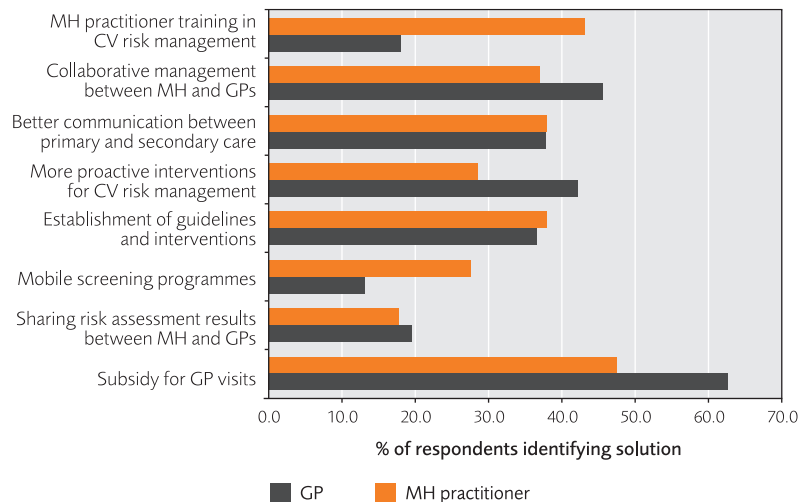

Figure 2. Solutions for cardiovascular risk assessment and management for mental health patients

Barriers and solutions to cardiovascular risk assessment and management

Respondents were asked to indicate the three most important barriers and solutions to effectively assessing and managing CVD for patients with a serious mental illness (Figures 1 and 2).

For MH practitioners the top two barriers were secondary care providers' knowledge and skills (57.6%) and lack of communication between MH provider and GP (52.9%). Lack of time in secondary care to complete assessment and follow-up (41.2%) and patients' financial status to accessing primary care and medications (41.2%) were jointly the third most frequently rated barrier.

The top three solutions to overcome barriers were (in decreasing importance) subsidising GP visits (47.4%), training or continued education on cardiovascular screening for MH practitioners (43.2%), establishing cardiovascular screening guidelines and interventions, and improving communication between primary and secondary care (both 37.9%).

This question was presented slightly differently to GPs and three options were omitted. GPs rated the most important barrier as patient factors; that is, compliance with medication and follow-up appointments (71.6%). Consistent with MH practitioners, lack of communication between MH provider and GP and a patient's financial ability to access primary care and medications were both rated as second most important barrier (59.5%). GPs agreed with MH practitioners that subsidising primary care visits would be the most effective solution to overcoming these barriers (62.3%). The next two important solutions for GPs were collaborative management between MH and GP (45.5%), and provision of proactive programmes/interventions for cardiovascular risk assessment/management (42.1%).

Other comments

Participants were given the opportunity to write comments at the end of the survey. Most MH practitioners focussed on the fact that they believed that they should be involved in the assessment of cardiovascular risk and helping patients to access primary health care, but that it was not their responsibility to manage this risk. Some respondents expressed concern about time and resource constraints that might restrict their ability to comprehensively manage these risk factors. There was some personal anxiety and concern expressed at the poor level of knowledge of MH practitioners in this area of health care.

Most of the comments from GPs focussed on funding, both in terms of a patient's inability to pay for services and in terms of the limitations placed on the resources available to GPs. GPs also commented, but to a lesser extent, that the expertise and therefore the responsibility for managing cardiovascular risk lay with GPs. Some respondents from this group felt that the restrictions on time in primary care for consultations (average 10 minutes) prevented discussions about anything more than acute issues with patients. Lack of communication between providers and paucity of MH practitioners well-trained in the cardiovascular risk area was also of concern.

Discussion

This was the first NZ study to explore MH practitioners' and GPs' views on assessment and management of cardiovascular risk in people with serious mental illness. Most practitioners were aware of MH patients' increased cardiovascular risk. Interestingly, practitioners appeared to associate the increased risk with the MH treatments they were most used to prescribing in everyday practice; treatments for schizophrenia and bipolar disorder for MH practitioners and treatments for depression in GPs. MH practitioners rated second-generation antipsychotics as the medications they were most concerned about for increasing cardiovascular risk. However, it was surprising that other medications, such as lithium and sodium valproate were not associated with increased risk by MH practitioners; there is a well-described relationship between these medications and appetite increase, weight gain, and metabolic syndrome.[31,32]

Whilst approximately half of MH doctors had confidence in their ability to assess patients' CVD risk, only one-fifth had faith in their own ability to effectively manage cardiovascular risk.

In comparison, equal numbers of GPs reported confidence in cardiovascular assessment and management. Given the recent high profile of CVD risk assessment and management both nationally and amongst PHOs in the Auckland area, it is perhaps surprising that fewer than two-thirds of GPs agreed that they could do this effectively. Furthermore, respondents reported confidence with assessment and management was somewhat at odds with the finding that their knowledge of current guideline screening targets was poor; fewer than one-tenth of MH practitioners and GPs could correctly identify the NZGG target blood pressure and total cholesterol level for a non-diabetic patient with a five-year CVD risk >15%.

The survey found respondents had little faith in the current ability of MH services to accurately and effectively assess and manage cardiovascular risk—overall only 10% of practitioners agreed that this was being done effectively at present. MH practitioners suggested that they relied on the primary care sector (via joint mechanisms) for physical health screening and solely on the primary care sector for management. Most GPs believed that both screening and management were their sole responsibility. Written comments provided further evidence of this belief, with some MH practitioners stating it was their responsibility to identify risks, but that they referred patients to the GP for risk management, and some GPs commented that they had the knowledge and expertise in this area.

Whilst most practitioners believed that MH patients needed to be able to access assistance and programmes for dietary advice, exercise and smoking cessation, only about a third of practitioners surveyed actually completed referrals for patients as part of their clinical role. This may indicate a lack of knowledge about the services available and how to access them or may reflect the uncertainty about the boundaries of care between MH and primary care services.

Despite suggestions that MH practitioners feel partly responsible for assessing cardiovascular risk, they were aware of their lack of knowledge and skill in this area and believe that they would benefit from both further training and guidance.

They identified that provision of guidelines for assessment and management interventions would be useful to improve this lack of knowledge. The New Zealand Mental Health Metabolic Working Group issued guidance on monitoring for the metabolic syndrome in patients with mental illness in 2006.[33] However, this guidance does not make specific links to assessment and management of cardiovascular risk, nor do the NZGG guidelines[34] identify people with serious mental illness as a risk group to be targeted for risk assessment. Whilst there is evidence describing the effect of MH treatments on some indices of CVD risk, there is little data describing their effect on global CVD risk. Because the existing risk prediction models are based on population data, they may underestimate risk in this relatively young patient group; further work needs to be undertaken in this area.

Financial factors were identified as an important barrier to physical health screening and management by both practitioner groups. Traditionally, screening has been managed by the primary care sector, where a co-payment has been required to visit a GP and co-payment is often required for prescriptions. The subsidy of regular and longer duration primary care visits and long-term treatments for this at-risk group potentially removes one of the barriers to accessing primary health care and treatment. Respondents also identified the need for better communication between the two services as vital in order to improve physical health outcomes. This is particularly important if the patient has been prescribed psychotropic medications that are essential in the treatment of mental illness but which may further increase the patient's cardiovascular risk. Collaborative management may be needed to assist patients attend follow-up appointments in primary care and adhere to additional medication.

Also of note is the particular significance of some of the issues, highlighted in this research, to cohorts of mental health clients from Maori and Pacific backgrounds. Maori and Pacific ethnicities appear to be at increased risk of CVD; Maori are known to have a higher incidence of cardiovascular events (both fatal and non-fatal) and have them earlier than non-Maori.[34] CVD contributes significantly to earlier mortality and significant

morbidity in Pacific people compared to European.[34] Diabetes and obesity also affect Maori and Pacific peoples disproportionately compared to Europeans; this is reflected in an increased morbidity and mortality due to diabetes.[35]

This inequitable burden of disease is exacerbated further where CVD, diabetes and serious mental illness intersect. Maori were found to have a higher prevalence of mental illness, both serious and in general, compared to the NZ general population.[36] For serious mental illness requiring inpatient treatment, admissions for Maori have been found to be higher than non-Maori.[37,38] The relationship between socioeconomic position, CVD, diabetes and mental illness is strong and, in NZ, over half the Maori population and an even greater proportion of Pacific people live in the most deprived areas.[34] However, the NZ Mental Health Survey found that Maori and Pacific people with mental illness were less likely to access health services of any type, regardless of sociodemographic factors such as age and household income.[39] This could partially be due the fact that, although secondary services are free at the point of care, primary care services where physical health is traditionally managed are only partially subsidised and the two systems function independently of each other. All of these factors may collectively put Maori and Pacific people at further risk of cardiovascular mortality. The issues raised by both MH practitioners and GPs with regard to access and subsidy for primary care services may be of particular significance to Maori and Pacific people, and those in the lowest socioeconomic groups.

We are not aware of any published studies exploring the views of both MH practitioners and GPs, nor any focussing on cardiovascular risk. However, our findings, in terms of the concerns of MH practitioners, are reflected by two papers examining US psychiatrists' awareness of and concerns about the impact of therapies for bipolar disorder[40] and schizophrenia[41] on metabolic syndrome. These surveys highlighted that US psychiatrists recognise metabolic syndrome as a significant health risk and screen for metabolic effects, primarily weight gain and glucose intolerance. Psychiatrists treating bipolar disorder indicated that they also measure lipids and, to a

lesser degree, blood pressure and waist circumference.[40] Suppes et al. reported that three-quarters of respondents reported having diagnosed metabolic syndrome, but only 28% correctly identified the five variables used to diagnose metabolic syndrome; this has parallels with our own findings about CVD risk factor targets. Finally, Suppes et al. reported that 92% of respondents referred patients to primary care for management of metabolic risk factors; this reflects the views of our respondents that this is the most appropriate setting for management of CVD risk.

The main limitation of this study is the poor response rate, particularly from nursing staff. Whilst the response rate is disappointing, the possible implication is that non-responders were less knowledgeable or, perhaps, less concerned about the risks of CVD in MH patients. The assumption that lack of knowledge about the area resulted in a poorer response is somewhat supported by comments made at the end of the survey and to the facilitators who presented the survey to potential participants at journal club and CME meetings. If this assumption is correct, then the scale of inaction and unmet need may be greater even than highlighted in this study.

In conclusion, this survey found that there is widespread recognition of the increased risk of CVD in patients with a serious mental illness. MH practitioners do not currently have the knowledge and skills to assume responsibility for assessing or managing this risk. GPs believe that this is primarily their responsibility. Both groups recognise the barriers presented by communication with, and access to, primary care services for, MH patients. The survey highlights potential concerns about the management of physical health in this high-risk group; further research is required to both identify the burden of physical ill health in this group, and to describe their engagement with physical and preventative health services, including CVD risk assessment and management.

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