

The physical health of people with a serious mental illness and/or addiction

An evidence review

The physical health of people with a serious mental illness and/or addiction: An evidence review

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Foreword

The relatively poor physical health of people with experience of mental illness and addiction is well-known, longstanding, and unacceptable.

Yet this issue has attracted little attention at a national policy level until recently, when it emerged as a priority in both Blueprint II (Mental Health Commission, 2012) and Rising to the Challenge (Ministry of Health, 2012). The Ministry's plan clearly indicates the need to address disparities in health outcomes amongst people with low-prevalence conditions, as one of four overarching goals, and also identifies this as a workforce development priority for primary care and the wider general health care workforce. The Ministry's planning and funding framework will undoubtedly reflect this stated priority, which provides a very important context for action to address the disparity.

We know that people living with serious mental illness are at greater risk of a range of chronic health conditions and have a significantly shorter life expectancy than their general population counterparts. The situation is similar for people with alcohol and other drug addictions. This is why people working in mental health and addiction services around the country have put in place a whole range of wellbeing programmes, smoking cessation support, and physical health monitoring processes.

There is real progress being made to improve collaboration and integration between primary and secondary health care sectors throughout New Zealand. There are indications that access to, and quality of physical health care for people experiencing mental illness and addiction is improving. There is also emerging evidence from overseas that early intervention in psychosis services are able to help young people to manage the weight gain associated with antipsychotic medication.

It has been very heartening to realise how committed people are to addressing this problem, and willing to share their experiences with us in response to our call for evidence. We are particularly grateful to those who indicated a wish to be part of a network of people representing a broad range of communities and interest groups across New Zealand, who want to improve the situation.

We acknowledge all those people with lived experience of the health problems associated with mental illness, whose voice is not immediately apparent in this summary of academic work, the findings of which are of immediate relevance to them and to their families. It is essential that these voices are heard in response to the serious disparities which are outlined in this evidence review.

There is so much more to do. It is our hope that this evidence review will inform a collaborative response, a way forward that will inspire everyone who recognises the importance of addressing this inequity, to work together on solutions.



Robyn Shearer

Chief Executive, Te Pou

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Executive summary

The scope of the review

This evidence review focuses on:

1. the physical health status of people with serious mental illness (SMI) and/or addiction, both internationally and within New Zealand
2. explanations for their poor physical health relative to the New Zealand population as a whole
3. promising interventions to improve physical health outcomes for this group.

The definition of ‘people with a serious mental illness and/or addiction’¹ includes those who have been diagnosed with schizophrenia, major depressive disorder, bipolar disorder, schizoaffective disorder and/or addiction.

Although many individuals experience both substance use and mental health problems, and there is a growing evidence base for responding to co-existing problems, much of the research tends to focus on either one or the other. In keeping with the review studies found, SMI and addictions have therefore been covered separately in this report. This review does not attempt to investigate co-existing problems beyond their impact on physical health, while acknowledging the work being undertaken at a service level to better meet the treatment needs of people with co-existing problems (Ministry of Health, 2010c).

The scope of this report is limited primarily to New Zealand and international reviews of published studies dating from 2000 to 2013, and recent New Zealand studies of relevance to the topic. Searches of online databases and more general internet searches were made.

In order to identify unpublished work and promising interventions from the mental health and addiction sector in New Zealand, a call for evidence was made from the Te Pou and Platform websites, and a small number of formal evaluations were found, alongside numerous examples of promising interventions in both primary and secondary care settings, based on sound principles and often modelled on well-established overseas programmes (see Appendix One).

Mortality and morbidity of people with serious mental illness and/or addiction

The associations between serious mental illness and relatively poor physical health outcomes have been well-established over many decades. People living with SMI are at greater risk of a range of chronic health conditions and have a shorter life expectancy than their general population

¹ It is recognised that definitions of serious mental illness used by researchers sometimes include addiction. For the purpose of this review, the two were kept separate where possible as most of the material found focused on either SMI or addictions. Any literature that included addiction as part of serious mental illness is specified within the document.

counterparts. Similarly, alcohol and other drug addictions are associated with a number of concurrent physical health problems (De Hert, Correll et al., 2011); Robson & Gray, 2007; Thornicroft, 2013). Furthermore, one systematic review concluded that the mortality gap between people with schizophrenia and the general community had worsened during the three decades up to 2006 that were covered by the study (Saha, Chant, & McGrath, 2007).

This review has found that the situation in New Zealand is similar to that found in other comparatively wealthy countries.

The international literature shows a significant gap in mortality between people with SMI and the general population. Life expectancy of those with SMI has been estimated to be up to 25 years shorter (Thornicroft, 2013; World Health Organization, 2013). Higher rates of suicide account for some of the disparity; however, deaths in this population are mainly due to diabetes, respiratory illness, cardiovascular disease and cancer (De Hert, Correll et al., 2011; Robson & Gray, 2007). Recent research has identified a similar mortality gap within New Zealand. Overall, people using mental health services have more than twice the mortality rate of the general population. The disparity is even more pronounced for people with a psychotic illness, who have more than three times the overall death rate. As with the international literature, the majority of deaths are due to natural causes, with cancer and cardiovascular disease accounting for the most deaths (Cunningham et al., 2014).

The addictions section of this review is focused on alcohol, cannabis and methamphetamine. Nicotine is of course a highly addictive substance; however, tobacco smoking tends to be identified in the literature as an “individual lifestyle choice” (De Hert, Correll et al., 2011, p. 52) and a major cause of disease and reduced life expectancy rather than an addiction. This review acknowledges the primary importance of tobacco smoking as a driver of poor health for people with SMI, and also summarises smoking-related ‘addictions’ research on smoking cessation interventions.

Alcohol has been causally linked to more than 60 medical conditions, including a range of gastrointestinal diseases and cancers, central nervous system effects, coronary heart disease, and sexually transmitted infections (Jones et al., 2011; Mannelli & Pae, 2007; Room et al., 2005). Alcohol consumption makes a substantial contribution to the global burden of disease, including four per cent of total mortality (Jürgen Rehm et al., 2009). A similar proportion has been identified within New Zealand, with around one-quarter of alcohol-related deaths due to cancer, and another quarter due to other chronic diseases (Connor et al., 2005).

For those with an illicit drug addiction, mortality risk increases with the frequency of drug use, and is more pronounced among opioid users (Degenhardt & Hall, 2012; Jones et al., 2011). Recent analysis of mortality amongst New Zealand users of mental health services identified that people with a primary substance use diagnosis had premature mortality rates over two and a half times that of the population as a whole (Cunningham et al., 2014).

People with an addiction are also at increased risk of a range of physical health conditions, although these vary according to the substance (Degenhardt & Hall, 2012; Jones et al., 2011).

Methamphetamine addiction is linked with heart disease, cerebrovascular complications, oral health

diseases, and increased risk of transmission of blood-borne viruses (Darke et al., 2008; Petit, Karila, & Chalmin, 2012). Cannabis has been found to pose a lower physical health risk compared with other illicit drugs, but its chronic use is linked to bronchitis and impaired respiratory function, respiratory cancers, cardiovascular disease, lung damage and reproductive disorders (Degenhardt & Hall, 2012; Hall, 2009; Jones et al., 2011). Rates of intravenous drug use in New Zealand are low; however, high rates of hepatitis C have been found among methadone clients and injecting drug users (Deering et al., 2004).

International literature has identified significantly higher rates of a range of major physical illnesses amongst people with SMI than their counterparts in the general population. These include metabolic syndrome, viral and oral health diseases, and a range of respiratory diseases (Collins et al., 2012; De Hert, Correll et al., 2011; Robson & Gray, 2007). Diabetes is reported as being up to four times more prevalent, and cardiovascular disease has been identified as the most common cause of death amongst people with SMI (De Hert, Correll et al., 2011; Scott & Happell, 2011). The evidence with regard to cancer is mixed, with limited evidence of elevated rates. However, case fatality rates are higher amongst people with SMI, compared with the general population, indicating unequal access to diagnosis and treatment of the disease (Lawrence, Kisely, & Pais, 2010; Scott & Happell, 2011).

Data on different health conditions amongst people with SMI in New Zealand reflects the international findings. *Te Rau Hinengaro: The New Zealand Mental Health Survey* data indicates that people with “any mental disorder” have a higher prevalence of several chronic physical conditions, compared with those with no mental disorder (Oakley-Browne et al., 2006). This data, and data from other sources, indicates that people with SMI in New Zealand are also more likely to be obese or overweight (Jun et al., 2000; Wheeler et al., 2013).

In contrast to the international literature, *Te Rau Hinengaro* found that rates of diabetes were similar to those in the general population. However, increased rates have been linked with antipsychotic use (Thornley, 2009), and among females with mood disorder when compared with their male counterparts (Oakley-Browne et al., 2006). *Te Rau Hinengaro* excluded people living in residential accommodation, and homeless people, and the diagnostic interview used did not generate diagnoses for specific psychotic disorders, such as schizophrenia. This is likely to explain the different findings, as people with SMI are significantly under-represented in this survey.

A higher prevalence of a range of other health conditions has been reported amongst people with SMI in New Zealand, including cardiovascular disease, respiratory diseases, chronic pain, high blood pressure and high cholesterol (Oakley-Browne et al., 2006; Wheeler et al., 2013). In line with the international literature, similar rates of cancer have been identified amongst those with and without SMI (Oakley-Browne et al., 2006), but worse outcomes for people with SMI indicate a disparity in access to and quality of healthcare treatment, as with international studies.

New Zealand research indicates some differences across ethnic groups. Higher rates of respiratory conditions and chronic pain have been identified amongst Māori with any mental disorder, compared with Māori with no mental disorder (Oakley-Browne et al., 2006). The overall alcohol-related death

rate for Māori is four times that of non-Māori (Connor et al., 2005). A study of mental health service users in Auckland found that Māori and Pacific service users had a higher body mass index (BMI) than their European/Other and Asian counterparts (Wheeler et al., 2013). Māori users of mental health services have higher mortality rates than the general Māori population, but the size of this difference is less for Māori than non-Māori (Cunningham et al., 2014).

Drivers of relatively poor health

There is a large body of literature on poor physical health outcomes amongst people with SMI and/or addiction, both from New Zealand and overseas. These outcomes include:

- greater exposure to known risk factors – socio-economic status, high rates of smoking, alcohol and other drug use, reduced physical activity and poor nutrition
- psychotropic medication effects – their contribution to obesity, metabolic syndrome, cardiovascular disease and type 2 diabetes
- reduced access to and quality of healthcare – due to financial barriers, stigma and discrimination. Systemic issues in healthcare delivery also make an important contribution to poor outcomes and include the separation of physical and mental health services, and a need for more clarity regarding roles and responsibilities for the physical healthcare of people with SMI and/or addiction.

The links between socio-economic status and mental illness have been widely reported (Collins et al., 2012). Robson and Gray (2007) note that socio-economic consequences associated with SMI also impact on the physical health of this population group. These consequences include issues such as restricted access to employment, social stigma and isolation, poverty, and poor housing. While these factors alone do not fully explain the disparities in health status between people with SMI and those of the general population, they are important to acknowledge, given evidence that policy interventions that address the social determinants of health can be effective in improving health outcomes for vulnerable or at-risk groups (Bambra et al., 2009; Jones, 2009; Marmot 2013).

Greater exposure to known risk factors for chronic physical illnesses, such as smoking, poor nutrition and low levels of physical activity, also contribute to relatively poor health. While such behaviours are often described as poor individual 'lifestyle' choices, it has been found that socio-economic and clinical influences can have a significant impact on health behaviours. Indeed, Robson and Gray (2007) argue against such factors being choices, and rather that they are a result of a range of social, environmental, physical and psychological consequences of SMI. Given the highly addictive nature of nicotine, it is certainly questionable whether choice is a factor at all in tobacco smoking.

The very high rates of smoking amongst this population is a key area of concern, particularly given that this review did not identify much evidence to date of a reduction in smoking prevalence, as currently seen for the general population. Yet stopping smoking is likely to provide both physical and mental health benefits, countering the widely held belief amongst smokers and non-smokers that smoking itself has mental health benefits (Taylor et al., 2014).

The scope of this review did not permit an in-depth analysis of the relationship between psychotropic medications and physical health outcomes; however, a number of studies have identified a negative impact on physical health, due to the contribution of antipsychotic medications to obesity, cardiovascular disease, poor oral health and type 2 diabetes (Collins et al., 2012). There are conflicting reports with regard to the links between specific drugs and actual levels of weight gain, and some authors argue that there is limited ability to accurately isolate the effect of antipsychotics on weight gain, because of the combined long-term effects of having a chronic illness (Álvarez-Jiménez, Gonzalez-Blanch, et al., 2008). However, there is strong evidence overall that antipsychotic medication contributes to obesity levels. A recent meta-analysis comparing people with schizophrenia and the general population found that people with schizophrenia who have multiple episodes and are on medication are at a more than fourfold increased risk for abdominal obesity, compared to general population controls; and that this group is also at significantly increased risk for developing cardio-metabolic abnormalities, compared with first-episode and drug-free patients (Vancampfort et al., 2013).

It is clear that not only do people with SMI and/or addiction face barriers in accessing healthcare due to stigma and discrimination; it would appear that a lack of clear responsibility for the physical health needs of this population is a key contributor to the current situation. Moreover, both internationally and within New Zealand, limited skills and confidence amongst the health workforce in addressing the issue have been identified. A recent editorial in the *Lancet* posed the question: “Why are patients with mental health problems being denied such important care?” (The Lancet, 2013, p. 1154). The answer given was that it is likely to be due to a lack of confidence amongst physical health teams in helping people with SMI, combined with mental health staff not feeling confident providing physical healthcare.

A systematic review of research examining the quality of medical care received by people with SMI and/or addiction identified disparities in the level of healthcare delivered to this group (Mitchell et al., 2009). This was despite them having similar or higher levels of contact with medical professionals, compared with the general population. Of note, is that inequalities were most evident in relation to general medicine and cardiovascular care, but may also be present in cancer and diabetes care (Mitchell et al., 2009).

Promising interventions

Despite the longstanding evidence regarding the relatively poor health status of this population group, it seems there have been few published studies of attempts to address the poor physical health of people with SMI (Lawrence et al., 2010) or those with an addiction (Weisner et al., 2001). The call for evidence, undertaken as part of this project, identified a number of promising evidence-based interventions being delivered within New Zealand. There is also an emerging body of literature about promising interventions, and this is divided into two main types of intervention: systems-level, and individual behaviour change.

Systems-level interventions include policy and regulatory mechanisms, changes to the way healthcare services are structured to better meet the physical health needs of people with SMI (including co-location of primary care health professionals in mental health services and vice-versa), quality improvement approaches (such as instigating routine screening, health assessments and monitoring within mental health services), and workforce development strategies. Training can assist mental health workers to better identify physical health problems and enable access to treatment, and support the general health workforce to understand the greater physical health risks associated with having a SMI and/or addiction and to respond appropriately.

Individual behaviour change interventions provide combinations of personalised smoking cessation, increased physical activity, and improved nutrition and general wellbeing. Those based on good evidence, which are service-user directed and work towards achieving long-term sustainable lifestyle changes, have been shown to be successful at an individual and small group level. However, there is no simple or single approach that has demonstrated long-term effectiveness.

The findings from the evidence review for each type of intervention are discussed in more detail below.

Systems-level interventions

Policy interventions

It has been noted that people with a mental illness are largely invisible within national and global strategies, even though various other vulnerable populations, such as children living in poverty, are commonly identified. People with SMI “are not mentioned among the vulnerable groups even though they represent a particularly vulnerable, disadvantaged socio-economic group” (Burti et al. 2013, p. 115). This lack of visibility as a priority group with legitimate high needs is clearly problematic in terms of improving health outcomes. This is supported by De Hert, Cohen, et al. (2011) who argue that people with SMI must be identified by governments as a group with significant health risks, who experience disparity in healthcare access and treatment, before the problem can be effectively addressed.

There is good evidence that broader health-related policy has been effective at improving the health status of specific groups and reducing health disparities. For example, a recent World Health Organization report on the social determinants of health recommends that governments “take action to develop systems and processes within societies that are more sustainable, cohesive and inclusive, focusing particularly on groups most severely affected by exclusionary processes” (Marmot, 2013, p. 17).

Specific actions to address the social determinants of health and wellbeing amongst marginalised populations, which are relevant to this review, include:

- avoid focusing on the individual attributes and behaviours of those who are socially excluded
- focus on actions across the social gradient in health that are proportionate to need, rather than the gap in health between the most- and least-disadvantaged groups

- focus actions on releasing capacity within organisations, professional groups and disadvantaged groups, to achieve long-term improvements in resilience and in how those who are socially excluded are able to live their lives
- empower disadvantaged groups in their relationships with the societal systems that they have contact with (Marmot, 2013).

The report advocates for “proportionate universalism”, which can address the needs of people at the bottom of the social gradient and those who are most vulnerable. “Policies are needed that are universal but are implemented at a level and intensity of action that is proportional to need – proportionate universalism.” (Marmot, 2013, p. 5)

The World Health Organization recommendations support earlier work on addressing health inequalities. Policy mechanisms, such as progressive taxation, home ownership, business regulation, and the way welfare benefits are distributed and healthcare is funded, have all been associated with reduced health inequalities (Woodward & Kawachi, 2000).

Policy interventions, such as smoke-free workplaces, have proven effective in reducing smoking prevalence across all workplace settings, and need to be supported by smoking cessation services offered routinely to smokers. Implementation of this policy has been slower in New Zealand mental health services compared with other workplaces, but the majority of mental health services are now fully compliant (Ministry of Health, 2012b).

Effective population-level policy measures for reducing alcohol-related harm will also impact on people with SMI. Policies supported by good international evidence are:

- raise alcohol prices
- raise the purchase age
- reduce alcohol accessibility
- reduce advertising and sponsorship
- increase drink-driving countermeasures (Sellman et al., 2012).

Healthcare service delivery

Integrated care models are considered promising with regard to improving the physical healthcare of people with SMI and/or addiction, but there have been limited rigorous evaluations of their outcomes. However, one systematic review of interventions designed to improve the physical healthcare of this group (Reilly et al., 2013) did find some significant improvement in the primary care linkage² as a result of the intervention, and all studies that assessed the quality of primary care reported a significant improvement in the intervention group. This included increased rates of diagnosis for

² Linkage with primary care was defined as “one or more appointments with a general medical provider” (Reilly et al., 2013, p. 148).

some common medical problems, improved care and treatment of target health conditions, and improved performance in relation to process measures.

Moves towards structural integration in the New Zealand policy context were signalled in *Better, Sooner, More Convenient Health Care in the Community* (Ministry of Health, 2011a) and discussed in *Rising to the Challenge: The Mental Health and Addiction Service Development Plan 2012-2017* (Ministry of Health, 2012a). The strengthening of linkages between primary care and mental health services was also a recommendation from the metabolic working group initiative (New Zealand Mental Health Metabolic Working Group, 2008).

An Australian systematic review of service linkages in primary mental healthcare (Fuller et al., 2009) summarised a wealth of findings on different aspects of primary care and secondary mental health service integration. It has been suggested that models of integrated care should be adapted to local needs and capacities (Druss & von Esenwein, 2006), and this has been put into practice in New Zealand through the Primary/Secondary Mental Health Integration Project (Ministry of Health, 2011b) and primary mental health development over many years (Dowell et al., 2009).

It is acknowledged that a number of practical barriers need to be addressed, and thus priority actions for the next five years, as outlined in *Rising to the Challenge* (Ministry of Health, 2012a), include developing an integrated IT system, enhancing the collection and reporting of primary care information, and building the confidence and capability of the primary care workforce in this area. It is also proposed that space for on-site delivery of specialist services within primary care locations will be provided.

Fuller et al. (2009) found that the following actions would be needed to embed linkages:

- have relevant institutions endorse the need for linked services in primary mental healthcare
- develop leadership in mental health and primary care to facilitate change
- have planning and accountability at a regional level, such as through primary healthcare organisations
- promote bottom-up models of clinical collaboration
- build workforce capacity to meet competency standards in collaborative mental healthcare
- collect and report on data that indicates the benefits of integrated primary mental health services
- promote the involvement of consumers at the centre of care, around which services collaborate (Fuller et al., 2009, p. 37).

Both the primary and secondary care workforces (across both physical and mental health specialist services) have a fundamental role to play in improving the physical health of people with SMI and/or addiction, and training may be required to increase skill and confidence levels in both settings. There is support within the literature for staff working within both primary and secondary healthcare settings to take on responsibility for monitoring and screening procedures related to the physical health of this population group (De Hert et al., 2010; Ministerial Advisory Committee on Mental Health, 2011). This review did not identify clear evidence regarding the level and frequency with

which monitoring and screening should be undertaken, but a range of guidelines provide recommendations as to which health aspects require monitoring (Curtis et al., 2012).

National Institute for Clinical Excellence (NICE) guidelines (2009) recommend that primary healthcare professionals monitor the physical health of people with schizophrenia at least once a year, and the metabolic working group suggests a range of monitoring timeframes for people treated with antipsychotic medications, depending on the specific medication and the aspect of health being monitored (New Zealand Mental Health Metabolic Working Group, 2008).

Some research indicates that mental health nurses have a key role to play within multidisciplinary teams, and are well suited to bridging the gap between mental and physical healthcare systems, due to their holistic training and general approach to SMI patients (Vreeland, 2007). They may also be more trusted by people with SMI (Kemp et al., 2009).

The recently released *Lethal Discrimination* report in the UK makes a number of recommendations relating to workforce interventions (Rethink Mental Illness, 2013). One is that general practitioners (GPs) should monitor the physical health of people with SMI more closely. The report proposed that all mental health professionals receive basic physical health training, and that the respective responsibilities of primary and secondary care services need to be clearly outlined.

Individual behaviour change interventions

The evidence on interventions that attempt to address the poor physical health of people with SMI and/or addiction through behaviour change tends to be weakened by methodological limitations inherent in many of the studies undertaken (Bradshaw et al., 2005; Cabassa et al., 2010). However, a number of approaches have been identified as showing promise in improving the physical health of people with SMI and/or addictions, and in reducing the risk factors they are exposed to, particularly when provided during the early stages of antipsychotic treatment (Álvarez-Jiménez, Hetrick, et al., 2008; Roberts & Bailey, 2011, Curtis et al., 2012).

Wellbeing interventions, such as physical activity and nutrition promotion, and smoking cessation initiatives, support and strengthen a therapeutic focus on recovery. Findings from evaluations of diet and exercise programmes indicate that the following characteristics are likely to facilitate greater success:

- build on existing, and promote further, therapeutic alliance
- incorporate both cognitive and behavioural strategies; combine exercise, dietary counselling and health promotion
- have realistic or modest outcome targets
- be flexible in accommodating individual needs and differences
- look to the long-term and provide ongoing support beyond the initial intervention
- include a group or social component
- acknowledge and take into account possible barriers faced by people with SMI in participating in such programmes (Kemp et al., 2009).

Roberts & Bailey (2011) found improved effectiveness in programmes with a peer component, alongside staff support and active participation.

Smoke-free policies provide a supportive context for smoking cessation programmes in mental health services. Programmes that incorporate nicotine replacement therapy, and provide more intensive personal support are likely to be more effective (Bhikha, 2008; Clinical Trials Research Unit, University of Auckland, 2008); and quitting smoking has not been found to worsen the mental health of people with SMI (Banham & Gilbody, 2010; Bradshaw et al., 2005; Happell et al., 2012). A recent systematic review of smoking cessation interventions (Taylor et al., 2014) concluded that stopping smoking is actually likely to provide mental health benefits, in the general population as well as for people with SMI, countering the widely held belief amongst smokers that quitting smoking will be detrimental to their mental health.

For specific sub-populations of people with an illicit drug addiction, opioid substitution treatment and needle exchange programmes have been found to be effective in reducing health-related harms (Strang et al., 2012; Wodak & Cooney, 2005).

This review found very limited published information about either the impact of ethnicity on the physical health of people with SMI, or the effectiveness of interventions attempting to meet the needs of different ethnic groups. The absence of evaluated interventions for different ethnic groups (both internationally and within New Zealand) is problematic and needs to be addressed.

Conclusion

There is strong evidence of longstanding disparities between the physical health and life expectancy of people with SMI and/or addiction and their general population counterparts, with a range of factors known to contribute to this situation.

In spite of the significant inequalities in health outcomes outlined in this review, people with SMI remain largely invisible in a global health policy context as a vulnerable priority group with legitimate high needs (Burti et al., 2013). This lack of visibility is clearly problematic in terms of gaining adequate resources for improving health outcomes. De Hert, Cohen et al. (2011) conclude that people with SMI must be identified by governments as a priority group with significant health risks and disparity in healthcare access and treatment, to enable the problems to be effectively addressed.

It has also been claimed that enough descriptive research has been undertaken to identify the size and seriousness of the problem of disparities in health of people living with SMI, and it is time to address this. The development and resourcing of evidence-based interventions aimed at reducing excess mortality amongst this population group must now become a priority (Thornicroft, 2013). The findings of this review strongly support this claim.

There are encouraging initiatives underway internationally, particularly in Europe, the UK and Australia (see discussion section). There is much to learn from the work of the Mental and Physical Health Platform (2013), which brought together partnerships with various associations across European countries in a call to action, with the aim of raising awareness of the issues, and changing

mind sets, in order to address the personal, social and economic consequences of ignoring the physical health of people with SMI.

In the UK, a cross-government national strategy supported by nearly 30 agencies, *No Health Without Mental Health*, (HM Government, 2011) includes the improvement for physical health for people with mental health problems as one of six priorities in its own call to action statement.

In 2013, a group of psychiatrists, including Jackie Curtis of the Bondi Early Psychosis Programme in Sydney, launched an international consensus statement focusing on early intervention to improve the physical health outcomes of young people diagnosed with psychosis. *Healthy Active Lives (HeAL)* focuses on minimising the complications of obesity through regular review of medication and the provision of a range of support to enable young people to lead healthy, active lives.

These models provide a way forward for a national, systemic approach. There are many examples of good practice within New Zealand that also show the way forward for a recovery-based approach to individualised wellbeing programmes for people with SMI and/or addictions, and localised approaches to service integration.

This review has identified that people with a SMI and/or addiction have significant physical health needs and a reduced life expectancy in comparison to the general population. The review has found evidence for the drivers of this disparity, which are multi-levelled and multi-faceted. The review has also found that although there is less evidence on effective interventions, there is sufficient evidence to inform action at multiple levels. Identifying the disparities and the gaps is a crucial first step (Nease, 2014), but the most important next step is to involve all those who can effect change to work together to improve the physical health outcomes of people with a mental illness and/or addiction, and to monitor mortality and morbidity rates on a routine basis to understand the impact of these changes (Cunningham et al., 2014).

Introduction

The links between serious mental illness (SMI) and poorer physical health outcomes are well-established. People living with SMI have a shorter life expectancy than their general population counterparts, and are at greater risk of a range of chronic health conditions (De Hert, Correll, et al., 2011; Handiside, 2004; Lawrence et al., 2010). There is also evidence that the gap may be widening (Saha et al., 2007; Scott & Happell, 2011). Similarly, alcohol or drug addiction is associated with a number of concurrent physical health issues. This includes adverse effects on respiratory and cardiovascular systems (Hall, 2009b; Jones et al., 2011), excess deaths (Degenhardt & Hall, 2012; Jones et al., 2011;) and a range of cancers (Mannelli & Pae, 2007; Rehm et al., 2009). Furthermore, co-existing substance use and psychotic disorders are associated with significantly greater risk of a number of physical illnesses, particularly heart disease, asthma, gastrointestinal disorders, skin infections and respiratory diseases (Dickey et al., 2002).

Despite this, there has been limited focus to date on the physical health needs of people with SMI and/or addiction as a priority for policy and research within New Zealand. There has been good work undertaken at a service level, but much of this has not been formally evaluated.

Internationally, however, there are clear signs of some momentum and collaborative action (Thornicroft, 2013). Over the past 10 years, for example, the issue has been a feature of UK policy (Chadwick et al., 2012) and in Australia, the *No Mental Health Without Physical Health* inquiry by the Ministerial Advisory Committee on Mental Health produced a range of recommendations seeking to address the physical health needs of people with SMI. These included a call to action for the Australian Government to take proactive and sustained action to close the health inequality gap (Ministerial Advisory Committee on Mental Health, 2011).

Moreover, the World Health Organization's *Mental Health Action Plan 2013–2020* states as its goal: “To promote mental wellbeing, prevent mental disorders, and reduce the mortality and disability for persons with mental disorders” (World Health Organization, 2013, p. 9), and in November 2013 the Mental and Physical Health Platform partners in Europe released *Mental and Physical Health: A Call to Action*, which makes policy and practice recommendations with the aim of mobilising action across individuals and organisations (The Mental and Physical Health Platform, 2013).

This evidence review will be used to inform the development of a consensus position statement and a programme of concerted action in New Zealand to improve the physical health of people diagnosed with SMI and/or addiction.

Methods

The purpose of this narrative review is to present evidence on the physical health of people with SMI/addictions; to summarise what is known about the drivers of inequalities in relation to SMI/addictions and physical health; and to highlight evidence-based interventions to improve the physical health outcomes of mental health service users. Our aim is to provide a source of empirically

supported knowledge and facilitate application of that knowledge to action within the New Zealand context.

Various definitions of SMI are used in the literature. For the purpose of this review, the following definition of ‘people with serious mental illness and/or addiction’³ was utilised: people who have been severely impacted by mental illness and/or addiction, including those who have been diagnosed with schizophrenia, major depressive disorder, bipolar disorder, schizoaffective disorder and/or addiction.

The review of health outcome literature relating to the physical health of people with SMI and/or addictions draws primarily on recent review studies and meta-analyses, as well as relevant New Zealand data published by the Ministry of Health, with a focus on publications from 2000 onwards. The review of literature on interventions also includes recent New Zealand and international studies of direct relevance to the research questions.

Relevant review articles were initially identified by the research team, and this literature was supplemented by a more detailed literature search. The scope was limited to reviews of published studies on the physical health status of people with SMI and/or addiction from 2000 to 2013. Studies were accessed via searches of online databases (including Scopus, Medline, Web of Science, PsychInfo) and more general internet searches (e.g. Google Scholar). Initial searches included the following terms: physical health; mental health; mental illness; schizophrenia; addictions; co-existing mental illness and substance use disorders; alcohol; drugs; illicit/illegal drugs; health; harms; health effects; burden of disease; effective/promising interventions; primary mental health; mental health service integration. Reference lists of selected articles were reviewed for additional relevant studies.

Non-English language articles that explored the mental health of people living with chronic physical health conditions were excluded.

In addition to searching online databases (as noted above), reports and other publications were accessed via general searches of relevant websites (e.g. Ministry of Health) and other sources suggested by the research team.

A call for evidence was undertaken in November 2013 as part of this review, to identify unpublished work and promising interventions. This entailed an online invitation to the mental health sector to submit information on evaluated interventions targeting the physical health of SMI/addiction populations. Examples given in the call for evidence invitation included workforce training, physical health improvement programmes (such as screenings or assessments), guidelines or policy initiatives, physical health monitoring or lifestyle modification programmes, and primary and secondary integration processes. The call resulted in over 20 responses, which described different approaches attempting to address the physical health needs of people with SMI and/or addictions. Where possible,

³ It is recognised that definitions of serious mental illness sometimes include addiction. For the purpose of this review, the two were kept separate where possible. Any literature that included addiction as part of serious mental illness is specified within the document.

copies of relevant evaluations were collected, reviewed and incorporated into this evidence review. Examples of good practice will be developed into stories for change and case studies, and made available separately.

The key questions to be answered by the review were as follows.

1. What are the main findings from recent international research⁴ on physical health outcomes amongst people with serious mental health illness and/or addiction, and how does this compare with general population health outcomes and findings available from New Zealand research?
2. What is the extent of physical health outcome disparity between the general population and people with serious mental health illness and/or addiction living in New Zealand?
3. What are the main reasons identified in the literature which explain these inequalities?
4. What evidence can be found for effective interventions to improve health outcomes for people with serious mental health illness and/or addiction?

Evidence relating to the physical health status of people with SMI is presented in the first section, followed by current knowledge in relation to people with an addiction. A second section provides possible explanations for the relatively poor health of people with SMI and/or addiction. The third section outlines evidence relating to promising interventions designed for this population group. Within each section, international material is presented first, followed by New Zealand data, where this is available.

The literature on mental illness is presented separately from the literature on addictions in most sections for ease of presentation. However, the high prevalence of co-existing mental illness and substance disorders is well-established. It has been estimated that between 22 per cent and 44 per cent of individuals admitted for SMI in the UK also have co-existing substance use problems (Graham, 2011). Todd (2010) estimated that within New Zealand mental health settings, between 30 and 50 per cent of people with SMI have a co-existing substance use problem. Many of these people will be at greater risk of having physical health problems, as outlined in this review, and the reasons for this are complex and interrelated.

Limitations of this review

While narrative reviews summarise current knowledge, and are recognised as a good source of background information, they have inherent limitations. For example, they are prone to bias in the selection of articles, as they do not include strict systematic methods for inclusion, or use rigorous appraisal methods in analysing the quality of studies included. Although we used broad search strategies across multiple databases, and supplemented these by reviewing the bibliographies of selected publications, relevant articles may have been missed. The scope of the review was largely

⁴ This refers to research published since 2000, within OECD countries.

limited to selected review articles. Therefore, while we are cautious in our findings, the general consistency of the information reviewed, particularly with regard to the international data, suggests that an accurate representation of evidence in this field has been obtained and presented.

The physical health status of people with serious mental illness and/or addiction

Serious mental illness - international literature

There is a wealth of international literature that discusses the associations between SMI and physical health (Collins et al., 2012; Thornicroft, 2013). This review found that many of the studies undertaken focus on schizophrenia, and this concurs with the findings from other researchers who have noted that there are few studies that have investigated a broader spectrum of SMI (Collins et al., 2012).

Key findings from the international literature are outlined below; this is followed by an analysis of New Zealand research evidence.

Mortality

Life expectancy of people with SMI has been estimated to be 20 to 25 years shorter than the general population (Ministerial Advisory Committee on Mental Health, 2011; Thornicroft, 2013; World Health Organization, 2013), with estimates that life expectancy is reduced by at least 20 per cent amongst people with schizophrenia (Hennekens et al., 2005), and that the mortality gap between people with schizophrenia and the general community has been increasing over recent decades (Saha et al., 2007).

Moreover, as with the general population, there is evidence of gender differences, with the gap being around 15 years for women, and 20 years for men (Thornicroft, 2013).

It is recognised that unnatural causes of death (e.g. suicide) explain these figures to some degree. Suicide rates amongst people with SMI are very high; for example the rates of people with schizophrenia have been estimated to be 12 times as high as the general population rate (Saha et al., 2007). One meta-review found that “for suicide mortality, borderline personality disorder, depression, bipolar disorder, opioid use and schizophrenia, as well as anorexia nervosa and alcohol use disorder in women, had substantially increased rates (greater than 10 times) compared with the general population.” (Chesney, Goodwin & Fazel, 2014, p. 158)

However there is a plethora of evidence that people with SMI and/or addictions are more likely to be at risk of life-threatening physical health conditions (Collins et al., 2012; Colton & Manderscheid, 2006; Lawrence & Kisely, 2010). Excess deaths in this population have been attributed to respiratory illness, cardiovascular disease and cancer (Colton & Manderscheid, 2006; Lawrence & Kisely, 2010).

Lawrence et al. (2010) note that while the proportion of deaths due to suicide within this population is relatively small compared with mortality linked to natural causes amongst people with SMI, the latter has received far less attention in the literature.

Lawrence et al. (2010) discussed a number of limitations regarding mortality data for people with SMI, including most of the administrative data and population-based registers that the research draws on.

Another problem identified is the relatively low numbers of people with SMI who seek treatment, leaving a gap in knowledge regarding mortality amongst people with an untreated mental illness.

Associated health conditions

There are a number of recent review studies that have investigated physical health problems amongst people with SMI (Collins et al., 2012; De Hert, Correll, et al., 2011; Robson & Gray, 2007; Scott & Happell, 2011) and found higher than expected rates of a range of health conditions, including diabetes, respiratory diseases, infectious disease, some forms of cancers, and HIV infection.

Metabolic syndrome

Metabolic syndrome is “an umbrella term for a cluster of symptoms including weight gain, especially abdominal or visceral, abnormal lipid profiles, hypertension and diabetes” (Collins et al., 2012, p. 639). It can also be a risk factor for type II diabetes and cardiovascular disease (Alberti et al., 2005). The prevalence of metabolic syndrome amongst people with SMI has been reported as being two to three times that of the general population (Scott & Happell, 2011), and is particularly prevalent amongst those with schizophrenia (De Hert, Correll, et al., 2011).

A number of review studies have highlighted an association between SMI and obesity (De Hert, Correll, et al., 2011; Robson & Gray, 2007; Scott & Happell, 2011), with one concluding that there is “good evidence” of an increased prevalence of obesity in people with SMI, compared with their general population counterparts (De Hert, Correll, et al., 2011). A minority of researchers found comparable levels of obesity amongst people with SMI and the general population during the 1990s, but these findings might be explained by the currency of those studies, as the prevalence of obesity has also been increasing amongst the general population (Collins et al., 2012). In addition to links with secondary medical problems, such as hypertension, diabetes and cardiovascular disease (Vreeland, 2007), obesity and weight management can pose particular challenges for people with SMI, as it can lead to medication non-adherence, further mental illness and hospitalisation (Vreeland, 2007).

The evidence suggests that there is increased risk of obesity evident amongst people with schizophrenia, compared with patients with major depression or bipolar disorders (De Hert, Correll, et al., 2011). There have also been regional differences identified (Scott & Happell, 2011), and higher rates reported amongst females with SMI (Allison et al., 2009; Robson & Gray, 2007; Scott & Happell, 2011).

Diabetes

It has been claimed that the relationship between diabetes and SMI (particularly schizophrenia) has received more attention than any other physical health condition in this field (Collins et al., 2012; Robson & Gray, 2007), with estimates of the incidence of diabetes amongst this group ranging from between 1.5 to four times that of the general population (Collins et al., 2012). Some research has identified it as being four to five times higher in specific age groups, amongst people with

schizophrenia (De Hert, Correll, et al., 2011). One review study across several countries⁵ found that the prevalence of type 2 diabetes in people with SMI was twice that of the general population (Scott & Happell, 2011).

Cardiovascular diseases

Cardiovascular disease⁶ has been identified as the most common cause of death amongst people with SMI (De Hert, Correll, et al., 2011), as well as within the general population (Ministry of Health, 2009b). However, people with schizophrenia, major depressive disorder and bipolar disorder are at significantly higher risk for cardiovascular disease morbidity and mortality than the general population (De Hert, Correll, et al., 2011), and for individuals with bipolar spectrum disorders, the mortality risk has been estimated to be up to 2.5 times higher (Roshanaei-Moghaddam & Katon, 2009).

For people with depression, the prevalence of cardiovascular disease is 1.5 to two times higher than the general population (De Hert, Correll, et al., 2011; Scott & Happell, 2011), and amongst people with schizophrenia, bipolar disorder and depression the risk of coronary heart disease is at least two-fold (De Hert, Correll, et al., 2011).

Respiratory diseases

Higher rates of respiratory diseases, such as emphysema, asthma and chronic bronchitis have been identified amongst this population group (Robson & Gray, 2007; Scott & Happell, 2011). Other respiratory conditions that are more prevalent internationally amongst people with SMI, when compared with the general population, include tuberculosis (among people with schizophrenia) and pneumonia, as well as chronic obstructive pulmonary disease (De Hert, Correll, et al., 2011).

Cancers

An elevated risk of some cancers among people with SMI has been reported, including digestive and breast cancers (Robson & Gray, 2007; Schoos & Cohen, 2003). However, there is evidence of conflicting data with regard to lung cancer (Collins et al., 2012; Robson & Gray, 2007), with some reports that prevalence is twice as high as the general population, while other studies report only a minimal increase in rates of this disease amongst people with SMI (Collins et al., 2012). Similarly, conflicting evidence has been noted in relation to the level of cancer risk amongst people with schizophrenia (De Hert, Correll, et al., 2011).

It is important to note that while there is limited evidence of higher incidence rates of cancer, mortality rates among people with SMI appear to be much higher (Lawrence et al., 2010; Lawrence & Kisely, 2010; Muir-Cochrane, 2006). This suggests factors such as poor diagnosis and lack of treatment of the disease amongst people with SMI (Lawrence et al., 2010; Lawrence & Kisely, 2010).

⁵ This included the US, Netherlands, Singapore, Belgium and Japan.

⁶ Cardiovascular disease includes both heart disease and stroke.

It has been suggested that various confounding factors have a role to play in the apparent discrepancy between the results of different studies (De Hert, Correll, et al., 2011; Scott & Happell, 2011). For example, given that people with SMI have a shorter life expectancy, they may die due to other causes (e.g. suicide) before reaching the expected age of death from cancer. In one review, Scott and Happell (2011) highlight that while some cancers (especially respiratory) are more common amongst people with SMI, overall cancer prevalence may be lower. However, they also note that this may be due to people with SMI dying earlier as a result of other chronic diseases (Scott & Happell, 2011).

Viral diseases

People with SMI are at an elevated risk of contracting a viral infection, with human immunodeficiency virus (HIV) and hepatitis C virus being the most serious (De Hert, Correll et al., 2011). For example, amongst this population group, the prevalence of both is higher when compared with the general population, although there is marked variation within this in relation to HIV positivity (De Hert, Correll et al., 2011; Scott & Happell, 2011). It should be noted that much of the research in relation to HIV status amongst people with SMI has involved US populations (Robson & Gray, 2007; Scott & Happell, 2011).

Oral health

Oral health has been found to be generally poor amongst people with SMI (De Hert, Correll et al., 2011; Khokhar et al., 2011). This may have a range of functional impacts, including difficulty eating. A Canadian Dental Association article (Clark, 2003) documents the possible effects of mental health medication on dental health to include xerostomia (dry mouth), decay, candida or perlelech (fissures).

There have also been associations found between coronary heart disease and poor oral health (Khokhar et al., 2011; Montebugnoli et al., 2004).

Serious mental illness - New Zealand literature

This review identified no New Zealand review studies, but there are a number of relevant published studies. There is sufficient good-quality evidence to be confident that New Zealanders with SMI have relatively high rates of a number of comorbid physical illnesses, similar to patterns found in other countries. The available data sets and emerging evidence indicate a mortality gap comparable to that found in international studies, as well as an increased prevalence of a number of physical health conditions.

A New Zealand burden of disease report (Ministry of Health, 2013) provides information about the contribution of diseases, including mental illnesses and addiction, to health loss in the whole population. Health loss is measured using disability-adjusted life-years (DALYs⁷) and health

⁷ DALYs combine years of life lost due to premature death, and years of life lived with disabilities, into one indicator that assesses the total lost years of full health from different causes (Rehm et al., 2009, p. 2225).

expectancy. The latter is similar to life expectancy, but includes the healthiness of the years lived. This systematic analysis enables a comparison of the relative impacts on health of different diseases. For example, the three leading groups of diseases that contribute to health loss for the whole population are cancers (17.5 per cent), vascular and blood disorders (17.5 per cent) and mental disorders (11.1 per cent), with mental illness being the leading cause of health loss for the population group aged 15 to 44 years.

The survey finds a direct association between anxiety and depressive illnesses, and coronary heart disease. This is referred to as “diseases as risks”, and these associations considerably increase the effects of mental illnesses and addiction on health loss. It is also reported that estimates of health loss based on diseases as risks are likely to be conservative, because other associated conditions did not meet the inclusion criteria set by the survey. As an example, the impact of anxiety and depression on health loss increases from 5.3 per cent to 6.9 per cent if indirect impacts on suicide, self-harm and cardiovascular disease are included (Ministry of Health, 2013).

Mortality

Mortality amongst people with SMI in New Zealand has only recently been investigated in a paper published during the time that this review was conducted (Cunningham et al., 2014). The results indicate that over 7,000 adults aged 18 to 65 years, who had used mental health services, died before the age of 65 years during the study period (2002 to 2010). Those excluded from the sample included people with intellectual disabilities, dementia, organic disorders and primary diagnosis of a terminal illness. Amongst both women and men, natural causes accounted for the majority of deaths (71 per cent and 58 per cent respectively), with cancer and cardiovascular disease the most common causes in this category. Overall, those using mental health services had more than twice the mortality rate of the general population, and people with a psychotic disorder had three times the general population mortality rate.

When compared with the whole Māori population, Cunningham et al. (2014) found that Māori mental health service users had a higher mortality rate (one-third greater), although the size of this difference was less for Māori than non-Māori. This is likely to be related to the higher underlying rates of premature mortality for Māori when compared with non-Māori (Blakely et al., 2005). Reliable mortality rates for Pacific people were not able to be examined by Cunningham et al., because the sample size was too small.

Associated health conditions

There is limited data available that provides information on the prevalence of specific health conditions amongst people with SMI living in New Zealand. *Te Rau Hinengaro: The New Zealand Mental Health Survey* is a nationally representative household survey, carried out in 2003 and 2004, which explored the prevalence rates of major mental disorders within the New Zealand population (Oakley-Browne et al., 2006). However, people who had a psychotic disorder were under-represented in this survey, as the diagnostic interview used did not generate diagnoses for specific psychotic

disorders, such as schizophrenia, and the survey also excluded people living in residential accommodation and homeless people. As a result, the study is likely to significantly underestimate the prevalence of chronic physical conditions amongst people with SMI.

Nevertheless, the survey provides some information about the extent of physical disorder and mental disorder comorbidity in the general population, alongside information about the use of health services amongst people with mental disorders. Data was collected via self-report about a range of physical health conditions. People with mental disorders⁸ were found to have a higher prevalence of several chronic physical conditions (Oakley-Browne et al., 2006; Scott et al., 2006). Overall, two-thirds of those with a mental disorder had at least one of the chronic physical conditions that were investigated in the survey, compared with just over half of the population without mental disorders (Scott et al., 2007).

Research undertaken at the University of Otago sought to identify a range of physical illnesses and risk behaviours amongst mental health service users, and compare results with existing data from the New Zealand population (Jun et al., 2000). Interviews were undertaken with 59 mental health patients from the HealthCare Otago Community Liaison Project, and various health-related data was collected (e.g. body mass index). Results indicated that only two patients considered their health to be excellent, with just under half rating it as either 'fair' or 'poor'. Despite the SMI population group visiting the GP more often, it was identified that they had overall poorer physical health, indicating that their health needs were not being met (Jun et al., 2000).

The following sections provide a summary of evidence in relation to specific health conditions, including metabolic syndrome, diabetes, cardiovascular disease, respiratory diseases, cancer, viral diseases, oral health and other conditions.

Metabolic syndrome

The New Zealand Mental Health Survey identified a higher level of being overweight or obese amongst people with (any) mental disorder – 55.2 per cent, compared with 50.9 per cent amongst the general population. In addition, the prevalence of being overweight or obese was higher among females with mental disorder (51.2 per cent), compared with females without mental disorder (43.4 per cent). A similar relationship was not evident amongst males (Oakley-Browne et al., 2006).

A recently published study reported findings on the health behaviours (including levels of exercise, smoking and alcohol consumption) of 404 people who accessing mental health services in Auckland, and the prevalence of a range of physical and mental health conditions (Wheeler et al., 2013). Where possible, these health behaviours and health conditions were compared with a general population cohort from the New Zealand Health Survey 2011/12 (Ministry of Health 2012c). Overall, 40.9 per cent of those surveyed were classified as obese (compared with 26.5 per cent in the general

⁸ Four groups of mental disorders were assessed: anxiety disorders; mood disorders; substance use disorders; and eating disorders (Oakley-Browne et al., 2006).

population), but less than one-quarter were overweight, compared with 36.2 per cent in the general population. Mental health service users consumed lower amounts of fruit and vegetables than the general population, and were less likely to be physically active. The authors commented that “mental illness can have major impacts on appetite, energy and motivation. For example, neurobiological factors associated with mental illness and the side effects of medication used for treatment can also encourage weight gain.” (Wheeler et al., 2013, p. 42)

The most common self-reported physical health conditions amongst mental health service users were high cholesterol (around one-quarter of the sample) and high blood pressure, which one-fifth reported (Wheeler et al., 2013).

Diabetes

The New Zealand Mental Health Survey (Oakley-Browne et al., 2006) identified that New Zealanders with (any) mental disorder (excluding psychotic disorders, as previously discussed) had slightly higher prevalence of diabetes, but this was not reported as being statistically significant (5.1 per cent compared with 4.0 per cent in the general population). However, it was found that females with mood disorder had nearly twice the prevalence of diabetes compared with their male counterparts. There was no difference between genders amongst those without mood disorder.

Only three of the 59 service users from the Otago study reported a diagnosis of type 2 diabetes (Jun et al., 2000), and one-in-ten self-reported type 2 diabetes within a population of mental health service users in Auckland (Wheeler et al., 2013).

A South Auckland study (Thornley, 2009) found that people with mental illness were no more likely to have diabetes than their (demographically matched) general population counterparts. However, a significant association was found with antipsychotic use; people in this category were more likely to have a diagnosis of diabetes (odds ratio 1.57) compared with non-users of this medication. The total population within this sample also had relatively high levels of diabetes when compared with the national average, due to the high numbers of Māori and Pacific people living in Counties Manukau.

Cardiovascular diseases

The New Zealand Mental Health Survey found that people with (any) mental disorder had higher prevalence of cardiovascular disease (10.2 per cent, compared with 7.5 per cent in the general population). It was found that females with mood disorder were nearly twice as likely to have cardiovascular disease compared with their male counterparts. There was no difference between genders amongst those without mood disorder (Oakley-Browne et al., 2006). Heart disease was not widely reported in the survey of people with SMI in Dunedin (Jun et al., 2000).

Respiratory diseases

People with (any) mental disorder from the New Zealand Mental Health Survey had higher prevalence of respiratory conditions⁹; 23 per cent compared with 16.7 per cent in the general population (Oakley-Browne et al., 2006). The survey of mental health service users in Dunedin found that around one-quarter had asthma (Jun et al., 2000). The study of people accessing mental health services in Auckland reported a lower prevalence, with just over 15 per cent reporting that they had asthma (Wheeler et al., 2013).

Cancers

Similar rates of cancer have been identified amongst those with and without mental disorders (excluding those with psychotic disorders) in New Zealand: 5.8 per cent across both populations (Oakley-Browne et al., 2006). This is consistent with some international findings.

Viral diseases

No information was identified as part of this review on the prevalence of viral diseases amongst people with SMI in New Zealand.

Oral health

Some New Zealand studies support an association between mental illness and poor dental health, although no studies were found that investigated this specifically. For example, the Dunedin longitudinal study provides good evidence of an association between socio-economic disadvantage and mental disorders (Miech et al., 1999; Poulton et al., 2002; Melchior et al., 2007), and the New Zealand Oral Health Survey identified strong associations between socio-economic status and oral health (Ministry of Health, 2010c, p. 22). The Dunedin study also provided data that established an association between tobacco smoking and periodontitis (Zheng et al., 2014), and smoking rates amongst people with SMI are very high (Wheeler et al., 2013).

Locker, Thomson and Poulton et al. (2001) used longitudinal data from the Dunedin study to investigate risk factors amongst young people aged 18 to 26 years for the development of dental anxiety, which can indicate a vulnerability to anxiety and mood disorders. Amongst those with dental anxiety, the findings suggested that conditioning experiences (e.g. exposure to invasive dental treatment) could give rise to dental anxiety, but it could also be closely associated with underlying disorders related to substance dependence. The same authors (Locker, Poulton, & Thomson, 2001) found strong associations between high rates of psychological disorder and high levels of dental anxiety amongst this population of young adults.

Other conditions

New Zealanders with (any) mental disorder have been found to have higher prevalence of chronic pain and high blood pressure, compared with the general population (Oakley-Browne et al., 2006).

⁹ This included asthma, chronic obstructive pulmonary disease, emphysema and other chronic lung disease.

The survey of mental health service users in Dunedin found that 22 per cent had diagnosed hypertension; other reported health issues included urinary incontinence, anaemia and musculoskeletal problems (Jun et al., 2000).

Prevalence of associated health conditions amongst Māori and Pacific people with SMI

The most common physical health conditions found amongst Māori with any mental disorder in the New Zealand Mental Health Survey were chronic pain and respiratory conditions; this was similar to the overall Māori sample. However, the prevalence of these conditions was higher in Māori with a mental disorder, compared with Māori who have no mental disorder. For all other health conditions, differences were not statistically significant. In addition, when considering risk factors amongst this group, there were no differences in the prevalence of being overweight or having high blood pressure between those with and those without mental disorders (Oakley-Browne et al., 2006).

However, as has previously been noted, psychosis was not included in the 2006 mental health survey. One study using mental health data from two national sources (Kake et al., 2008) estimated that the 12-month prevalence of schizophrenia for Māori (0.97 per cent) was significantly higher than for non-Māori (0.32 per cent), even after adjustment for age, case under-ascertainment, and socio-economic deprivation. The study found that Māori men had the highest prevalence estimates overall (1.27 per cent in 2002 to 2003).

If the prevalence of schizophrenia is three times as high amongst Māori, compared with non-Māori, and schizophrenia is strongly associated with numerous physical health problems, as outlined in this review, this points to a significantly increased burden of ill health amongst Māori communities.

A study of mental health service users in Auckland found that Māori and Pacific people had a higher BMI than their European/Other and Asian counterparts (Wheeler et al., 2013).

Addiction - international literature

Alcohol and other drug addiction is associated with a number of concurrent physical health problems (Han et al., 2010; Jones et al., 2011; Rosen et al., 2008; Volkow & Li, 2005). Moreover, both heavy alcohol use and illicit drug use have been linked with excess deaths, either due to health conditions, or accidents and suicide (Adrian & Barry, 2003), with one European study estimating that life expectancy is reduced by almost 14 years (Hannerz et al., 2001). A study from the UK found that the physical health of alcohol dependent patients was associated with the amount of alcohol consumed, as well as older age. Amongst drug-dependent individuals, the key factors were having ever injected drugs, and homelessness (Keaney et al., 2011).

The challenges of assessing health-related harms from substance misuse have been highlighted in the literature. Jones et al. (2009) undertook a systematic review of the health harms of both legal and illicit substances, and noted the difficulties in interpreting evidence, due to a lack of clarity as to whether or not a substance is a direct or indirect cause of negative health effects. In addition, they noted

difficulties in quantifying levels of risk. However, Degenhardt and Hall (2012) noted that the level of increased mortality amongst users of amphetamine, cocaine, and heroin, is such that it cannot be attributed to confounding factors alone.

A review of the health harms arising from alcohol and other drug use noted that these were diverse in nature, and that they varied according to a range of factors linked to the culture and context of drug use (Jones et al., 2011). These included the way substances are used, combinations of substances used, and the social context of drug use. It is beyond the scope of this review to explore the physical health harms of all substances in detail, so priority has been given to those that are most relevant to the New Zealand context. This includes tobacco, alcohol, cannabis, and methamphetamine. In addition, given the clear differences between the health effects of alcohol and of illicit substances, these are considered separately in the following sections.

Tobacco

Tobacco smoking is undoubtedly an addiction – indeed tobacco (nicotine) is certainly one of the most addictive substances legally and widely available. It is also one of the most dangerous to health, being known to cause the death of one in every two users (Ministry of Health, 2014). Many mental health researchers seem to regard the well-documented impacts of tobacco smoking on physical health as more of a problem than the addiction itself. For example, smoking is described in one study as “a tremendous problem that ... contributes to excesses in morbidity and mortality that are largely preventable,” partly because “historically smoking has been used as a behavioural reward in psychiatric inpatient units and continues to serve as a shared social activity for many psychiatric patients” (Williams & Ziedonis, 2004, p. 1068).

The situation has been similar historically in New Zealand, and partly explains why mental health services have been relatively slow to fully comply with their obligations under the Smoke-free Environments Act 1990 and its subsequent amendments. A recent unpublished Ministry of Health survey (2012b) of district health board mental health services identified a number of inpatient services that had yet to complete the final stages of transition to full compliance.

This review deals with smoking cessation issues for people with SMI in the section on drivers of relatively poor health.

Alcohol

The World Health Organization has identified three main ways that alcohol use can cause harm to the drinker: intoxication, alcohol dependence and acute toxicity (Ministry of Health, 2009a). Alcohol makes a substantial contribution to the global burden of disease (World Health Organization, 2011). This includes 4 per cent of total mortality, and between 4 and 5 per cent of DALYs (Rehm et al., 2009). Alcohol is the third largest risk factor for global disease burden, and results in 2.5 million deaths each year (World Health Organization, 2011). The level of burden varies across different countries, with evidence that it is higher per unit of alcohol consumption amongst low-income nations (Rehm et al., 2009).

The estimated number of attributable deaths and DALYs is much higher for alcohol use disorders than problematic illicit drug use. Illicit drug deaths are concentrated amongst younger individuals, whereas alcohol-related mortality is linked with middle-aged and older adults (Degenhardt & Hall, 2012). In addition, while drug use is generally more common among males than females (Jones et al., 2011; Ministry of Health, 2010a) women appear to be more sensitive to the adverse effects of drugs, including increased sensitivity to the neurotoxic effects of alcohol (Jones et al., 2011).

It has been reported that many studies on the health effects of alcohol are limited by poor measurement of alcohol consumption, and samples that have a shortage of people with irregular heavy drinking patterns (Rehm et al., 2003). Despite this, research consistently indicates that two dimensions of alcohol consumption impact on physical health: volume of alcohol consumed, and drinking patterns, such as irregular heavy drinking (Connor et al., 2005; Mannelli & Pae, 2007; Rehm et al., 2009; Room et al., 2005).

Alcohol misuse has been claimed to be causally related to more than 60 different medical conditions (Room et al., 2005), including the following.

- Gastrointestinal and liver diseases – the main liver diseases related to alcohol misuse include fatty liver, alcoholic hepatitis and cirrhosis (Jones et al., 2011; Mannelli & Pae, 2007). The most serious is hepatic cirrhosis, the development of which is strongly linked to the amount and duration of alcohol consumption (Mannelli & Pae, 2007; Rehm et al., 2009). In 2010, alcohol-attributable liver cirrhosis was responsible for just under half of all liver cirrhosis deaths (Rehm et al., 2013). Alcohol may also affect other gastrointestinal organs, with a significant proportion of acute pancreatitis cases linked to problematic use of this substance (Jones et al., 2011; Mannelli & Pae, 2007). Other gastrointestinal complications linked to increased mortality include gastrointestinal bleeding, gastritis and damaged veins in the lower oesophagus (Jones et al., 2011).
- Central nervous system effects – these include withdrawal symptoms, such as seizures, as well as cognitive impairment, encephalopathy, peripheral neuropathy and irreversible dementia (Mannelli & Pae, 2007; Stanley & Laugharne, 2010).
- Cancer – a range of cancers, including oral, throat and oesophageal, liver, breast and colorectal cancers are associated with alcohol misuse (Grønbaek, 2009; Jones et al., 2011; Rehm et al., 2009; Room et al., 2005). A stronger evidence-base, in relation to breast cancer in particular, has developed in recent years, with an identified link between level of risk and volume of alcohol consumption (Mannelli & Pae, 2007; Room et al., 2005). Alcoholic beverages are classified as carcinogenic by the International Agency for Research on Cancer (Anderson et al., 2009).
- Coronary heart disease – the protective factors of low-to-moderate consumption of alcohol in relation to lower coronary heart disease incidence and mortality have been widely reported (Anderson et al., 2009; Rehm et al., 2009), albeit with some controversy, due to methodological issues (confounding factors in population studies). One study (O’Keefe et al., 2007) noted that randomised trials of alcohol for improving clinical outcomes for

cardiovascular disease had not been done, and questioned the strength of evidence for protective factors claimed on the basis of observational studies. The authors argued against the promotion of moderate drinking at a population level because of these doubts. In fact, the authors noted that “alcohol abuse, the third largest preventable cause of death, is responsible for killing more than 100,000 Americans annually” (O’Keefe et al., 2007, p. 1013). It should be noted that most of the mechanisms that provide this cardio-protective effect are only applicable amongst individuals with a pattern of regular drinking without heavy drinking occasions (Room et al., 2005). In contrast, those who engage in irregular heavy drinking are at increased risk of coronary heart disease and sudden cardiac death (Jones et al., 2011; Room et al., 2005)

- Sexually transmitted diseases – alcohol is a contributory risk factor for these and HIV infection (Anderson et al., 2009).
- Other physical health conditions – these include increased risk for incidence and re-infection of tuberculosis (Jones et al., 2011), as well as reproductive disorders (Jones et al., 2011).

Illicit drugs

Overall, in comparison with the extensive body of knowledge on the health effects of alcohol, far less is known about the adverse health effects of illicit drug use. In particular, Degenhardt and Hall (2012) report that the literature relating to physical health harms for substances such as MDMA (ecstasy), hallucinogenic drugs, inhalants, non-medical use of benzodiazepines and anabolic steroids is more scarce than for other illegal substances, such as cannabis and amphetamine-type stimulants. This is also the case for data on the health harms related to the new synthetic drugs that have emerged in recent years.

The physical health effects of illicit drug use vary, according to the specific substance and the method of administration, as well as the frequency and level of use, with heavier users experiencing increased health risks (Degenhardt & Hall, 2012). For example, intravenous drug use has a number of specific health risks, including transmission of blood-borne viruses (Degenhardt et al., 2009; Galea & Vlahov, 2002; Jones et al., 2011). Those who use more than one drug type are also likely to experience more serious health effects (Chen & Lin, 2009; Degenhardt & Hall, 2012; Galea & Vlahov, 2002).

When considering use of illicit substances – or other unregulated psychoactive substances – potential health harms are further impacted by the lack of quality control with regard to their manufacture and distribution. Users can therefore not be certain about the composition of drugs they are taking, as well as the overall purity or quality of substances (Jones et al., 2011), which may pose further risks with regard to their health. It is known, for example, that many illicit drugs may contain adulterants (Cole et al., 2010). While these are mostly legal and readily available substances that are unlikely to significantly harm users’ health at low doses, it has been reported that current analysis methods make it difficult to estimate the level of adulterants likely to cause harm (Jones et al., 2011).

The authors highlight a number of observations from their review:

- there are lower physical health risks associated with cannabis compared with other illicit drugs, as the substance cannot be easily injected and does not produce fatal overdoses
- the quality of evidence varies widely, with cannabis-related data drawn mostly from prospective population-based cohorts, and data for other drugs from selected cohorts of treated users
- the magnitude of the health effects is often poorly quantified, particularly in relation to opioids and psycho-stimulants
- there is evidence that opioid, cocaine and amphetamine use is associated with more adverse outcomes than cannabis.

Mortality

It was estimated that the median number of deaths attributed globally to illicit drugs in 2000 was around 200,000¹⁰, double the previous estimate in 1990 (Degenhardt & Hall, 2012). Mortality risks increase with the frequency of drug use, with individuals who use illicit substances only once or twice, having only a very small increase in mortality. Overall, it has been reported that increased mortality is more pronounced amongst opioid users (Degenhardt & Hall, 2012; Jones et al., 2011).

Fatal overdose is a key contributor to increased mortality amongst illicit drug users and is particularly prevalent amongst injecting drug users (Jones et al., 2011). The risk of overdose is increased when certain substances are used in combination (e.g. opioids and alcohol), and when drug users resume opioid use following a period of abstinence; fatal cardiac arrhythmias and strokes can be triggered by stimulant-related overdoses (Degenhardt & Hall, 2012).

Cannabis

As noted previously, the health risks of cannabis have been reported as very different to those of other illicit drugs, with one review concluding that, overall, use of this substance poses a lower physical health risk (Degenhardt & Hall, 2012). The authors report that recent systematic reviews have found no current evidence that cannabis use increases mortality, and other studies have found ‘weak support’ for an association between cannabis use and suicide. Moreover, overdosing fatally on cannabis is very difficult, if not impossible, with claims that there have been no cases of fatal overdoses reported (Jones et al., 2011).

The health effects of chronic use (i.e. regular use over periods of years) can be difficult to isolate as this type of behaviour is usually correlated with other drug use (e.g. alcohol and tobacco), which are also known to have negative effects on physical health (Hall, 2009a). Taking this into account, a review of epidemiological evidence on the major adverse health effects of cannabis use reported the most probable effects of chronic use as: chronic bronchitis and impaired respiratory function; respiratory

¹⁰ This was based on four causes of death: AIDS mortality; opioid overdose mortality; suicide mortality; and trauma mortality. The authors note that uncertainty levels around each estimate were wide (Degenhardt et al., 2011).

cancers; and cardiovascular disease, particularly for those with an existing personal or family history of symptoms (Hall, 2009a). Other research has also identified a link with chronic bronchitis and lung damage, alongside reproductive disorders (Jones et al., 2011).

A lack of conclusive evidence of an increased risk of cancer amongst cannabis smokers has been reported, with case-control studies reporting conflicting findings (Degenhardt & Hall, 2012).

Methamphetamine

Methamphetamine is the most commonly manufactured illegal stimulant in New Zealand, and has been a focus of government drug policy in recent years (Department of the Prime Minister and Cabinet, 2009). Internationally, the substance has been linked with a range of health harms (Darke et al., 2008; Petit et al., 2012). While its association with psychological harms, such as psychosis, receive much attention in public and media debates, methamphetamine addiction can cause serious negative physical health effects, particularly amongst older, dependent users (McKetin et al., 2008). This includes heart disease and cerebrovascular complications. It is also linked with an increased risk of transmission of blood-borne viruses, due to the sharing of injecting equipment and high-risk sexual behaviour, and dental diseases. Overdose is a significant source of mortality amongst younger methamphetamine users, and recent reviews of the literature have also highlighted high rates of suicidal behaviours (Darke et al., 2008; Petit et al., 2012).

Methamphetamine users typically consume a range of other substances, including alcohol, cannabis and other psycho-stimulants, and this poly-drug use may result in increased toxicity. In addition, use with alcohol increases the heart rate and blood pressure of users (Darke et al., 2008; Petit et al., 2012).

Addiction - New Zealand literature

While the most recent household survey of alcohol and drug use across the general population did not report on physical health harms (Ministry of Health, 2009a, 2010a), findings indicate that one-in-six adults had used any drug for recreational purposes in the past year and the most common drug used was cannabis, followed by BZP party pills, ecstasy and amphetamines (Ministry of Health, 2010a). In addition, one-in-four past-year drinkers were identified as having a potentially hazardous drinking pattern, with men and Māori and Pacific people significantly more likely to be drinking in this way (Ministry of Health, 2009a).

Findings from the New Zealand Mental Health Survey (Oakley-Browne et al., 2006) indicate that people with any substance use disorder¹¹ had a higher prevalence of chronic pain, high blood pressure and respiratory conditions, compared with those with no mental disorder. For example, 56 per cent reported experience of chronic pain in the previous 12 months (compared with 35 per cent of those with no mental disorder), and just over one-quarter experienced a respiratory condition in the same

¹¹ This included people with diagnosed substance use disorders, most of whom had alcohol use disorders (Oakley-Browne et al., 2006).

period (compared with 17 per cent of those with no mental disorder). People with any substance disorder reported lower rates of diabetes than those with no mental disorder, and cancer rates were the same for both populations.

Other New Zealand data is reported below, with alcohol considered first, followed by an overview of the available information on the physical health status of people with an illicit drug addiction.

Tobacco smoking is covered elsewhere in this review.

Alcohol

It has been estimated that approximately 1,037 deaths (almost 4 per cent of total deaths) in New Zealand in 2000 were attributable to alcohol consumption, with around 981 deaths estimated to be prevented by the substance¹² – resulting in a net loss of approximately 56 lives (Connor et al., 2005). However, as previously mentioned, the protective effect of moderate consumption of alcohol for cardiovascular disease is likely to be a result of confounding, rather than a real effect, so this may be an under-estimate of mortality. New Zealand researchers have commented that “any coronary protection from light to moderate drinking will be very small and unlikely to outweigh the harms.” (Jackson et al., 2005, p. 1912)

Findings from the New Zealand Burden of Diseases, Injuries and Risk Factors Study (Ministry of Health, 2013) incorporate both the harmful and known protective effects of the substance. The net impact of alcohol was estimated at 37,000 DALYs – or 3 per cent of total DALYs. While nearly half of this was associated with risk of injury (e.g. road traffic injuries), the remaining 54 per cent was attributed to adverse effects linked to disease processes.

The Ministry of Health (2009b) identifies intoxication as the main cause of alcohol-related harm in New Zealand, because it can lead to risk-taking behaviour, accidents and injuries, violence and acute alcohol poisoning. Conner et al. (2005) estimated that 3.9 per cent of deaths in New Zealand in 2000 were attributable to alcohol consumption (similar to the 4 per cent estimated globally by Rehm et al., 2009), and that 51 per cent of alcohol-related deaths were due to injury. Around one-quarter of alcohol-related deaths were due to cancer, with the remaining quarter as a result of other chronic diseases.

Differences were evident across both gender and ethnicity, with the overall alcohol-related death rate for Māori being 4.2 times that of non-Māori. Overall, more Māori died due to alcohol use, and fewer deaths were prevented by alcohol in this population group. The alcohol-related death rate for men overall was far higher than for women, amongst both Māori and non-Māori. When considering the net effect of years of life lost, this was also higher in men than women, and higher amongst Māori compared with non-Māori (Connor et al., 2005).

The authors highlighted five key messages from their analysis:

¹² Positive effects were mostly due to reduced coronary disease mortality amongst older populations.

- prior to middle age, there are no health benefits from drinking alcohol
- a key determinant of the health effects of alcohol is an individual's pattern of drinking
- injury is a key component of the alcohol burden
- alcohol use disorders underpin many of the adverse effects of alcohol
- the health burden of alcohol falls inequitably on Māori (Connor et al., 2005).

Recent research exploring mortality among users of secondary mental health services in New Zealand identified that individuals with a principle diagnosis of substance use had mortality rates over two-and-a-half-times that of the population as a whole. While specific causes of death were not identified, the authors reported that this was likely to be related to the impacts of the substances themselves, with alcohol in particular singled out (Cunningham et al., 2014).

Illicit drugs

The Ministry of Health (2013) reports that illicit drugs account for 1.2 per cent of health loss from all causes; this includes 11,000 DALYs. Drug-use disorder is the major contributor to this loss, which includes withdrawal-related health problems. In addition, unintentional overdose (and other unintentional injury) comprises almost 15 per cent of health loss from illicit drugs, with infectious complications of injecting drugs (including HIV/AIDs, hepatitis C and B, and bacterial endocarditis) contributing a further 11 per cent. This data does not include misuse of legally available substances, such as prescription drugs. In addition, other impacts of drug use on chronic disease are not included – either due to a lack of data, or because the causal link is not robust. The ministry notes that the extent of health loss due to illicit drug use reported is likely to be an underestimate.

It is also important to highlight differences across sub-populations with regard to illicit drug use in New Zealand – three-quarters of the health loss burden is borne by males, and more than a quarter by young people aged 15 to 24 years. Moreover, Māori experience over three times the drug-related health loss sustained by non-Māori (Ministry of Health, 2013).

Cannabis is the most commonly used illicit drug within New Zealand, and rates of intravenous drug use in New Zealand are low (Ministry of Health, 2010a), as is prevalence of HIV (Deering et al., 2004). However, high rates of hepatitis C have been found among methadone treatment programme clients (Deering et al., 2004; Sheridan et al., 2005), with reports that 70 per cent of New Zealand's intravenous drug users have the virus (Shearin, 2003).

The health status of clients receiving methadone maintenance treatment in a drug treatment clinic in Christchurch was assessed via the SF-36¹³ survey. It was found that the health of the study participants was significantly poorer than population norms on all of the SF-36 scales. There was no significant

¹³ This tool provides a measurement of health status, and yields an 8-scale health profile, as well as summary measures of health-related quality of life.

association found between time on the methadone treatment programme and SF-36 scores, suggesting that most changes in health status following entry to treatment take place early on (Deering et al., 2004). A subsequent study amongst a similar population found that the most common physical health problems experienced by methadone maintenance clients were sweating, headaches and fatigue. Physical health problems typically associated with opiate use (e.g. dental problems, constipation) were experienced by a large proportion of the sample. In terms of self-reported health conditions, just over half had hepatitis C, around a quarter reported chronic pain, and 21 per cent suffered from migraines (Sheridan et al., 2005).

Drivers of relatively poor physical health

This section explores the main reasons identified in the literature for the relatively poor health experienced by people with SMI and/or addiction. These are complex and inter-related, but as stated in one review study “...the same biological and socio-economic factors that influence the health of us all appear to act as a microcosm asserting a greater detrimental influence on people with mental illness” (Collins et al., 2011, p. 639).

Some factors are specific to either people with SMI or people with an addiction, and these are discussed separately where appropriate. Data from New Zealand is presented, where it is available, alongside the international studies.

While it is recognised that this is a complex and interrelated picture, the literature on the identified drivers uses the broad categories of:

- socio-economic status
- exposure to risk factors (sometimes also referred to as lifestyle factors)
- medication effects and side effects
- access to and quality of healthcare (at a systemic, provider and individual level).

Socio-economic status

The links between socio-economic status and mental illness have been widely reported. Socio-economic inequalities have been shown to impact on mental health in two ways. First, comparative population studies have shown that greater income inequality is associated with higher prevalence of mental and substance disorders in wealthy societies (Pickett & Wilkinson, 2010). Burns et al. (2013) found a significant positive relationship between the incidence rate of schizophrenia and Gini coefficient¹⁴, and concluded that countries with a wide gap between wealthy and poor may be at increased risk of schizophrenia. Second, the degree of socio-economic disadvantage that individuals experience is associated with a proportionately increased risk of mental illness (McManus et al., 2009).

New Zealand research (Oakley-Browne et al., 2006) shows that the prevalence of mental illness is strongly associated with socio-demographic variables, including: NZDep2001 deciles (for those living in the least deprived areas prevalence is 3.2 per cent, compared with 6.9 per cent for those living in the most deprived areas); equivalised household income (2.8 per cent for those on the highest income, compared with 8.1 per cent for those on the lowest); and educational qualifications (3.4 per cent for those with both school and post-school qualifications, and 6.1 per cent for those with no qualifications). Furthermore, low socio-economic status at birth and cumulative episodes of poverty during the life course is strongly co-related to poor adult health (within the general population). There

¹⁴ The Gini coefficient is a statistical measure used to represent the income distribution of a nation's residents.

appears to be a dose-response relationship between periods of low income throughout a person's life, and poor health outcomes (Thomson et al., 2004).

Mental illness can further compound the disadvantage associated with low socio-economic status, for example through increases in a range of health-risk behaviours (Campion et al., 2013).

The socio-economic consequences associated with SMI have a serious impact on the physical health of this population group. These consequences include restricted access to employment, social stigma and isolation, poverty and poor housing (Robson & Gray, 2007). However, these factors alone do not fully explain the disparities in health status between people with SMI and those of the general population; studies that have adjusted for socio-economic status still identify significantly worse health outcomes for people with SMI (Kisely et al., 2007; Lawrence & Kisely, 2010).

For those living with a serious addiction, their physical health is inextricably linked to their social environment, including socio-economic status (Adrian & Barry, 2003; Galea & Vlahov, 2002). For example, living conditions and availability of resources can directly or indirectly affect the health consequences of drug use (Adrian & Barry, 2003; Galea & Vlahov, 2002). In their review, Galea and Vlahov (2002) conclude that there is a strong relationship between socio-economic status, multiple health risks, and increased morbidity and mortality amongst illicit drug users. They highlight that socio-economic status not only influences high-risk behaviours that are directly linked to poor health, it has a role to play in determining access to healthcare (and the quality of care received), and a range of behavioural norms, including appropriate preventive behaviour.

Exposure to risk factors

Much has been written about the impact of health behaviours – including those commonly referred to as lifestyle factors in the literature (Robson & Gray, 2007; Scott & Happell, 2011). These include behaviours relating to tobacco smoking, nutrition, physical activity, substance use, etc., which are recognised as having an influence on an individual's level of physical health, both in the short and longer term. While such behaviours are often seen as poor individual choices, links to broader structural and clinical influences can largely determine health behaviours. Indeed, Robson and Gray (2007) argue against such factors being seen as choices, and rather as a result of a range of social, environmental, physical and psychological consequences of SMI. Given the highly addictive nature of nicotine, it is certainly questionable whether choice is a factor at all in tobacco smoking.

In addition to health behaviours as outlined above, there are risk factors relating to SMI itself, such as accidents causing injury, and suicide. The risk factors for physical health conditions linked with mental illness and/or addictions are discussed below.

Illness-related factors

The excess mortality associated with SMI, and particularly with schizophrenia, has been studied since the early 20th century, and it has long been clear that having the illness itself carries its own heightened mortality risk, primarily from suicide and other unnatural causes, such as accidental death; but the

majority of excess deaths are related to natural causes, such as cancer and cardiovascular disease (Vancampfort et al., 2013). One systematic review (Saha et al., 2007) found that the differential mortality gap between people with schizophrenia and the general community had worsened over the three decades up to 2006 covered by the study. The increasing mortality gap, in spite of improvements in general and psychiatric healthcare, was identified as a particular concern.

In an attempt to better understand the nature of excess mortality associated with schizophrenia and suggest a means of prevention, Brown et al. (2000) investigated the causes of the excess mortality associated with schizophrenia in a cohort study of 370 patients with schizophrenia, identifying those who died and their circumstances, over a 13-year follow-up period. Death from unnatural causes accounted for one-third of the excess mortality, and most of these deaths (n=14) were by suicide. Two unnatural deaths were probably accidental, but causally related to schizophrenia. Smoking was found to be a key factor in excess mortality amongst the avoidable natural deaths.

Tobacco smoking

Rates of tobacco smoking amongst those with SMI have received much attention to date, with evidence that these are up to three times higher than the general population (Collins et al., 2012; Hennekens et al., 2005). One US study estimated that up to 85 per cent of individuals with schizophrenia, bipolar disorder and other SMI were smokers (Ziedonis et al., 2003). Similarly, high rates of smoking have been identified amongst people with an alcohol or illicit drug addiction (Doolan & Froelicher, 2006; Sullivan & Covey, 2002), including prevalence of at least 80 per cent in some studies (Baca & Yahne, 2009; Sigmon & Patrick, 2012; Williams & Ziedonis., 2004). It has also been noted that people with SMI tend to be very heavy smokers (Collins et al., 2011).

New Zealand research indicates similar patterns. For example, smoking prevalence has been reported as very high amongst users of drug and alcohol outpatient clinics (Adamson et al., 2006), and among those receiving methadone maintenance treatment in New Zealand (Deering et al., 2004). The New Zealand Mental Health Survey reports smoking prevalence amongst people with any mental illness at 32 per cent, compared with 21 per cent amongst people without mental health issues. Moreover, higher rates of smoking are evident amongst Māori with any mental disorder, compared with Māori with no mental disorder (Oakley-Browne et al., 2006). In a study of people using mental health services in Auckland, there was around twice the proportion of current smokers, compared with a general population cohort, but also a higher proportion who had never smoked. In the Auckland sample, there was a higher proportion of Māori smokers, and more in the Asian group who had never smoked (Wheeler et al., 2013).

A range of differences in smoking behaviour amongst people with a mental illness has been identified, including that this group tends to consume a higher number of cigarettes (Wheeler et al., 2013; Clinical Trials Research Unit, University of Auckland, 2008; Hennekens et al., 2005; Jun et al., 2000). Interestingly, New Zealand research identified that a high proportion of people with SMI were either seriously considering or actively trying to stop smoking (Jun et al., 2000). This has also been reported amongst people with an addiction (Sullivan & Covey, 2002).

Broader influences, such as environmental and social factors, should not be overlooked when considering the high rates of smoking amongst people with SMI and/or addiction. It has been identified as a complex issue, with cigarettes potentially used as a means of coping with the symptoms of mental illness or as a way of fitting in with others in a similar situation (Bhikha, 2008; Wheeler et al., 2013). Smoking behaviour has also been supported within mental health institutions in New Zealand in the past, with cigarettes commonly used as a reward to manage the behaviour of patients (Wheeler et al., 2013). Moreover, staff may be of the view that smoking cessation may not be realistically achieved, or that it will exacerbate an individual's mental health condition (Stubbs et al., 2004), even though this viewpoint is not supported by current evidence.

Banham & Gilbody (2010) conducted a systematic review of eight trials of smoking cessation interventions in people with SMI. All trials measured psychological functioning and either found no difference (i.e. no worsening of mental health symptoms) or an improvement. This is further supported by a recent systematic review and meta-analyses of 26 observational studies of smoking cessation interventions in the general population, as well as people with a SMI. The study concluded that smokers can be reassured that stopping smoking is likely to provide mental health benefits, countering the widely held belief amongst smokers that smoking itself has mental health benefits (Taylor et al., 2014). Taylor et al. (2004) found that smoking cessation actually had a positive impact on mental health, for the general population as well as for people with a mental illness.

In New Zealand, legislation for policies on smoke-free workplaces and public places has allowed exemptions for those working in mental health and addiction services, which face many challenges in the transition to a smoke-free culture. These include “staff smoking, negative staff attitudes to becoming smoke-free, poor knowledge of nicotine dependence, smoking-related harm and comorbidities, and poor knowledge and skills regarding cessation-support options” (Glover et al., 2013, from abstract).

Nutrition

People with SMI and/or addiction appear to have less healthy eating patterns, including consuming only one or two meals per day (Best et al., 1998; Kilbourne et al., 2007; Nolan & Scagnelli, 2007), and having poor quality diets. In their review of the literature, Scott and Happell (2011) reported a range of issues related to quality of diet amongst people with SMI, including higher consumption of high-fat and low-fibre foods compared with the general population, an increased likelihood of adding salt to food, and lower levels of consumption of fruit and vegetables.

Similarly, a study of patients from a methadone maintenance clinic in the UK, found that more than a quarter of the sample had not had a cooked meal within the past three days, and for those who had, many were consuming take-away food (Best et al., 1998). Higher consumption of, and preference for, sweet foods has also been identified amongst people who are opiate dependent (Nolan & Scagnelli, 2007).

In New Zealand, a survey of mental health service users in Auckland found that nearly half the sample ate an adequate amount of fruit¹⁵, and just under one-third an adequate amount of vegetables¹⁶, significantly less than the general population (Wheeler et al., 2013). Other research has identified that people with SMI were less likely to be able to afford to eat properly (Jun et al., 2000).

Physical activity

Levels of physical activity are lower amongst people with SMI, compared to the general population (Robson & Gray, 2007; Scott & Happell, 2011;). One narrative review highlighted studies showing that around one-third of mental health service users reported no current participation in physical activity, and reduced involvement in vigorous activities (Scott & Happell, 2011). The challenges faced by this group in being physically active include a lack of confidence, the sedating effects of some medications and a lack of motivation (e.g. due to depression), as well as the potential financial costs involved, for example, in joining a gym (Robson & Gray, 2007).

Wheeler et al. (2013) also found that a greater proportion of mental health service users were sedentary (i.e. took less than 30 minutes of physical activity in the past week) and a lower proportion was active (i.e. took at least 30 minutes of physical activity a day for five days within the past week), compared with a general population cohort.

Alcohol and drug use

Previous research – both nationally and internationally – has identified elevated levels of alcohol and other drug use amongst people with mental illness (Collins et al., 2012; Jané-Llopis & Matytsina, 2006; Oakley-Browne et al., 2006; Scott & Happell, 2011; Wheeler et al., 2013). It has been hypothesised, for example, that substances may be used to medicate the symptoms of SMI, or as a way of relieving stress (Jané-Llopis & Matytsina, 2006). High rates of alcohol use have also been identified amongst people with an illicit drug addiction (Darke et al., 2008; Degenhardt & Hall, 2012). The high prevalence of a co-morbidity of a mental illness and an addiction within these population groups is significant in relation to physical health outcomes.

Injecting drug use

Injecting drug use is not common in New Zealand (Ministry of Health, 2010a), but it has been reported in 151 countries (Degenhardt et al., 2009) and international studies have found that the sharing of contaminated injection equipment is linked with a number of blood-borne viruses (Jones et al., 2011) including HIV, hepatitis B and hepatitis C (Degenhardt & Hall, 2012; Jones et al., 2011). It is also linked with an increased risk of overdose and dependence, alongside bacterial and fungal infections (Jones et al., 2011). Risks of unsafe injecting are primarily associated with substances such

¹⁵ This was defined as eating two or more servings of fruit each day.

¹⁶ This was defined as eating three or more servings of vegetables each day.

as opioids, cocaine, and amphetamines (Degenhardt & Hall, 2012). A study by Shearin et al. (2003) found that 70 per cent of New Zealand's IV drug users had hepatitis C.

Medication side-effects

The scope of this review did not permit an in-depth review of the effects of psychotropic medications; however, a number of studies have identified a negative impact on physical health due to their contribution to obesity, cardiovascular disease, poor oral health and type 2 diabetes (Collins et al., 2012). It is suggested that these effects have contributed to a reduction in life expectancy amongst people with SMI over recent decades (Saha et al., 2007). Indeed, the health effects of obesity amongst people with schizophrenia have been found to be comparable in terms of premature mortality and morbidity, with tobacco smoking (Faulkner, Cohn & Remington, 2010).

Saha et al. (2007) noted that the clinical superiority of second-generation antipsychotic medications introduced in the early 1990s had been questioned and suggested that the weight gain associated with the use of these drugs seemed to account for much of the additional mortality from natural causes.

There is substantial evidence of the benefits of maintenance treatment with antipsychotic drugs for people with schizophrenia, but the authors of a recent systematic review and meta-analysis investigating the benefits, caution that the advantages of these drugs need to be weighed against their side-effects (Leucht et al., 2012). It has been claimed that adverse effects are both diverse in nature and relatively common (Muir-Cochrane, 2006), and that the impact of medications, such as antipsychotics, on weight gain may be underestimated in the literature (Álvarez-Jiménez, Gonzalez-Blanch, et al., 2008).

Álvarez-Jiménez, Gonzalez-Blanch et al. (2008) suggest a number of limitations with the literature on antipsychotics and weight gain, including that the vast majority of findings are based on short-term trials, involving people who are chronically ill. Given that these populations are likely to have had prolonged previous exposure to drugs linked with weight gain, and had their lifestyles impacted by the effects of a chronic illness, the authors argue that there is limited capacity within such trials to accurately isolate the effect of antipsychotics on weight gain. Their subsequent review of the evidence found that weight gain was three to four times greater in studies with young people who had limited previous exposure to antipsychotic drugs. They also challenged the notion that different antipsychotic drugs are linked with varying levels of weight gain, and argued that, overall, they may cause similar absolute gains.

More recently, a large meta-analysis comparing people with schizophrenia and the general population found that people with schizophrenia who have multiple episodes and who are on antipsychotic medication are at a “more than fourfold increased risk for abdominal obesity compared to age- and gender- or cohort-matched general population controls” and that “chronic, medicated patients with schizophrenia have significantly increased risk for developing cardio-metabolic abnormalities compared with first-episode and drug-free patients” (Vancampfort et al., 2013, p. 244).

Access to and quality of healthcare

There has been much written and published about the barriers that people with SMI face in accessing healthcare (De Hert, Correll et al., 2011; Handiside, 2004; Lawrence & Kisely, 2010; Mitchel et al., 2009). Lawrence and Kisely (2010) segment these into three categories: systematic issues, provider issues, and patient-related issues.

Systemic issues include aspects such as the separation (including geographical) of physical and mental health services, a lack of clarity with regard to who is responsible for the monitoring and ongoing management of the physical health of patients with SMI, a lack of continuity of care, and overall fragmentation of care across different providers.

Provider issues include time and resource constraints, as well as stigmatising attitudes and discriminatory behaviour towards this population group.

Patient-related issues incorporate some of the risk factors discussed in the previous sections – primarily smoking, poor diet and restricted physical activity. Other issues linked to the effects of mental illness, which affect help-seeking behaviours, include difficulties in communicating health needs and cognitive impairment.

The combination of medication side effects, health service fragmentation, service users' greater exposure to behavioural risk factors, and discrimination from health professionals too often results in inadequate medical care (Burti et al., 2013, p. 114). It is also suggested that “mental health patients use the complete range of preventive health services to the lowest degree” and that this also applies to clinical check-ups (Burti et al., 2013, p. 115).

A systematic review of research examining the quality of medical care received by people with SMI and/or addiction identified disparities in the level of healthcare delivered to this group (Mitchell et al., 2009). This was despite similar or higher levels of contact with medical professionals, compared with the general population. Of note, is that inequalities were most evident in relation to general medicine and cardiovascular care, but may also be present in cancer and diabetes care, particularly as the data shows similar prevalence, but poorer outcomes (Mitchell et al., 2009). In their review, De Hert, Correll et al. (2011) highlight that a significant proportion of patients with SMI do not receive tests for assessing metabolic risk factors, and those with diabetes are less likely to receive standard levels of care in relation to this health condition. With regard to cardiovascular disease, people with SMI have the highest mortality – but are the least likely to receive specialised interventions or some medications. Others have reported that people with schizophrenia tend to be offered less cardiovascular procedures (Hennekens et al., 2005).

At a broader level, the literature contains many reports of the lack of assessment, monitoring and documentation of the physical health status of people with SMI, both within primary and secondary care settings.

The contribution of healthcare practitioners to this problem has received much attention in the literature, particularly in terms of attitudes, knowledge and skills. This includes the identification of

issues such as: poor levels of knowledge and skills in both mental health practitioners (in relation to physical health) and in physical health practitioners (in terms of working with patients with an SMI) (Robson & Gray, 2007); stigmatisation of people with SMI (De Hert, Correll et al., 2011; Vreeland, 2007); and a reluctance to take on functions perceived to be additional to their primary role (De Hert, Correll et al., 2011; Dunbar, Brandt et al., 2010; Millar, 2008). Blythe and White's (2012) evidence review of the role of mental health nurses identified a lack of knowledge and training on the monitoring and management of physical health, role ambiguity, and poor communication between primary and secondary healthcare services. Vreeland (2007) noted that healthcare professionals may not believe that health and wellness are achievable amongst people with SMI, due to the symptomatology of their illness.

An additional barrier in accessing adequate healthcare is that people with SMI do not always seek medical care, even when experiencing serious physical health symptoms, and this ultimately contributes to poorer physical health. This may be due to individuals being less able to interpret physical signs, or having lower levels of self-care and problem-solving capabilities (Burti et al., 2013; De Hert, Correll et al., 2011). Robson and Gray (2007) highlight research that has found a high pain tolerance and reduced pain sensitivity (due to medication effects) amongst people with SMI. Other service-related factors identified include financial barriers and the cost of care, a lack of health insurance coverage and under-resourcing of mental healthcare (De Hert, Correll et al., 2011).

For people with an illicit drug addiction, stigma and discrimination by health professionals has been identified as a key barrier in accessing adequate healthcare (Ahern et al., 2007; Butler & Sheridan 2010; van Boekel et al., 2013; Handiside, 2004).

One study found that health professionals generally held negative views of patients with an addiction, with perceptions that they could be violent or manipulative, and were poorly motivated. While it was suggested that such attitudes may lead to suboptimal healthcare for these patients, it was also highlighted that there have been few studies that have evaluated the consequences of negative attitudes (van Boekel et al., 2013).

Others have discussed the implications of substandard care for addicted individuals within the healthcare setting (Ahern et al., 2007; Butler & Sheridan, 2010). Research has identified that injecting drug users, for example, have limited access to healthcare and may not receive the same level of interventions as other patient groups (Galea & Vlahov, 2002). Such issues may also result in keeping drug use hidden, because of concerns about receiving poor treatment from health professionals and/or fear of legal implications due to the illicit nature of their activities (Ahern et al., 2007).

Healthcare access for people with SMI and/or addiction in New Zealand

The review identified a number of New Zealand studies exploring healthcare access and usage by people with SMI. In part, these studies' findings concur with international studies, particularly with regard to a lack of skills on the part of healthcare practitioners (both within mental and physical health services), and poor clarity of roles affecting care and treatment. Discrimination and stigma are

experienced by people with SMI when seeking healthcare treatment, and there are also financial barriers in accessing primary care services.

The New Zealand evidence also highlights that people with SMI may have different patterns of healthcare use, compared with the general population, particularly in terms of primary care, rather than just reduced contact with health services. Wheeler et al. (2014) explored healthcare access patterns in a group of 404 people with SMI living in Auckland and compared them with a general population group (using New Zealand Health Survey data), and found that people with SMI accessed services in more complex ways and were more particular about who they went to for care than their general population counterparts.

One possible explanation for the relatively poor physical health of people with SMI is that they have inadequate access to healthcare. However Wheeler et al. (2014) note that some studies show poor access and others demonstrate more frequent attendance at both primary and secondary care services.

Their study demonstrated that a significantly lower proportion of people with SMI had visited a GP, medical centre or family practice first when they were physically unwell, and that people with SMI were more likely to see medical specialists, and slightly less likely to see a particular health practitioner, when unwell.

Wheeler et al. (2014) also found that the group of people with SMI were more likely to have seen their GP within the past year than New Zealand Health Survey respondents (85.8 per cent versus 81.3 per cent), but that these visits were more likely to be for injuries or mental health-related issues, than for routine check-ups. However, people with SMI were more likely to visit their health practitioner for blood pressure, cholesterol, diabetes and green prescriptions, which suggested awareness of physical health needs, and that “active management of mental health populations for metabolic syndrome is occurring” (Wheeler et al., 2014, p. 14).

A high rate of GP attendance was identified amongst SMI patients from a Dunedin study, and it was also noted that a number were dissatisfied with the service provided, due to high cost and restricted consultation time. Other complaints included a lack of skills amongst GPs in managing psychiatric conditions and medications, and a lack of response by GPs to physical health concerns (Jun et al., 2000).

Earlier research exploring experiences of discrimination amongst those with a mental illness in New Zealand found that 23 per cent felt they had been discriminated against when using general health services. It was reported that this was mostly linked to a perceived lack of credibility, including a sense that their physical health problems were dismissed due to their mental illness (Peterson et al., 2007).

In one New Zealand study, which investigated the barriers faced by staff from a mental health service in assessing metabolic risk, some practitioners were initially unsure about adding additional responsibilities to an already heavy workload, and were also uncertain that it was part of their “core business” (Dunbar, Brandt et al., 2010). Robson and Gray (2007) noted that a lack of skills may be present in mental health nurse practitioners (who may have received no formal physical healthcare

training), as well as in their practice nurse counterparts working within a primary care setting (with limited or no mental health training).

A survey of mental health practitioners (n=421) and GPs (n=232) in Auckland identified that around three-quarters were in agreement that there is a link between SMI and cardiovascular disease, with mental health practitioners more likely than GPs to agree that psychotropic medications increased cardiovascular risk (Wheeler, Harrison, & Homes, 2010). In diagnosing cardiovascular risk, more GPs (65.5 per cent) than mental health doctors (e.g. senior medical officers) (55.3 per cent) felt able to do this effectively, and only 21 per cent of mental health doctors felt that they could accurately manage the risk. Most mental health practitioners believed that cardiovascular risk assessment should be shared between mental health practitioners and GPs, whereas GPs were far more likely to believe it was their sole responsibility. Amongst both groups, only a small proportion of the sample (10 per cent overall) believed that mental health services were effective in both assessing and managing cardiovascular risk amongst patients with SMI. For mental health practitioners, the key reasons reported for why this is happening included secondary care providers' knowledge and skills, a lack of communication between mental health providers and GPs, a lack of time (in secondary care) to complete assessments and follow up, and patients' financial status. GPs rated the most important barriers as patient factors (i.e. compliance with medication and follow-up appointments).

A small-scale (n=9) qualitative study, which explored health practitioners' (psychiatric trainees, mental health pharmacists, GPs) views on their role in overseeing SMI clients' cardiovascular risk profile, identified a number of similar barriers. These included practitioner skills and knowledge; substandard communication between primary and secondary care services; lack of resources; financial status of clients; and ability to address behaviour change amongst this patient group (Wheeler, Harrison, Mohini, et al., 2010).

In a New Zealand study on healthcare access for people with a serious addiction, it was identified that clients on the methadone maintenance programme from a drug treatment clinic had few consultations with health professionals (Sheridan et al., 2005). Respondents were asked to indicate how many times they had seen a GP, pharmacist, case manager, dentist, Auckland Methadone Service doctor or needle exchange staff in the past 3 months. The number of consultations was very low. While some individuals were defined as high users (i.e. 10 to 15 consultations in the past 3 months), the majority had no consultations. The study participants indicated that the most likely individual they would seek support from in relation to their healthcare was a GP, followed by their partner, with family and friends also rated highly. When considering pharmacists as a potential source of help or support, cost was a major barrier, as well as concerns about lack of privacy and confidentiality.

Handiside (2004) argued that there is no clear responsibility for the physical healthcare of mental health service users in New Zealand. The paper highlighted the lack of mental health guidelines for primary health organisations as evidence of this. Handiside did, however, note that a number of district health boards had defined aims in relation to improving the physical health status of people

with SMI, and acknowledged that the situation was slightly better with regard to the needs of people with a serious addiction.

A more recent study identified that GPs and community pharmacists may hold stigmatised views of drug users, and that this may impact on the level and nature of healthcare provided (Butler & Sheridan, 2010).

Promising interventions

This section outlines research findings on effective interventions for addressing the relatively poor physical health experienced by people living with SMI and/or addiction. Despite the longstanding evidence on the health status of this population group, it seems there have been fewer published studies of attempts to address the poor physical health of people with a SMI (Lawrence et al., 2010) or those with an addiction (Weisner et al., 2001). The call for evidence undertaken as part of this project identified a number of promising evidence-based interventions being delivered within New Zealand, and these are included in this report where evaluations or audits were available, and where not, these are summarised in Appendix One.

An emerging body of literature, which informs this section, is divided into two main types of intervention: systems level and individual behavioural change. In the main, these interventions attempt to address the drivers of poor physical health outlined in the previous chapter.

- Systems-level interventions include policy and regulatory mechanisms; changes to the way healthcare services are structured to better meet the physical health needs of people with SMI (for example the co-location of primary care health professionals in mental health services and vice-versa); clinical guidance; quality improvement approaches, such as routine screening, health assessments and monitoring within mental health services; and workforce development and education strategies. For example, the mental health workforce can be trained to better identify physical health risk factors and problems, and enable access to treatment; and all of the health workforce can be supported to understand the greater physical health risks associated with having an SMI and/or addiction and to respond appropriately.
- Individual behaviour change interventions tend to focus on reducing a person's exposure to lifestyle risk factors and any side-effects of psychotropic medications. Interventions include smoking cessation, increased physical activity, improved nutrition and general wellbeing. Those interventions based on adult education principles and that are service-user directed, have been shown to be successful at an individual and small group level. However, the evidence in this area is still emerging, and while it is promising and consistent with good practice for behaviour change interventions in other settings, there is no simple or single approach that has demonstrated long-term effectiveness for this particular group. This is a reflection of the difficulties and expense of evaluating the outcomes of this type of intervention, rather than of the value of the programmes themselves. This review certainly found sufficient evidence to guide service development.

New Zealand evidence is presented alongside international evidence within each section.

Systems-level interventions

Policy interventions

This review did not identify any evaluations of policy interventions, internationally or within New Zealand, which specifically addressed the poor physical health of people with SMI and/or addiction. However, it is relevant to look more broadly at health-related policy that has been shown to be effective at tackling health inequalities and preventing adverse health outcomes, and which is likely to have impacted on this group or could be adapted to support improvements in their physical health in the future.

Policies to address social inequalities

The World Health Organization has published a great deal on policy interventions that can reduce health inequalities amongst groups most affected by social exclusion, vulnerability and disadvantage. A recent World Health Organization review of strategies to address health inequities endorses both universal coverage of healthcare and a focus on behaviour change in relation to the three main risk factors for poor health outcomes: “smoking, diet and alcohol – that cause much of these health inequities but are also socially determined.” The World Health Organization review also supports addressing the “causes of the causes: the conditions in which people are born, grow, live, work and age, and inequities in power, money and resources that give rise to them” (Marmot, 2013, p. 1).

Of relevance to people with SMI is that the report advocates “proportionate universalism”, which can address the needs of people at the bottom of the social gradient and those who are most vulnerable: “Policies are needed that are universal but are implemented at a level and intensity of action that is proportional to need – proportionate universalism.” (Marmot, 2013, p. 5)

The World Health Organization review recommends that governments take action to develop systems and processes within societies that are more sustainable, cohesive and inclusive, focusing on those groups most severely affected by exclusionary processes. Specific actions to address the social determinants of health and wellbeing amongst marginalised populations that are relevant to this review include:

- avoid focusing on the individual attributes and behaviours of those who are socially excluded
- focus on actions across the social gradient in health that are proportionate to need, rather than the gap in health between the most- and least-disadvantaged groups
- focus actions on releasing capacity within organisations, professional groups and disadvantaged groups to achieve long-term improvements in resilience and how those who are socially excluded are able to live their lives
- empower disadvantaged groups in their relationships with societal systems with which they have contact. (Marmot, 2013, p. 17)

These recommendations support earlier work on addressing health inequalities. Policy mechanisms, such as progressive taxation, home ownership, business regulation, and the way welfare benefits are distributed and healthcare is funded, have all been associated with reduced health inequalities

(Woodward & Kawachi, 2000). Generally speaking, universal (whole population) policy measures have been shown to be more effective at reducing health inequalities within the whole population (Korpi & Palme, 1998; Peres et al., 2009). However, targeted initiatives are essential in improving the health status of vulnerable and marginalised population groups, proportional to need.

It is apparent that people with a mental illness are largely invisible within national and global strategies such as those mentioned above, even though various other vulnerable populations, such as children living in poverty, are commonly identified. People with SMI “are not mentioned among the vulnerable groups even though they represent a particularly vulnerable, disadvantaged socio-economic group.” (Burti et al., 2013, p. 115) This lack of visibility as a priority group with legitimate high needs is clearly problematic in terms of improving health outcomes. This is supported by De Hert, Cohen et al. (2011) who suggest that people with an SMI must be identified by governments as a group with significant health risks and disparity in healthcare access and treatment before the problem can be effectively addressed.

In looking more specifically at improving health outcomes amongst people with SMI, Campion et al. (2013) argue that increased investment in early intervention, public health campaigns that address the stigma associated with mental illness and encourage early recognition and help-seeking, and better access to health services, are strategies that could reduce the impact of socio-economic inequalities faced by people with SMI. They conclude: “Addressing the inequalities that lead to and arise from mental disorders is a key part of a sustainable mental health strategy; it is also a key part of the work of healthcare professionals in primary and secondary care, and of their colleagues in other professions such as public health and government.” (Campion et al., 2013, p. 184)

Smoke-free policy

The New Zealand tobacco control programme provides an example of how legislation and regulation can improve population health outcomes as part of a comprehensive public health programme. The introduction of legislation for smoke-free workplaces in 1990 was a key component of the tobacco programme. Increasing the cost of tobacco has also been shown to be effective in motivating people who smoke to quit (Bambra et al., 2009). Overall, tobacco control policy in New Zealand has been associated with a significant drop in smoking rates in the general population from approximately 25 per cent during the 1980s to less than 18 per cent in 2011 (Ministry of Health, 2012c), although prevalence remains relatively high amongst some groups, particularly Māori adults and people with SMI. The tobacco programme has probably reduced smoking prevalence amongst people with SMI, but prevalence is still substantially higher than for the general population (Wheeler et al., 2013).

As highlighted previously, a number of district health boards in New Zealand may not have fully implemented smoke-free policies within mental health and addiction services. Barriers to full implementation within mental health services have included exemptions in smoke-free policies for various reasons, resistance from staff who are smokers, poor knowledge of nicotine dependence, smoking-related harm and comorbidities, and lack of knowledge and skills regarding cessation-support options (Glover et al., 2013).

Yet some studies indicate that smoke-free mental health facilities can improve outcomes for service users and staff, with a reduction in violent incidents, suicide-related acts and the incidence of self-harm, as well as discharges against medical advice (Moss et al., 2010; Olivier et al., 2007). These studies indicated that partial bans are less effective than total smoke-free policies in achieving smoking cessation and can prove disruptive to staff and patients.

Alcohol and other drugs policy

Sellman et al. (2012) have identified the five most effective policy measures for reducing alcohol-related harm that are supported by good international evidence (including NICE¹⁷). These are:

- raise alcohol prices
- raise the purchase age
- reduce alcohol accessibility
- reduce advertising and sponsorship
- increase drink-driving countermeasures.

Pricing policies, such as a minimum price per unit, have been shown to be effective in modifying drinking behaviour, including a reduction in consumption (Bambra et al., 2009). A systematic review of over 100 studies that examined the relationship between alcohol prices, and sales or self-reported drinking, concluded that there was an inverse relationship between alcohol prices or taxes, and drinking (Wagenaar et al., 2009). Overall, policies that regulate the environment in which alcohol is marketed (e.g. economic and physical availability) have been shown to be effective strategies to reduce harm (Anderson et al., 2009; Martineau et al., 2013; World Health Organization, 2011).

One review of illicit drug policy found that drug supply control policies could result in a reduction in drug initiation due to higher drug prices, but that these impacts may not be sustainable (Strang et al., 2012). Moreover, in relation to legislative policy, it was identified that wide-scale arrests and imprisonments (and the introduction of tougher sanctions) had restricted success in reducing levels of drug use. In contrast, there is a growing body of evidence that immediate and brief sentences, alongside drug testing of individuals who are under criminal justice supervision, and dedicated alcohol and drug treatment courts (Brown, 2010; Belenko, 2001, 1999) are effective in reducing levels of drug use and subsequent offending (Strang et al., 2012).

Needle exchange programmes are a clinical intervention targeted at injecting drug users (Handiside, 2004; Strang et al., 2012), which provide sterile needles and syringes, sometimes in exchange for used equipment. These programmes have been in place in New Zealand since the early 1980s as a central component of HIV and AIDS prevention policy. One international review concluded that these programmes are effective in reducing HIV infection among injecting drug users, and that they do not

¹⁷ National Institute for Clinical Excellence (UK).

increase either illicit or injecting drug use (Wodak & Cooney, 2005). However, no evidence was found that they reduce hepatitis C infections.

Healthcare service delivery

While the scope of this review does not extend to clinical interventions and treatment, it is worth making the point that early intervention in psychosis (EIP) services are an important mental health service response for improving the long-term health outcomes of people with SMI. Indeed, early intervention services which assist young people to manage the weight gain associated with psychotropic medication have been found to improve physical health outcomes amongst this group (Curtis, Newall & Samaras, 2012).

The issue of whether these types of services are cost-effective or save money has been debated in the literature, and the evidence is not conclusive. McCrone, Singh, Knapp et al. (2013), using a decision tree-based model and populating it with data from the UK National Health Service, concluded that early intervention in psychosis services delivered cost savings of £4,814 per patient compared to care provided by generic Child and Adolescent Mental Health Services due to reduced length of hospital admissions. However a systematic review assessing the cost of EIP (Amos, 2012) found no evidence to support the claim that EIP services reduce costs or achieve cost-effectiveness. This finding was related to the quality of the available evidence. The research did however indicate that cost differences may be greater early in treatment for patients with more severe illnesses.

The Gluckman Report (Office of the Prime Minister's Science Advisory Committee, 2011) brought together a large body of evidence, which highlighted the importance of a life-course perspective, with a focus on early intervention. These findings are reflected in *Rising to the Challenge* (Ministry of Health, 2012a, p. 27), which identifies early intervention in psychosis as one of eight government priorities for mental health services. District health boards are asked to reprioritise or apply demographic funding to develop new early intervention services where there are gaps.

Shared care between primary and secondary care services

The need for a more collaborative approach between primary and secondary care in supporting improvements in the physical health of people with SMI and/or addiction has been widely discussed, and service integration continues to be a key component of health policy direction in New Zealand. This is reflected in *Rising to the Challenge* (Ministry of Health, 2012a) and *Better, Sooner, More Convenient Healthcare in the Community* (Ministry of Health, 2011a). As well as providing potential health benefits for individuals with SMI and/or addiction, it has been argued that better collaboration between sectors can provide economic benefits through more appropriate use of health services by this patient group (Ministerial Advisory Committee on Mental Health, 2011), although there may be additional costs in the short-term (Samele et al., 2006).

As part of the government's *Better, Sooner, More Convenient* policy (Ministry of Health, 2011a), the integration of a range of primary and secondary healthcare services was trialled in sites around New Zealand during 2010. Five demonstration sites were established for the Primary/Secondary Mental

Health Integration Project. The final report on these projects (Ministry of Health, 2011b) identified key learnings of relevance to the integration project.

The aim of the demonstration sites was to showcase initiatives on:

- sharing electronic notes
- providing specialist mental health telephone advice to GPs
- more comprehensively integrating primary and secondary mental health and alcohol and other drug treatment services.

The report identifies key learnings from this project (Ministry of Health, 2011b); primarily that there needs to be strong local support from both primary and secondary services, from the initial planning stages through to implementation. For the demonstration sites that were deemed to be most successful, there was a strong project champion who drove the project and addressed problems and issues as they arose.

Concerns about physical health are often the motivating factor for individuals to engage in substance use treatment (Keaney et al., 2011), and it has been reported that people with an addiction are more likely to attend primary care services because of chronic health problems, compared with individuals who do not have an identified addiction (Proude et al., 2006). This supports the argument for shared care across mental health services, addiction services and primary care, to enable access to appropriate care from a number of entry points.

Yet while integrated care models are considered promising with regard to improving the physical healthcare of people with SMI and/or addiction, there have been limited rigorous evaluations of their outcomes (Reilly et al., 2013), and the need for further research has been highlighted (Bradford et al., 2013).

There are many models of integrated care that seek to develop closer working relationships between primary care and specialist mental healthcare (Reilly et al., 2013). In some cases, this entails GPs taking responsibility for the physical healthcare of patients, while maintaining regular contact with mental health service providers (Lawrence & Kisely, 2010). Other examples include the co-location of primary and secondary health services (Druss et al., 2001; Friedmann et al., 2003; Lawrence & Kisely, 2010; Vreeland, 2007); the involvement of mental health nurses in physical health service delivery (Vreeland, 2007); and GPs visiting acute inpatient mental health wards to monitor and treat physical health problems (Welthagen et al., 2004). Alternatively, case managers or link workers may be appointed to liaise between services and organise overall care for the patient (Lawrence & Kisely, 2010; Vreeland, 2007; Byng et al., 2004), or primary care staff may provide on-site services at mental health clinics.

A review of randomised controlled trials of integrated models of healthcare delivery found that some studies had mental health settings as the central point of care, with general medical services either co-located within these, or with nurse care managers placed within the mental health service (Bradford et al., 2013).

Druss et al. (2006) identify a continuum of approaches, based on the level of involvement of primary care providers. They note that at one end of the spectrum are models where mental health staff are trained to provide screening and other routine medical services for people with SMI. At the other end of the spectrum, facilitated referrals to primary care may offer a pragmatic approach for providing general medical care while a person is being treated by specialist mental health or addiction services.

A review of interventions integrating physical and mental healthcare for people with SMI (Bradford et al., 2013) identified a small number of randomised controlled trials (n=4). Results were mixed, with positive effects identified in relation to increased rates of immunisation and screening for cancer and cardiovascular disease. However, there were inconsistent findings with regard to physical functioning, with two studies demonstrating small improvements in the physical health component and two that did not. In addition, none investigated disease-specific outcomes, or clinical outcomes related to preventive care.

A study from the US identified that while the provision of healthcare alongside drug treatment programmes may improve treatment outcomes, there may not be an associated improvement in physical health status for people with an addiction (Friedmann et al., 2003).

A systematic review of interventions designed to improve the general medical care of people with SMI or an addiction identified six randomised trials spanning a range of approaches: two trials were focused on people with SMI, and four on populations with addiction (Druss & von Esenwein, 2006a). They included team-based interventions, on-site medical consultation, and models of care involving referrals to primary care settings. Five of the six studies identified a significant improvement in the “primary care linkage”¹⁸ as a result of the intervention, and all of the studies that assessed the quality of primary care reported a significant improvement in the intervention group. This included increased rates of diagnosis of some common medical problems, improved care and treatment of target health conditions, and improved performance in relation to process measures.

In their review of the effectiveness of interventions to improve the physical health of people with SMI, Samele et al. (2006) concluded that there were promising findings regarding the benefits of an integrated approach, with some interventions showing positive results within a fairly short timeframe. Noted benefits included improvements in access to primary care services, improved physical health, and delivery of preventative measures; these have also been reported elsewhere (Lawrence & Kisely, 2010). It should be noted, however, that these findings relied heavily on a randomised trial from the US (Druss et al., 2001), which involved patients from a Veterans Affairs mental health clinic, and thus the generalisability of the findings is not known. The authors noted that such interventions rely on patients being in regular contact with mental health services. Other barriers to an integrated strategy,

¹⁸ Linkage with primary care was defined as “one or more appointments with a general medical provider”. (Druss & von Esenwein, 2006a, p. 148).

particularly in New Zealand, include financial constraints due to the fees associated with primary care and transport difficulties (Wheeler et al., 2014).

Ensuring that integrated care models are tailored to local needs and capacities is likely to facilitate better outcomes (Druss & von Esenwein, 2006a).

An Australian systematic review of service linkages in primary mental healthcare found that the following actions would be needed to embed linkages:

- have relevant institutions endorse the need for linked services in primary mental healthcare
- develop leadership in mental health and primary care to facilitate change
- have planning and accountability at a regional level, such as through primary healthcare organisations
- promote bottom-up models of clinical collaboration
- build workforce capacity to meet competency standards in collaborative mental healthcare
- collect and report on data that indicates the benefits of integrated primary mental health services
- promote the involvement of consumers at the centre of care, around which services collaborate (Fuller et al., 2009, p. 37).

It has been argued that the most comprehensive physical care occurs where the primary care organisation has a key role in the mental healthcare of the individual (Lawrence, 2003). This argument and other factors have supported the development of primary mental healthcare services in New Zealand since 2005, and a range of models have been developed around the country (Dowell et al., 2009). While primary mental health services mainly address mild-to-moderate, common mental health conditions, they do confirm that primary care providers can and do successfully respond to mental health problems across the spectrum of severity, and provided examples of effective interdisciplinary teamwork.

A programme evaluation of one New Zealand service that aimed to provide effective mental healthcare in a primary care setting demonstrated positive results (Rodenburg et al., 2004). The service was for people who had been predominantly cared for by specialist mental health services, and found that patients reported no deterioration in their clinical condition while under the care of their GP, and were largely satisfied with the quality of care. What was noted in this study was that the provision of generalist care was able to address both physical and mental health needs. This was seen as a positive feature of the scheme and a key benefit of GP involvement. The majority of patients referred to the scheme had severe physical health needs. The evaluation report also noted the importance of involving patients in the design, implementation and governance of the new programme, as well as in the evaluation.

Assessment and monitoring of physical health

Physical health assessment and monitoring may take many forms; however, the main aim is to gather information, which can then be used in the treatment or prevention of a physical health problem

(Tosh et al., 2010). For example, when people enter drug treatment or mental health inpatient services, they may undertake a physical health assessment, and the person's health can then be monitored, based on the initial assessment.

It has been suggested that this should involve assessment of BMI and waist circumference, blood pressure, lipid profiles, screening for diabetes, as well as dental and eye health checks (Robson & Gray, 2007; Tosh et al., 2010). This has the potential to not only identify current and future health problems (Montejo, 2010), thus improving the quality of life for patients with SMI, but also provide economic benefits, due to the possibility of reduced dependence on health services (Tosh et al., 2010). Physical health screening programmes can be undertaken in a range of settings, and findings from some research have suggested that they are accepted by people with SMI (De Hert, Cohen et al., 2011). This is discussed further below.

The evidence is mixed, however, with regard to the efficacy of structured health assessment tools. The authors of a systematic review of lifestyle interventions concluded that there was insufficient evidence to support the effectiveness of health assessments of people with schizophrenia in improving physical health (Samele et al., 2006). Similarly, despite the development of guidelines encouraging the monitoring of physical health of patients with SMI, a Cochrane review of controlled trials, which explored the effectiveness of physical health monitoring, found no relevant randomised trials (Tosh et al., 2010). However, the authors of that review noted that this does not mean assessment and monitoring cannot improve the physical health status of people with SMI. Reports on one physical health monitoring programme¹⁹ delivered in a psychiatric hospital in Belgium found that patients were accepting of the programme, and most were keen to discuss their results. Furthermore, data collected identified high rates of metabolic abnormalities. Collins et al. (2012) also provided some evidence that assessment tools can be effective in identifying the unmet physical health needs of people with SMI.

De Hert, Cohen et al. (2011) argue that follow-up monitoring of patients with SMI should be undertaken at appropriate intervals, with others highlighting the need for a coordinated approach to systematic monitoring (Montejo, 2010). Robson and Gray (2007) reported that there is no consensus regarding the nature and frequency of monitoring and assessment procedures; however, they highlighted the existence of guidelines (e.g. from NICE) to inform practice. The need for appropriate mechanisms for referring patients with abnormal findings has also been highlighted (Vreeland, 2007). Again, a lack of training and education of health professionals in relation to physical health monitoring for people with SMI may contribute to their poorer physical health (Montejo, 2010;

¹⁹ This involved a screening and monitoring protocol, which stipulated that all patients undergo: a baseline screening for metabolic syndrome/metabolic risk factors; weight, BMI calculation and waist circumference measurement; monitoring of dyslipidaemia, metabolic syndrome and glucose abnormalities. Results of all patients were reviewed by a psychiatrist and GP, and treatment advice provided to the treating physician. Patients could also be referred to a centralised lifestyle programme (De Hert et al., 2010).

Robson & Gray, 2007). This can be addressed through training mental health professionals in physical health monitoring or by providing proactive linkage to primary care providers.

New Zealand examples

A metabolic monitoring project managed between Mosgiel Health Centre Primary Mental Health and Otago DHB community mental health teams has been reported on by Southland District Health Board (Maxwell, 2009). This was a nurse-led collaboration to address the physical health of service users who had been prescribed antipsychotic medication and were therefore at risk of developing metabolic syndrome. People were identified by the mental health team and invited to participate in a health assessment with their primary care team. A nursing care plan was then developed in collaboration with the individual. Other physical health issues, such as respiratory problems, were also addressed through, for example, smoking cessation advice, green prescription, and advice on diet or referral to a dietician.

Of the 14 individuals assessed for metabolic monitoring, none had had a previous health assessment of their metabolic syndrome. Eleven out of the 14 service users met the criteria for metabolic syndrome. All had a waist circumference above the recommendation, and at least two other risk factors, with the most common one being high cholesterol. Following the assessment, six of the 11 service users were referred back to their GP for other physical health problems, for example, cardiovascular risk, risk of hepatitis C, and unexplained weight loss.

The funding for the health assessments was found for eight of the 14 services users from Careplus, because they had one or more chronic health conditions (<http://www.moh.govt.nz>). This subsidised the annual costs by \$17, leaving the individual to pay \$3 for the year, which included 3-monthly review visits for their chronic health condition, and baseline observations such as weight and blood pressure. The other five people who were not eligible for Careplus funding were not charged for their assessment.

A similar monitoring programme was instigated within Compass Health general practices in Wellington (Kyle, 2011). Careplus funding was also utilised to provide heavily subsidised or free health assessments to enrolled patients who were prescribed anti-psychotics. The general practices already had an established liaison programme with secondary mental health services to manage people with a mental illness who were stable. An audit of antipsychotics and metabolic monitoring was instigated in 2009. This involved auditing enrolled patient data to identify all those currently prescribed antipsychotics and identifying the date of their last metabolic test. Individuals were offered a free health assessment as required. The antipsychotic monitoring was based on the recommended best practice developed by the New Zealand Mental Health Metabolic Working Group (2008). In total, 440 people were identified, covering 13 general practices. Ages ranged between 10 and 98 years, with the majority (85 per cent) on atypical antipsychotics. Over half of these individuals were found to have received less than four of the 10 recommended tests for metabolic monitoring in the past, with 75 of them having no records of any tests for metabolic monitoring.

The findings from this audit were used to make a number of improvements within the practice, including regular auditing of patients on antipsychotics and the instigation of ‘free to patient’ annual health checks, continuing professional education for practice nurses and GPs on metabolic monitoring, and new templates within Medtec to improve recording of tests. The audit was used to demonstrate the role of primary care in supporting people with mental illness and addiction, particularly in managing long-term conditions.

Clinical guidelines

Citrome and Yeoman (2005) reviewed UK and US guidelines for the management of people with SMI, as a means of identifying optimal information in relation to their physical wellbeing, and to make recommendations for future improvements. Within the UK, five guidelines were identified, alongside other sources of practical guidance, with the 2002 NICE Clinical Guideline (CG1) considered the most comprehensive. This document identifies primary care (and the GP) as having responsibility for the physical health of people with schizophrenia, including regular assessments of physical health status. NICE guidance for the treatment and management of psychosis and schizophrenia has since been updated (NICE, 2014). A number of US guidelines for schizophrenia and monitoring metabolic parameters were identified; these contained specific guidance on what should be monitored and how often. The review noted that the existence of guidelines does not guarantee their routine implementation.

In New Zealand, guidance on metabolic monitoring, and interventions for managing metabolic complications associated with antipsychotic use and schizophrenia, has been developed by the New Zealand Mental Health Metabolic Working Group, which developed a consensus statement first published in 2006 and revised in 2008. The guidance focuses on prevention and relies on mental health service users being linked in with primary care services, and provides the following advice, in summary:

- mental health service users should be linked in with primary healthcare services
- the choice of antipsychotic medication should be determined following a careful risk–benefit assessment; the benefits of medication in treating the psychotic illness can be more beneficial than the potential side-effects
- all mental health service users treated with antipsychotic medications should be monitored for metabolic and other complications
- information packages should be provided to service users that discuss:
 - medication side-effects
 - symptoms of metabolic complications
 - healthy eating
 - regular exercise programmes
- access to smoking cessation programmes is encouraged
- inpatient services may consider dietary changes to minimise foods that are rich in saturated fats, and have a high glycemic index and low fibre content

- access to exercise and activity programmes within inpatient units may help to improve sedentary lifestyles
- mental health services should discourage the use of vending machines that sell cigarettes and junk food, which is rich in saturated fats and with high sugar content.

The guideline also provides evidence-based monitoring recommendations for antipsychotic medication, and a detailed ranked metabolic evidence summary, for mental health professionals.

Individual behaviour change interventions

International evidence

There is a large body of international literature that focuses on wellbeing interventions as a way of improving the physical health of people with SMI through behaviour change (Bradshaw et al., 2005; Cabassa et al., 2010; Chacón et al., 2011). In many cases, these interventions focus on modifiable risk factors – nutrition, physical activity and smoking cessation. Recent reviews indicate that these types of interventions can be effective in facilitating positive changes, and in improving the overall physical health of people with SMI (Bradshaw et al., 2005; Cabassa et al., 2010; Happell et al., 2012; Roberts & Bailey, 2011).

General advice about physical health may be delivered to people with SMI via educational programmes, and incorporate health promotion goals and change strategies (Muir-Cochrane, 2006). A Cochrane review on the effects of general physical health advice on morbidity, mortality, and improving or maintaining quality of life in people with SMI identified six²⁰ randomised clinical trials. These were conducted in a range of settings, including community health teams, primary care, supported accommodation and a crisis residential unit. The delivery of the general physical health advice varied. For example, one intervention involved participants receiving six semi-structured health promotion sessions, and another involved a one-year programme focused on overall wellness. In terms of outcomes, a range of different measures were adopted across the studies, which made comparative analysis difficult. Overall, the authors concluded that there is some “limited and poor quality” evidence that the provision of this type of advice can improve health-related quality of life as it relates to mental (not physical) health. None of the findings supported the notion that physical healthcare advice has a strong effect on physical healthcare behaviour or likelihood of ill health. They also suggest that clinicians may be spending much time and effort on providing ineffective advice (Tosh et al., 2011).

A Cochrane review of interventions to reduce weight gain associated with schizophrenia (Faulkner et al., 2010) found that both pharmacological and non-pharmacological interventions could be effective. Studies included in the review pointed to the need for realistic goal setting, structure, intensive personal support initially, and continued support over time. Intervention components should include

²⁰ Only five studies provided data to enable comparisons between physical health advice and standard care.

reduced caloric intake such as through reduced portion sizes rather than complex dietary change, supported by environmental change such as removal of 'junk food' vending machines and better access to fruit and vegetables. A gradual increase in levels of physical activity, building up to 30-60 minutes of moderate physical activity most days of the week was recommended. Cognitive-behavioural strategies tailored to this population needed to be further developed and evaluated.

De Hert, Cohen et al., (2011) note that physical activity can improve metabolic health status even when not accompanied by weight loss, and that it can be effective in improving the cardio-metabolic risk profile amongst people with schizophrenia; evidence which has been supported by other reviews (Gorczynski & Faulkner, 2010). They advise that people with SMI should be encouraged to engage in at least half-an-hour of moderately vigorous activity most days (De Hert, Cohen et al., 2011).

Programmes involving interpersonal interactions and the use of repetition may be more effective if they incorporate follow-up and reinforcement, as well as group discussions (Muir-Cochrane, 2006).

A systematic review of the international literature on health behaviour interventions found that the most commonly targeted behaviour was weight management, which predominantly involved weight loss via changes in nutrition or physical activity (Happell et al., 2012). Other interventions focussed on smoking cessation, physical activity and alcohol use, with a small number concerned solely with nutrition. Overall, the authors concluded that such interventions show "great promise" in relation to improving the physical health status of people with SMI, with programmes reporting positive changes across all of the targeted health behaviours (although the effectiveness of nutrition programmes in influencing dietary habits was considered unclear). The most popular form of intervention was group-based programmes, which showed a high success rate, and those concerned with weight management reported significant improvements in relation to body weight and BMI, as well as physical activity and nutrition.

Other research has identified that behavioural interventions for weight management can be effective and cost-efficient, particularly when provided during the early stages of antipsychotic treatment (Álvarez-Jiménez, Hetrick et al., 2008; Roberts & Bailey, 2011, Curtis et al., 2012), although it should be noted that, in many cases, the longer-term effects of these types of programmes are not known (Kemp et al., 2009).

Kemp et al. (2009) report that weight loss interventions that incorporate dietary guidelines and physical activity show promise, alongside innovative (e.g. incorporate recreational activities) and flexible (i.e. tailored to individuals) programmes. Interventions that develop therapeutic alliance, capitalise on psychosocial benefits, and promote achievable outcome targets may also have greater success in achieving positive outcomes (Kemp et al., 2009).

Recommendations for successful behaviour change interventions have been comprehensively described by NICE (2014). Of relevance in designing interventions for people with SMI are

- Ensure organisational policies, strategies, resources and training all support behaviour change

- Plan behaviour change interventions and programmes taking local needs into account
- Develop acceptable, practical and sustainable behaviour change interventions
- Use proven behaviour change techniques when designing interventions
- Ensure interventions meet individual needs
- Ensure behaviour change is maintained for at least a year
- Evaluate behaviour change interventions.

New Zealand evidence

A systematic review of effective evidence-based behaviour change theories and programmes for people with chronic health conditions undertaken by the New Zealand Guidelines Group (2012) found that no one particular theory or programme had been proven to be consistently superior in bringing about health behaviour change amongst this population. While the group under scrutiny did not specifically include people with SMI, the results are relevant. Evidence was appraised for health behaviour change in people with diabetes, chronic obstructive pulmonary disease, asthma, stroke and hypertension, in relation to behaviour change outcomes, such as increased physical activity, improved nutrition and weight management, managing blood pressure and other important outcomes for many people with SMI.

The review concluded that social learning theory was the most commonly used and effective health behaviour change theory, and was found to be effective across a number of chronic conditions and in a mixed patient group. Motivational interviewing was also found to be effective for several chronic conditions. Cognitive behaviour therapy, the trans-theoretical model and self-regulation were also found to be successful for particular conditions.

Key findings from a review of case studies undertaken as part of the New Zealand Guidelines Group review identified critical features for the successful implementation and sustainability of health behaviour change programmes, as follows (New Zealand Guidelines Group, 2012, p. 11).

- A properly-resourced governance structure that includes broad representation of the funder, primary and secondary care providers, facilitators of the interventions, and the community from which participants will be drawn, is essential.
- Clinical champions who can publicise and support new programmes are crucially important, but champions alone cannot systematise new models of care unless they are supported by an effective governance structure, which itself is adequately resourced and supported operationally.
- In forming alliances between organisations to implement self-management programmes, it is important in the early phases to choose those partners with a clear strategic outlook and a visible commitment to change models of care.
- Early and extensive consultation with clinical leaders among the referrer community (e.g. GPs and primary health organisations) is needed before the intervention commences, so that they are able to support its implementation, understand and trust the programme, and refer individuals.

- It is crucial to pay attention to referral processes to assist GPs and other providers to refer patients without disrupting their work flow. Priority should be placed on integrating referral functionality into patient management software. In addition, communication back to referrers documenting how patients have achieved their self-management goals is a motivator for further referrals.
- Even though improved health behaviours may, of themselves be simple, coaching individuals in them is skilled work. Interventions cannot rely on volunteer labour. In all cases culturally-appropriate, well-selected, well-trained and well-supported facilitators are required. Ongoing training and support must be included for facilitators.
- Information for participants should be well-designed and available in the participants' native languages wherever possible. The communities from which participants are being sought should be actively involved, at governance level, as champions of the programmes or as leaders at the venues where the interventions are delivered.
- Interventions should be delivered in accessible and culturally-appropriate locations, such as marae or community halls.

The quality of evidence regarding behavioural interventions

A recent review by NICE identified significant gaps in evidence for individual behaviour change techniques, including how to deal with multiple behaviours; the relationship between practitioner training, subsequent competencies and behaviour change interventions; and how theoretical accounts of behaviour change can be used to guide behaviour change interventions (NICE, 2014, p. 70).

Not surprisingly, there are also quality issues relating to behavioural intervention studies for people with SMI, including a lack of rigour in some studies (Bradshaw et al., 2005). Given the variability in study design, there are challenges in identifying the most beneficial interventions (Cabassa et al., 2010; Happell et al., 2012; Roberts & Bailey, 2011) and specific beneficial features of these. Moreover, while there are many examples of physical activity interventions, including both within New Zealand and internationally, only a small number have been evaluated with published results (Grueber, 2013). Kemp et al. (2009) also discuss the methodological challenges common to behavioural interventions, including the difficulty in recruiting people with SMI to randomised controlled trials, due to distrust of the process and reluctance to participate if not selected for the intervention group. Another review, which assessed the methodological quality of research in this field, highlighted the “serious under-representation” of individuals from minority ethnic populations within intervention studies, and the dominance of small, single-site trials with small samples (Cabassa et al., 2010).

Features of promising behavioural change interventions

While there are some challenges in identifying common features of promising behavioural change interventions for people with SMI, a number of common principles have been identified in programmes, which have been shown to be effective or show promise. These are:

- build on existing, and promote further, therapeutic alliance

- incorporate both cognitive and behavioural strategies; combine exercise, dietary counselling and health promotion
- have realistic or modest outcome targets
- be flexible in accommodating individual needs and differences
- be long-term and provide ongoing support beyond the initial intervention
- include a group or social component
- acknowledge and take into account possible barriers faced by people with SMI in participating in such programmes
- have a peer support component, alongside staff support and active participation (Kemp et al., 2009; Roberts & Bailey, 2011).

Nutrition and physical activity interventions

A recent Cochrane review identified components of relatively successful behaviour change programmes that may be transferable to programmes for people with SMI (Richards et al., 2013). This review of face-to-face interventions for promoting physical activity compared the effectiveness of different kinds of interventions amongst community dwelling adults living in high-income countries. A total of 10 studies, recruiting 6,292 subjects, met the inclusion criteria. The findings indicated that interventions that offered personal counselling and advice, with choices of exercise, were more likely to be successful. Outcomes were better if the intervention comprised a specified type of physical activity and was supervised by a non-health professional, using a combination of group and individual approaches.

The following examples of weight management programmes have been reported to be effective in facilitating weight loss for people with SMI

- The Healthy Living programme (Vreeland et al., 2003) was a 12-month intervention designed to help people with SMI make long-term lifestyle and behavioural changes. It consisted of four phases: assessment; 12-week weight control programme, with twice-weekly group meetings and one individual session per week; 12-week (less intensive) weight control phase, with a weekly group meeting and one individual session per month; and a 6-month weight-maintenance phase, with a weekly group meeting and one individual session per month. At 12 months, the intervention group had a mean weight loss of 3kg, decreased BMI, and improvements in exercise levels, blood pressure, and nutrition knowledge. In comparison, the control group had a mean weight gain of 3.2kg, and increased BMI (Vreeland, 2007).
- The Solutions for Wellness programme (Littrell et al., 2003) is a manualised, psycho-educational programme specifically designed for people with mental illness, consisting of two patient workbooks, which promoted nutrition, exercise and healthy lifestyle habits. Participants attended a 1-hour weekly class for 4 months, and also received weekly reminder letters and other encouragement to attend class. Evaluation of the programme showed significant differences in weight change between the control and intervention group, and an

overall compliance rate of 92 per cent amongst participants in the programme (Vreeland, 2007).

- Keeping the Body in Mind in New South Wales, Australia, is a multidisciplinary team approach to the management and prevention of poor metabolic health, involving liaison between the psychiatrist, a GP, dietician and, where available, an occupational therapist, and a structured exercise programme (Curtis et al., 2012). The service is for young people (aged 15 to 25 years) with first episode psychosis, who are highly susceptible to clinically significant weight gain during the first 12 weeks of antipsychotic treatment. The health of this group was compared with a similar cohort of young people from a Sydney early intervention service with treatment as usual, i.e. no lifestyle programme accompanying antipsychotic prescribing. The study found that this intensive lifestyle intervention prevented weight gain in the intervention group (with a non-significant weight gain after 12 weeks of intervention), compared with the treatment as usual group, which had an average 7kg weight gain after 12 weeks of entry. There was also no waist circumference increase in the intervention group, compared with a significant increase in the treatment-as-usual group (J. Curtis, personal communication, March 2014).

One review of the US literature (Cabassa et al., 2010) focused on interventions for people with SMI that targeted weight management, exercise, health promotion and self-management activities. The authors found that, of the 23 studies identified and reviewed, just over half targeted people with schizophrenia. Intervention sites included a range of treatment settings, such as outpatient clinics, day programmes, etc. The interventions reported on ranged in duration from 30 minutes to 1 year, and featured both individual sessions and groups formats (some were a combination of both). They were delivered by a range of staff, including health clinicians, as well as fitness instructors and case managers. In terms of specific outcomes, the review identified that:

- 10 of 18 studies reported statistically significant weight loss findings (three of the randomised controlled trials did not)
- 13 studies assessed the efficacy of lifestyle interventions in improving risk factors for metabolic syndrome: seven of these reported statistically significant improvements on at least one of the risk factors investigated
- improvements were based on existing general population lifestyle interventions, which had been adapted for SMI patients. All used a group structure, or combined group and individual sessions, and most incorporated dietary counselling, and a light-to-moderate level of physical activity. In addition, they used behaviour techniques, such as goal setting and self-monitoring.

Overall, the authors concluded that people with SMI may benefit from lifestyle interventions, albeit to a lesser degree than their general population counterparts.

Others have argued that there is a lack of data examining differences in health outcomes between people with SMI and those without mental illness following an intervention (Happell et al., 2012). As previously noted, people with SMI are likely to face different barriers and motivators with regard to

health behaviour change, and these need to be considered in the design and implementation of such programmes. In their review of the evidence, Roberts and Bailey (2011) reported that barriers to engaging people with SMI are linked to the symptoms of mental illness and treatment effects. This includes, for example, low self-esteem and confidence, as well as sedation and weight gain. People with SMI may also consider that physical health problems are secondary to other day-to-day concerns, want to keep physical health issues separate from mental health problems, or fear being subjected to coercive treatment if they disclose information about their physical health (Kemp et al., 2009).

Factors that encourage people with SMI to participate in wellbeing interventions include peer and staff support. Staff who are encouraging and motivating, exhibit a positive attitude, and take part in activities alongside the client group, further promote engagement. However, one study indicated that group-based interventions are not always as effective as one-on-one support (Roberts & Bailey, 2011).

Research on the role of peer supporters was included in this review. Kemp et al. (2009) discussed the Peer Advocacy and Support Service in Australia, which involves paid peer support to assist people with their physical health needs. Despite being a small trial, it was reported that the service helped people to set goals addressing issues such as weight loss, smoking, diet and level of physical activity.

A review summarising nutrition and mental health research in Australia and New Zealand between 1986 and 2006 (Porter & Evans, 2008) found that dietitians are well positioned to lead and participate in mental health research, and to implement research findings to improve the nutritional status of people with SMI. It has been reported that despite the small number of New Zealand dietitians working in mental health services, many dietitians practise in a range of mental health settings, including within hospitals and the community. Results from interventions that were identified as addressing physical health issues included: two that focused on increasing physical activity levels (one was unsuccessful in its implementation and the other was limited by a small sample size); and two aimed at improving food skills via shopping and budgeting education (these showed promising results, but were also limited by small samples). Results from the only randomised controlled trial identified, demonstrated that weight gain due to medication effects was able to be minimised when six dietetic education sessions were delivered over a 3-month period (Porter & Evans, 2008).

A recent review of physical activity interventions for people with SMI identified that a number had been developed in this country, but very few had been evaluated (Grueber, 2013). This supports findings from the call for evidence which was undertaken as part of this project and found only three interventions that had been formally evaluated. Key results of these evaluated interventions are as follows.

- Four Active Life programmes were established in Canterbury, and run across three settings (Christchurch²¹, North Canterbury and Ashburton), over an 18-week period, by a non-

²¹ Two programmes were established in Christchurch.

government mental health organisation (Gawith, 2009). Each programme involved 10 to 15 individuals with mental health problems, who attended weekly 2-hour sessions. These involved physical fitness activities (e.g. spin classes), alongside an education component (e.g. healthy eating). In addition, a Healthy Pacific Lifestyles programme ran over 16 weeks, consisting of weekly physical exercise activities and meetings with guest speakers. An evaluation of the Active Life programmes identified a range of positive results, including weight loss and improvements in relation to BMI, blood pressure, exercise levels, and food choices and nutrition. Moreover, benefits were sustained 4 months after the completion of the programme. Physical health gains were less evident amongst participants in the Healthy Pacific Lifestyles programme, although improvements in relation to blood pressure were identified (Gawith, 2009).

- The Activity Based Experience (ABE) programme is a client-centred, individualised physical activity intervention for people with mental illness, which was delivered by a national non-government provider of community mental health and support services. The duration of the intervention is 3 months, with one session per week. An evaluation of the programme identified no significant changes to physical measurements (blood pressure, body weight) or smoking status. However, levels of self-esteem, mental wellbeing and physical activity showed improvements. Participants in the programme reported several barriers to exercise (e.g. lack of energy), with support required to overcome these. Some participants maintained physical activity following completion of the programme. The evaluation concluded that the programme can play an important part in the recovery of people with SMI, but recommended that the duration, frequency and intensity of the sessions, and assessment tools needed to be reviewed, to enable physical health changes to occur (Grueber, 2013).
- Nurses, along with other health professionals and service users, established and maintained healthy living programmes in two locked forensic mental health units in New Zealand. An illustrative case study of the programmes found that successful implementation depended on involvement of the multidisciplinary team and the involvement of champions. Each programme operated within a different physical environment and adopted its own philosophical approach. The healthy living programmes had an impact on nurses, other staff, and on the culture of the institutions. The authors concluded that to improve implementation of healthy living programmes there is a need to understand the clinical and philosophical contexts in which they are established, particularly across forensic settings, prisons and general mental health units. (Prebble et al., 2011).

Smoking cessation

Reviews focusing on the effectiveness of smoking cessation treatments have concluded that smoking cessation treatments that work in the general population are equally effective amongst people with SMI (Banham & Gilbody, 2010; Bhikha, 2008; De Hert, Cohen et al., 2011), and that the evidence-base for the effectiveness of wellbeing interventions amongst people with schizophrenia is strongest in relation to smoking cessation (Bradshaw et al., 2005). Moreover, there is evidence that such treatment

does not worsen people's mental health, particularly those with less severe mental illness (Banham & Gilbody, 2010; Bradshaw et al., 2005; Happell et al., 2012). As outlined earlier, Taylor et al. (2004) found that smoking cessation actually had a positive impact on mental health, for the general population, as well as for people with a mental illness.

Positive results can be achieved via the introduction of effective, evidence-based programmes that support clients, including motivational interviewing and provision of nicotine replacement therapy (Mental Health Foundation of New Zealand, 2012). The Ministry of Health smoking cessation guidelines (2007) recommend that brief advice is provided to all people who smoke who access mental health services, based on strong evidence that it is effective in helping people to quit. More intensive, evidence-based smoking cessation interventions, such as multi-session support and medication (nicotine replacement therapy), should also be offered. The guidelines note that smoking cessation may affect the metabolism of a number of medications, and recommend that people with SMI who stop smoking while taking medications for their illness should be monitored to assess whether changes in dosage are necessary.

Bhika (2008) noted that combined treatment of mental illness and tobacco addiction is likely to deliver optimal results, given the interlinked nature of these conditions, and highlighted the need to address barriers to stopping smoking amongst people with SMI who smoke, including smoking's use as a tool to facilitate social interaction.

The authors of a systematic review of smoking cessation interventions concluded that an integrated approach to treatment was likely to be more effective in both engaging smokers and facilitating compliance with medication (Clinical Trials Research Unit, University of Auckland, 2008). They also identified that people with SMI would likely benefit from more intensive interventions, including pharmacotherapy and multi-session behavioural support; these findings have been reported elsewhere (Bhikha, 2008). Happell et al. (2012) noted that nicotine replacement therapy was used across all the successful smoking cessation interventions they reviewed.

As outlined earlier, smoking rates amongst people with substance use disorders are very high at 56 per cent (Oakley-Browne et al., 2006), and are even higher amongst those with alcohol dependence at around 80 per cent (Williams & Ziedonis, 2004); the latter group also has higher levels of nicotine dependence. However, there is evidence that people with alcohol problems do not have more problems quitting than smokers without alcohol problems (Ministry of Health, 2007). Smoking cessation can be problematic for a minority of addiction treatment service users and the Ministry of Health's guidelines recommend close monitoring and the provision of intensive support for people with substance use disorders.

There is conflicting evidence regarding whether or not people with a serious drug addiction experience greater difficulty in stopping smoking, compared with smokers who do not use drugs (Clinical Trials Research Unit, University of Auckland, 2008). Concerns have also been raised about the negative impact of smoking cessation interventions on drug treatment outcomes (Doolan & Froelicher, 2006; Sullivan & Covey, 2002). One review found that four of five studies reviewed

reported no detrimental impact on drug or alcohol treatment outcomes amongst study populations; however, a fifth study (which was considered more rigorous) found that there was a significant negative effect (Doolan & Froelicher, 2006). It has been reported that entry to drug treatment may provide an optimum time for the introduction of smoking cessation initiatives, given that many individuals are highly motivated to stop smoking at this period in their life (Sullivan & Covey, 2002).

Overall, the evidence suggests that smoking cessation interventions may be effective in the short-term. A review of clinical trials targeting people with an illicit drug or alcohol addiction (or both) found that short-term rates of smoking cessation were better in the intervention groups; however, long-term follow up (more than 6 months later) consistently showed little differences between groups. The authors concluded that interventions of greater intensity or a longer duration may be needed when working with people with a serious addiction (Doolan & Froelicher, 2006). Similarly, a New Zealand review of the international evidence found that smoking cessation interventions may be effective in the short-term among people with addictions, but that this is not sustained over time (Clinical Trials Research Unit, University of Auckland, 2008).

When considering the characteristics of successful smoking cessation interventions with this population group, one review identified no evidence for specific interventions being more effective, aside from nicotine replacement therapy-based programmes, which may have positive short-term effects (Clinical Trials Research Unit, University of Auckland, 2008). There is some evidence that incentive-based programmes (e.g. where participants receive voucher rewards for maintaining smoking abstinence) may be effective with opioid-dependent populations (Sigmon & Patrick, 2012).

Problematic alcohol and other drug use²²

Screening for alcohol and addiction problems is described by SAMHSA (2013) as a process of identifying patients with possible problems and determining the appropriate course of future action for these individuals. Screening provides healthcare professionals the opportunity to initiate discussions with patients about their alcohol and drug use and to provide intervention as needed.

Brief intervention attempts to increase a person's insight into his or her substance use with the intention of behavioural change. It is provided when the person is identified through screening to be at moderate risk for substance-use problems. Brief intervention "can be provided through a single session or multiple sessions of motivational interventions", which "can be tailored to a particular population or setting. It can be a stand-alone treatment for those at risk or a vehicle for engaging those in need of more intensive levels of care." (SAMHSA, 2013, p. 8)

There is strong evidence that brief advice or brief interventions from GPs and others are one of the most effective interventions for people with hazardous and harmful alcohol use (Anderson et al., 2009;

²² This section considers effective interventions for problematic alcohol and other drug use. It is not a review of the literature on effective treatments for alcohol and drug dependence or significant misuse.

World Health Organization, 2011), and that less intensive interventions can be just as effective as those which are more intensive (Anderson et al., 2009). However, while the evidence suggests that they can have significant effects on drinking behaviour and related problems amongst high-risk drinkers, they are less beneficial for alcohol-dependent individuals (Room et al., 2005). It is worth noting that similar evidence exists in relation to the effectiveness of brief interventions for smoking cessation.

There is a need to ensure that any advice is tailored to the individual patient, and that they receive positive feedback and support. The importance of involving family and caregivers has also been highlighted (De Hert, Cohen et al., 2011).

There is a body of research that has explored physical activity programmes as an adjunct to addiction treatment (Caviness et al., 2013; Lynch et al., 2013; Weinstock et al., 2012; Williams & Streat, 2004). However, physical activity programmes are generally undertaken as a means of addressing drug or alcohol misuse, rather than with the primary aim of improving physical health, although it is recognised that this is likely to be an associated impact. For example, research has shown that increasing alternative substance-free behaviours, such as exercise, may provide other physical benefits, such as a decrease in body fat and an overall improvement in physical fitness (Brown et al., 2010; Weinstock et al., 2012; Zschucke et al., 2012).

Discussion

The New Zealand and international evidence gathered as part of this review has painted a very clear picture – people with SMI and/or addiction are more likely to have physical health problems than the general population, and to die earlier. For those with SMI, problems include obesity and metabolic syndrome, diabetes, cardiovascular disease, respiratory diseases, some cancers, poor oral health and viral diseases. For people with an addiction, health harms vary according to the substance, with alcohol in particular linked to over 60 physical health conditions. The extent of the disparity is very wide, with some conditions several times more prevalent among people with SMI and/or addiction than the general population.

From the limited data available relating to physical health outcomes for people with an addiction in New Zealand, indications are that they are likely to experience worse health outcomes than the general population. With regard to alcohol, Māori are likely to bear more of this burden.

The review has confirmed both that the situation in New Zealand is very similar to other relatively wealthy nations, and that there are many actions that can be taken to improve the situation. While the evidence-base is not strong, there is certainly enough to have informed a number of interventions around New Zealand and elsewhere that are showing positive results.

Attempts are being made around the world to address these inequities. In Europe, the Mental and Physical Health Platform was established in 2008 “with the twofold aim of raising greater awareness of the interplay between mental and physical health, and changing mindsets to address the personal, social and economic consequences of ignoring that interaction.”²³

In the UK, the cross-government mental health outcomes strategy *No Health Without Mental Health* (HM Government, 2011) was launched in 2011, by nearly 30 mental health non-government organisations, peak professional health bodies, universities, the Department of Health, and child and youth organisations. *No Health Without Mental Health* is a comprehensive national strategy outlining a clear, shared vision for mental health, with six primary objectives. Improving the poor physical health of people with mental health problems is one of these objectives, placing the issue high on the national policy agenda.

The areas of action falling out of the six objectives, which are of particular relevance to this issue, are:

- fewer people will experience stigma and discrimination as a result of negative attitudes and behaviours toward people with mental health problems by improving public and professional

²³ Quotation is from a brochure launching the Mental and Physical Health Charter, retrieved 20 April 2014 from http://ec.europa.eu/health/mental_health/eu_compass/policy_recommendations_declarations/mh_charter_action_en.pdf

attitudes and reducing the institutionalised discrimination inherent in many organisations, including support services

- mental health problems will be identified, and interventions made, early across all ages
- fewer people with mental health problems will have poor physical health
- fewer people with mental health problems will die prematurely.

In Australia, the No Mental Health Without Physical Health inquiry by the Ministerial Advisory Committee on Mental Health produced a range of recommendations seeking to address the physical health needs of people with SMI. These included a call to action for the Australian Government to take proactive and sustained action to close the health inequality gap (Ministerial Advisory Committee on Mental Health, 2011).

In June 2013, an international group of psychiatrists launched “a drive to end the global scandal of premature deaths among people suffering from severe mental illness” (Laurence, 2013). Dr David Shiers, co-author of the *Healthy Active Lives (HeAL)* statement, is quoted in the article saying: “The evidence is now clear – weight gain, cardiovascular risk and metabolic disturbance commonly appear early in the course of emerging psychosis and are potentially modifiable. As clinicians, if we dismiss these disturbances as being of secondary to controlling their psychiatric symptoms, we may be inadvertently condoning a first step on a path towards physical health inequalities for these young people. This vulnerable group needs a far more holistic and preventive approach.”

Within the next five years, the HeAL Group want to see that:

- 90 per cent of young people experiencing a first episode of psychosis, and their families or supporters, are satisfied that they made treatment choices informed by an understanding of their risks for future obesity, cardiovascular disease and diabetes
- within a month of starting treatment, 90 per cent have a documented assessment, which includes risks for future obesity, cardiovascular disease and diabetes
- all young people receive a regular review of their medication to minimise the development of complications of obesity, cardiovascular disease and treatment
- 75 per cent gain no more than 7 per cent of their pre-illness weight, two years after starting antipsychotic treatment
- 75 per cent maintain blood glucose, lipid profile and blood pressure within the normal range, two years after initiating antipsychotic treatment
- 90 per cent receive health promotion advice on healthy eating, tobacco and substance use, dental care and sexual health
- fewer than 30 per cent smoke tobacco
- more than 50 per cent engage in appropriate physical activity²⁴.

²⁴ <http://www.thementalelf.net/populations-and-settings/child-and-adolescent/healthy-active-lives-heal-tackling-premature-death-in-young-people-with-psychosis/#sthash.MRHGkP23.dpuf>

This review has confirmed that people with SMI and/or addiction have significant physical health needs and a reduced life expectancy in comparison to the general population. The review has found evidence for the drivers of this disparity, which are multi-faceted. It has also found that although there is less evidence on effective interventions, there is sufficient evidence to inform action at multiple levels. Identifying the disparities is a crucial first step (Nease, 2014), but the most important next step is to involve all those who can effect change, to work together to improve the physical health outcomes of people with a mental illness and/or addiction, and to monitor mortality and morbidity rates on a routine basis to understand the impact of these changes (Cunningham et al., 2014).

References

- Aaltonen, J., Seikkula, J., & Lehtinen, K. (2011). The comprehensive open-dialogue approach in Western Lapland: I. The incidence of non-affective psychosis and prodromal states. *Psychosis: Psychological, Social and Integrative Approaches*, 3(3), 179-191.
- Adamson, S. J., Todd, F., Sellman, D., Huriwai, T., & Porter, J. (2006). Coexisting psychiatric disorders in a New Zealand outpatient alcohol and other drug clinical population. *Australian and New Zealand Journal of Psychiatry*, 40, 164-170.
- Adrian, M., & Barry, S. J. (2003). Physical and mental health problems associated with the use of alcohol and drugs. *Substance Use & Misuse*, 38(11-13), 1575-1614. doi:10.1081/JA-120024230
- Ahern, J., Stuber, J., & Galea, S. (2007). Stigma, discrimination and the health of illicit drug users. *Drug and Alcohol Dependence*, 88(2-3), 188-196. doi:10.1016/j.drugalcdep.2006.10.014
- Alberti, K., Zimmet, P., & Shaw, J. (2005). The metabolic syndrome - a new worldwide definition. *Lancet*, 366, 1059-1062.
- Allison, D. B., Newcomer, J. W., Dunn, A. L., Blumenthal, J. A., Fabricatore, A. N., Daumit, G. L., ... Alpert, J. E. (2009). Obesity among those with mental disorders: A National Institute of Mental Health meeting report. *American Journal of Preventive Medicine*, 36(4), 341-350. doi:10.1016/j.amepre.2008.11.020
- Álvarez-Jiménez, M., Gonzalez-Blanch, C., Crespo-Facorro, B., Hetrick, S., Rodriguez-Sanchez, J. M., Perez-Iglesias, R., & Luis, J. (2008). Antipsychotic-induced weight gain in chronic and first-episode psychotic disorders. *CNS drugs*, 22(7), 547-562.
- Álvarez-Jiménez, M., Hetrick, S. E., González-Blanch, C., Gleeson, J. F., & McGorry, P. D. (2008). Non-pharmacological management of antipsychotic-induced weight gain: Systematic review and meta-analysis of randomised controlled trials. *The British Journal of Psychiatry*, 193(2), 101-107.
- Amos, A. (2012). Assessing the cost of early intervention in psychosis: A systematic review. *Australian and New Zealand Journal of Psychiatry*, 46(8), 719-734.
- Anderson, P., & Baumberg, B. (2006). *Alcohol in Europe*. London: Institute of Alcohol Studies.
- Anderson, P., Chisholm, D., & Fuhr, D. (2009). Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *The Lancet*, 373(9682), 2234-2246.
- Baca, C. T., & Yahne, C. E. (2009). Smoking cessation during substance abuse treatment: What you need to know. *Journal of Substance Abuse Treatment*, 36(2), 205-219.
- Baigent, M. F. (2003). Physical complications of substance abuse: What the psychiatrist needs to know: *Current Opinion in Psychiatry*, 16(3), 291-296. doi:10.1097/01.yco.0000069084.26384.cd
- Bambra, C., Joyce, K. E., & Maryon-Davies, A. (2009). *Strategic review of health inequalities in England post-2010 (Marmot Review). Task Group 8: Priority public health conditions. Final report*. Task Group 8. Retrieved from <http://dro.dur.ac.uk/6396/2/6396R.pdf>. UK.
- Banham, L., & Gilbody, S. (2010). Smoking cessation in severe mental illness: What works? *Addiction*, 105(7), 1176-1189. doi:10.1111/j.1360-0443.2010.02946.x
- Belenko S. (1999) *Research on drug courts: A critical review 1999 update*. Columbia: The National Center on Addiction and Substance Abuse.
- Belenko S. (2001) *Research on drug courts: A critical review 2001 update*. Columbia: The National Center on Addiction and Substance Abuse.

- Best, D., Lehmann, P., Gossop, M., Harris, J., Noble, A., & Strang, J. (1998). Eating too little, smoking and drinking too much: Wider lifestyle problems among methadone maintenance patients. *Addiction Research & Theory*, 6(6), 489–498.
- Bhikha, S. (2008). *The use and effectiveness of smoking cessation programmes and/or support by people with mental illness*. Retrieved from <http://www.quit.org.nz/file/research/Mental%20Health%20Consumers%20and%20Cessation%2020081031.pdf>
- Blakely, T., Tobias, M., Robson, B., Ajwanid, S., Bonne, M., & Woodward, A. (2005). Widening ethnic mortality disparities in New Zealand 1981–99. *Social Science & Medicine*, 61, 2233–2251.
- Bradford, D. W., Cunningham, N. T., Slubicki, M. N., McDuffie, J. R., Kilbourne, A. M., Nagi, A., & Williams Jr, J. W. (2013). An evidence synthesis of care models to improve general medical outcomes for individuals with serious mental illness: A systematic review. *The Journal of Clinical Psychiatry*, 74(8), e754–64.
- Bradshaw, T., Lovell, K., & Harris, N. (2005). Healthy living interventions and schizophrenia: A systematic review. *Journal of Advanced Nursing*, 49(6), 634–654. doi:10.1111/j.1365-2648.2004.03338.x
- Broadbent, J. M., Thomson, W. M., & Poulton, R. (2006). Progression of dental caries and tooth loss between the third and fourth decades of life: A birth cohort study. *Caries Res*, 40(6), 459–465.
- Brown, R. A., Abrantes, A. M., Read, J. P., Marcus, B. H., Jakicic, J., Strong, D. R., ... Stuart, G. G. (2010). A pilot study of aerobic exercise as an adjunctive treatment for drug dependence. *Mental Health and Physical Activity*, 3(1), 27.
- Brown, R. T. (2010). Systematic review of the impact of adult drug-treatment courts. *Translational Research*, 155(6), 263–374.
- Brown, S., Barraclough, B., & Inskip, H. (2000). Causes of the excess mortality of schizophrenia. *The British Journal of Psychiatry*, 177, 212–217.
- Burns, J. K., Tomita, A., and Kapadia, A. S. (2014). Income inequality and schizophrenia: Increased schizophrenia incidence in countries with high levels of income inequality. *International Journal of Social Psychiatry*, 60(2); 185–196.
- Burti, L., Berti, L., Bonfioli, E., & Fiorini I. (2013). Meeting the challenge of physical comorbidity and unhealthy lifestyles. In G. Thornicroft, M. Ruggeri & D. Goldberg (Eds.), *Improving mental health care: The global challenge*: 114–130, Chapter 8, Wiley-Blackwell, West Sussex, UK.
- Butler, R., & Sheridan, J. (2010). Innocent parties or devious drug users: The views of primary healthcare practitioners with respect to those who misuse prescription drugs. *Harm Reduction Journal*, 7(1), 21. doi:10.1186/1477-7517-7-21
- Byng, R., Jones, R., Leese, M., Hamilton, B., McCrone, P., & Craig, T. (2004). Exploratory cluster randomised controlled trial of shared care development for long-term mental illness. *British Journal of General Practice*, 54, 259–266.
- Cabassa, P. D., Ezell, M. P. H., & Lewis-Fernández, M. D. (2010). Lifestyle interventions for adults with serious mental illness: A systematic literature review. *Psychiatric Services*, 61(8), 774–782.
- Campion, J., Bhugra, D., Bailey, S., & Marmot, M., (2013). Inequality and mental disorders: Opportunities for action. Comment. *The Lancet*; 382, 183–184.
- Caviness, C. M., Bird, J. L., Anderson, B. J., Abrantes, A. M., & Stein, M. D. (2013). Minimum recommended physical activity, and perceived barriers and benefits of exercise in methadone maintained persons. *Journal of Substance Abuse Treatment*, 44(4), 457–462. doi:10.1016/j.jsat.2012.10.002
- Central Intelligence Agency. (2009). The world factbook. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/index.html>
- Chacón, F., Mora, F., Gervás-Ríos, A., & Gilaberte, I. (2011). Efficacy of lifestyle interventions in physical health management of patients with severe mental illness. *Annals of General Psychiatry*, 10(1), 22. doi:10.1186/1744-859X-10-22

- Chadwick, A., Street, C., McAndrew, S., & Deacon, M. (2012). Minding our own bodies: Reviewing the literature regarding the perceptions of service users diagnosed with serious mental illness on barriers to accessing physical health care. *International Journal of Mental Health Nursing*, 21(3), 211–219. doi:10.1111/j.1447-0349.2011.00807.x
- Chen, C. -Y., & Lin, K. -M. (2009). Health consequences of illegal drug use: *Current Opinion in Psychiatry*, 22(3), 287–292. doi:10.1097/YCO.0b013e32832a2349
- Chesney, E., Goodwin, G. M., and Fazel, S. (2014). Risks of all-cause and suicide mortality in mental disorders: a meta-review. *World Psychiatry*13:2: 153-160.
- Citrome, L., & Yeomans, D. (2005). Do guidelines for severe mental illness promote physical health and well-being? *Journal of Psychopharmacology*, 19(6 suppl), 102–109. doi:10.1177/0269881105059505
- Clinical Trials Research Unit, University of Auckland. (2008). *Literature review for the revision of the New Zealand smoking cessation guidelines*. Wellington: Ministry of Health. Retrieved from <http://www.moh.govt.nz/moh.nsf/indexmh/literature-review-for-the-revision-of-the-nz-smoking-cessation-guidelines>
- Cole, C., Jones, L., McVeigh, J., Kicman, A., Syed, Q., & Bellis, M. (2010). Adulterants in illicit drugs: A review of empirical evidence. *Drug Testing and Analysis*, 3, 89–96.
- Collins, E., Tranter, S., & Irvine, F. (2012). The physical health of the seriously mentally ill: An overview of the literature. *Journal of Psychiatric and Mental Health Nursing*, 19(7), 638–646. doi:10.1111/j.1365-2850.2011.01831.x
- Colton, C. W., & Manderscheid, R. W. (2006). Congruencies in increased mortality rates, years of potential life lost, and causes of death among public mental health clients in eight states. *Prev Chronic Dis*, 3(2), A42.
- Connor, J., Broad, J., Rehm, J., Hoorn, S. V., & Jackson, R. T. (2005). *The burden of death, disease, and disability due to alcohol in New Zealand*. Retrieved from <https://researchspace.auckland.ac.nz/handle/2292/4700>
- Cunningham, R., Peterson, D., Sarfati, D., Stanley, J., & Collings, S. (2014). Premature mortality in adults using New Zealand Psychiatric Services. *New Zealand Medical Journal*, 127(1394), 31- 41
- Curtis, J., Newall, H. D., & Samaras, K. (2012). The heart of the matter: Cardiometabolic care in youth with psychosis. *Early Intervention in Psychiatry*, 6, 347-353.
- Darke, S., Kaye, S., McKetin, R., & Duflo, J. (2008). Major physical and psychological harms of methamphetamine use. *Drug & Alcohol Review*, 27(3), 253–262. doi:10.1080/09595230801923702
- Deering, D. E., Frampton, C. M. A., Horn, J., Sellman, J. D., Adamson, S. J., & Potiki, T. L. (2004). Health status of clients receiving methadone maintenance treatment using the SF-36 health survey questionnaire. *Drug & Alcohol Review*, 23(3), 273–280. doi:10.1080/09595230412331289428
- Degenhardt, L., & Hall, W. (2012). Extent of illicit drug use and dependence, and their contribution to the global burden of disease. *The Lancet*, 379(9810), 55–70. doi:10.1016/S0140-6736(11)61138-0
- Degenhardt, L., Hall, W., Warner-Smith, M., & Lynskey, M. (2004). Comparative quantification of health risks: Global and regional burden of disease attributable to selected major risk factors. In M. Ezzati, A. Lopez, A. Rodgers, & R. Murray (Eds.), *Illicit drug use* (2nd ed.). Geneva: World Health Organization. Retrieved from http://libdoc.who.int/publications/2004/9241580348_eng_Volume1.pdf#page=1133
- Degenhardt, L., Whiteford, H., Hall, W., & Vos, T. (2009). Estimating the burden of disease attributable to illicit drug use and mental disorders: What is “global burden of disease 2005” and why does it matter? *Addiction*, 104(9), 1466–1471. doi:10.1111/j.1360-0443.2009.02715.x
- De Hert, M., Cohen, D., Bobes, J., Cetkovich-Bakmas, M., Leucht, S., Ndeti, D. M., ... Möller, H. -J. (2011). Physical illness in patients with severe mental disorders: II: Barriers to care, monitoring and treatment guidelines, plus recommendations at the system and individual level. *World Psychiatry*, 10(2), 138–151.

- De Hert, M., Correll, C. U., Bobes, J., Cetkovich-Bakmas, M., Cohen, D., Asai, I., & Leucht, S. (2011). Physical illness in patients with severe mental disorders: I: Prevalence, impact of medications and disparities in health care. *World Psychiatry, 10*(1), 52–63.
- De Hert, M., Schereurs, V., Vancampfort, D., & Van Winkel, R. (2009). Metabolic syndrome in people with schizophrenia: A review. *World Psychiatry, 8*(1), 15–22.
- De Hert, M., van Winkel, R., Silic, A., van Eyck, D., & Peuskens, J. (2010). Physical health management in psychiatric settings. *European Psychiatry, 25*, S17–S23.
- Department of the Prime Minister and Cabinet. (2009). *Tackling methamphetamine: An action plan*. Wellington: New Zealand Government.
- Dickey, B., Normand, S. T., Weiss, R. D., Drake, R. E., & Azeni, H. (2002) Medical morbidity, mental illness and substance use disorders. *Psychiatric Services, 53*, 861–867.
- Doolan, D. M., & Froelicher, E. S. (2006). Efficacy of smoking cessation intervention among special populations: Review of the literature from 2000 to 2005. *Nursing research, 55*(4), S29–S37.
- Dowell, A. C., Garrett, S., Collings, S., McBain, L., McKinley, E., & Stanley, J. (2009). *Evaluation of the primary mental health initiatives: Summary report*. Wellington: University of Otago and Ministry of Health.
- Druss, B. G., & von Esenwein, S. A. (2006). Improving general medical care for persons with mental and addictive disorders: Systematic review. *General Hospital Psychiatry, 28*(2), 145–153. doi:10.1016/j.genhosppsych.2005.10.006
- Druss, B. G., Rohrbaugh, R. M., Levinson, C. M., & Rosenheck, R. A. (2001). Integrated medical care for patients with serious psychiatric illness: A randomized trial. *Archives of General Psychiatry, 58*(9), 861–868. doi:10.1001/archpsyc.58.9.861
- Dunbar, L., Brandt, T., Wheeler, A., & Harrison, J. (2010). Barriers and solutions to implementing metabolic risk assessment in a secondary mental health service. *Australasian Psychiatry, 18*(4), 322–325. doi:10.3109/10398561003692571
- Dunbar, L., Wheeler, A., Harrison, J., Brandt, T., Pulford, J., Condell, W., & Stoepker, J. (2010). Implementing metabolic risk assessment in a secondary care mental health service. *Australasian Psychiatry, 18*(4), 318–321.
- Eapen, V., & John, G. (2011). Weight gain and metabolic syndrome among young patients on antipsychotic medication: What do we know and where do we go? *Australasian Psychiatry, 19*(3), 232–235. doi:10.3109/10398562.2010.539609
- Faulkner, G., Cohn, T., Remington, G. (2010). *Interventions to reduce weight gain in schizophrenia (Review)*. The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.
- Friedlander, A. H., & Marder, S. R. (2002). The psychopathology, medical management and dental implications of schizophrenia. *The Journal of the American Dental Association, 133*(5), 603–610.
- Friedmann, P. D., Zhang, Z., Hendrickson, J., Stein, M. D., & Gerstein, D. R. (2003). Effect of primary medical care on addiction and medical severity in substance abuse treatment programs. *Journal of General Internal Medicine, 18*(1), 1–8. doi:10.1046/j.1525-1497.2003.10601.x
- Fuller, J. D., Perkins, D., Parker, S., Holdsworth, L., & Kelly, B. (2009). *Systematic review on service linkages in primary mental health care: Informing Australian policy and practice*. Sydney: Australian Primary Health Care Research Institute, Australian National University and Sydney School of Public Health, University of Sydney.
- Galea, S., & Vlahov, D. (2002). Social determinants and the health of drug users. *Public Health Reports, 117*(Suppl. 1), S135–S145.
- Gawith, L. (2009). *Supporting mental health consumers make healthier life choices: Evaluation of Comcare Trust's Active Life and Pacific Trust's Healthy Pacific Lifestyles programmes (2008)*. Christchurch: Comcare.
- Gilmore, I. T. (2010). Alcohol misuse and its consequences: An overview and a European perspective. *European Review, 18*, 47–56. doi:http://dx.doi.org.ezproxy.auckland.ac.nz/10.1017/S1062798709990123

- Glover, M., Fraser, T., Bullen, C., Wallace-Bell, M., McRobbie, H., & Hadwen, G. (2013). Transition to a smoke-free culture within mental health and drug and alcohol services: A survey of key stakeholders: Transition to a smoke-free culture. *International Journal of Mental Health Nursing*. doi:10.1111/inm.12035
- Gorczyński, P., & Faulkner, G. (2010). Exercise therapy for schizophrenia. *Cochrane Database of Systematic Reviews*, 5. doi:10.1002/14651858.CD004412.pub2
- Graham, H. L. (2011). Severe mental health and substance use; developing integrated services; a UK perspective. In D. B. Cooper (Ed.), *Developing services in mental health: Substance use*: 62-78. Radcliffe Publishing Ltd, Oxon, UK.
- Grønbaek, M. (2009). The positive and negative health effects of alcohol – and the public health implications. *Journal of Internal Medicine*, 265(4), 407–420. doi:10.1111/j.1365-2796.2009.02082.x
- Grueber, A. (2013). *Outcomes and experiences of the Activity Based Experience (ABE) programme at Richmond Services Ltd: A mixed methods study*. Christchurch: University of Canterbury.
- Hall, W. (2009). The adverse health effects of cannabis use: What are they, and what are their implications for policy? *International Journal of Drug Policy*, 20(6), 458–466. doi:10.1016/j.drugpo.2009.02.013
- Han, B., Gfroerer, J. C., & Colliver, J. D. (2010). Associations between duration of illicit drug use and health conditions: Results from the 2005–2007 national surveys on drug use and health. *Annals of Epidemiology*, 20(4), 289–297. doi:10.1016/j.annepidem.2010.01.003
- Handiside, A. (2004). *Our physical health – who cares?* Retrieved from <http://www.mhc.govt.nz/media/199699/physical%20health%20of%20service%20users..who%20cares%20april%202004.doc>
- Hannerz, H., Borga, P., & Borritz, M. (2001). Life expectancies for individuals with psychiatric diagnoses. *Public health*, 115(5), 328–337.
- Happell, B., Davies, C., & Scott, D. (2012). Health behaviour interventions to improve physical health in individuals diagnosed with a mental illness: A systematic review. *International Journal of Mental Health Nursing*, 21(3), 236–247. doi:10.1111/j.1447-0349.2012.00816.x
- Healthy Active Lives (HeAL) Keeping the Body in Mind in Youth with Psychosis Retrieved from http://www.iphys.org.au/media/HeAL_declaration.pdf on 3 June 2014.
- Hennekens, C. H., Hennekens, A. R., Hollar, D., & Casey, D. E. (2005). Schizophrenia and increased risks of cardiovascular disease. *American Heart Journal*, 150(6), 1115–1121. doi:10.1016/j.ahj.2005.02.007
- HM Government. Department of Health, UK. (2011). *No health without mental health: A cross-government mental health outcomes strategy for people of all ages* retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213761/dh_124058.pdf
- Jané-Llopis, E., & Matytsina, I. (2006). Mental health and alcohol, drugs and tobacco: A review of the comorbidity between mental disorders and the use of alcohol, tobacco and illicit drugs. *Drug and Alcohol Review*, 25(6), 515–536. doi:10.1080/09595230600944461
- Jansen, P., & Smith, K. (2006). Māori experiences of primary health care. *NZFP*, 33(5), 298–300.
- Jones C.P., Jones C.Y., Perry G.S., Barclay G., Jones C.A. (2009). Addressing the social determinants of children's health: A cliff analogy. *Journal of Health Care for the Poor and Underserved*, 20, 1-12.
- Jones, D. R., Macias, C., Barreira, P. J., Fisher, W. H., Hargreaves, W. A., & Harding, C. M. (2004). Prevalence, severity, and co-occurrence of chronic physical health problems of persons with serious mental illness. *Psychiatric Services*, 55, 1250-1257.

- Jones, L., Bates, G., Bellis, M., Beynon, C., Duffy, P., Evans-Brown, M., ... McVeigh, J. (2011). *A summary of the health harms of drugs*. London: Department of Health.
- Jun, L., Kamal, A. M., Newton, L. V., Penney, J., Waters, G., Whimster, S., & Yaacob, N. Y. (2000). *The physical health of people with serious mental illness in Dunedin*. Dunedin: Otago Medical School.
- Take, T. R., Arnold, R., & Ellis, P. (2008). Estimating the prevalence of schizophrenia amongst New Zealand Māori: A capture-recapture approach. *Australian and New Zealand Journal of Psychiatry*, 42, 941-949.
- Keaney, F., Gossop, M., Dimech, A., Guerrini, I., Butterworth, M., Al-Hassani, H., & Morinan, A. (2011). Physical health problems among patients seeking treatment for substance use disorders: A comparison of drug dependent and alcohol dependent patients. *Journal of Substance Use*, 16(1), 27-37. doi:10.3109/14659890903580474
- Kemp, V., Bates, A., & Isaac, M. (2009). Behavioural interventions to reduce the risk of physical illness in persons living with mental illness. *Current Opinion in Psychiatry*, 22(2), 194-199. doi:10.1097/YCO.0b013e328325a585
- Khokhar, W. A., Clifton, A., Jones, H., & Tosh, G. (2011). *Oral health advice for people with serious mental illness*. John Wiley & Sons, Ltd. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008802.pub2/abstract>
- Kilbourne, A. M., Rofey, D. L., McCarthy, J. F., Post, E. P., Welsh, D., & Blow, F. C. (2007). Nutrition and exercise behavior among patients with bipolar disorder 1. *Bipolar Disorders*, 9(5), 443-452.
- Kisely, S., Smith, M., Lawrence, D., Cox, M., Campbell, L. A., & Maaten, S. (2007). Inequitable access for mentally ill patients to some medically necessary procedures. *Canadian Medical Association Journal*, 176(6), 779-784.
- Korpi, W., & Palme, J. (1998). The paradox of redistribution and strategies of equality: Welfare state institutions, inequality, and poverty in the western countries. *Am Social Rev*, 63, 661-687.
- Kyle, A. (2011). *Antipsychotic monitoring in general practice*. Paper presented at the Mental Health and Medication Safety Conference, Adelaide, Australia, 3-4 March 2011.
- Laugesen, M. (2003). *Smoke-free policies in New Zealand*. Geneva: World Health Organization. Retrieved from http://cdrwww.who.int/entity/tobacco/training/success_stories/TfiR3hrNZf.pdf
- Laurance, J. (2013). *Psychiatrists call for action over premature deaths of mentally ill*. Independent, Thursday 5 June 2013. Retrieved on 20 April 2014 from <http://www.independent.co.uk/life-style/health-and-families/health-news/psychiatrists-call-for-action-over-premature-deaths-of-mentally-ill-8664106.html>
- Lawrence, D., & Kisely, S. (2010). Inequalities in healthcare provision for people with severe mental illness. *Journal of Psychopharmacology*, 24(4 suppl), 61-68.
- Lawrence, D., Kisely, S., & Pais, J. (2010). The epidemiology of excess mortality in people with mental illness. *Canadian Journal of Psychiatry*, 55(12), 752-60.
- Lawrence, S. (2003). *Health promotion, prevention, early intervention, co-morbidity: The contribution of primary care to people with psychosis: Report of study tour to Australia and New Zealand*. London: Churchill Fellowship 2003.
- Littrell, K. H., Hilligoss, N. M., Kirshner, C. D., Petty, R. G., & Johnson, C. G. (2003). The effects of an educational intervention on antipsychotic-induced weight gain. *Journal of Nursing Scholarship*, 35(3), 237-241.
- Leucht, S., Tardy, M., Komossa, K., Heres, S., Kissling, W., Salanti, G., & Davis, J. M. (2012). Antipsychotic drugs versus placebo for relapse prevention in schizophrenia: A systematic review and meta-analysis. *The Lancet*, 379, 2063-2071.
- Locker, D., Poulton, R., & Thomson, W. M. (2001). Psychological disorders and dental anxiety in a young adult population. *Community Dent Oral Epidemiology*, 29(6), 456-63.
- Locker, D., Thomson, W. M., & Poulton, R. (2001) Psychological disorder, conditioning experiences, and the onset of dental anxiety in early adulthood. *Journal of Dental Research*, 80, 1588-1592.

- Lynch, W. J., Peterson, A. B., Sanchez, V., Abel, J., & Smith, M. A. (2013). Exercise as a novel treatment for drug addiction: A neurobiological and stage-dependent hypothesis. *Neuroscience & Biobehavioral Reviews*, 37(8), 1622–1644. doi:10.1016/j.neubiorev.2013.06.011
- McCrone, P., Singh, S. P., Knapp, M., Smith, J., Shiers, D., and Tiffin, P. A. (2013). The economic impact of early intervention in psychosis services for children and adolescents. *Early Intervention in Psychiatry*, 7(4), 368-373.
- Mannelli, P., & Pae, C. U. (2007). Medical comorbidity and alcohol dependence. *Current psychiatry reports*, 9(3), 217–224.
- Marmot, M. (2013). *Review of social determinants and the health divide in the WHO European region: Executive summary*. World Health Organization Regional Office for Europe. Report prepared by UCL Institute of Health Equity.
- Martineau, F., Tyner, E., Lorenc, T., Petticrew, M., & Lock, K. (2013). Population-level interventions to reduce alcohol-related harm: An overview of systematic reviews. *Preventive Medicine*, 57(4), 278–296. doi:10.1016/j.ypmed.2013.06.019
- Maxwell, C. (2009). *Metabolic monitoring project report: Stage 1: Health assessments of clients enrolled with the Mosgiel Health Centre and the community mental health teams who are at risk of developing metabolic syndrome due to prescribed antipsychotic medication*. Unpublished report.
- McKetin, R., Kelly, E., McLaren, J., & Proudfoot, H. (2008). Impaired physical health among methamphetamine users in comparison with the general population: The role of methamphetamine dependence and opioid use. *Drug & Alcohol Review*, 27(5), 482–489. doi:10.1080/09595230801914776
- McManus S., Meltzer H., Brugh T., Bebbington P., Jenkins R. (Eds.) (2009). *Adult psychiatric morbidity in England, 2007: Results of a household survey*. Leeds: Health and Social Information Centre.
- Mental Health Foundation of New Zealand. (2012). *Tobacco smoking and mental health*. Auckland: Mental Health Foundation.
- Miech, R. A., Caspi, A., Moffitt, T. E., Entner Wright, B. R., & Silva, P. A. (1999). Low socioeconomic status and mental disorders: A longitudinal study of selection and causation during young adulthood. *American Journal of Sociology*, 104(4), 1096-1131.
- Millar, H. (2008). Management of physical health in schizophrenia: A stepping stone to treatment success. *European Neuropsychopharmacology*, 18, S121–S128. doi:10.1016/j.euroneuro.2008.02.002
- Ministerial Advisory Committee on Mental Health. (2011). *Improving the physical health of people with severe mental illness: No mental health without physical health*. Melbourne: Department of Health, Victoria.
- Ministry of Health. (2007). *New Zealand smoking cessation guidelines*. Wellington: Ministry of Health.
- Ministry of Health. (2009a). *Alcohol use in New Zealand: Key results of the 2007/08 New Zealand Alcohol and Drug Use Survey*. Wellington: Ministry of Health.
- Ministry of Health. (2009b). *Mortality and demographic data 2006*. Wellington: Ministry of Health.
- Ministry of Health. (2010a). *Drug use in New Zealand: Key results of the 2007/08 New Zealand alcohol and drug use survey*. Wellington: Ministry of Health.
- Ministry of Health. (2010b). *Our oral health: Key findings of the 2009 New Zealand oral health survey*. Wellington: Ministry of Health.
- Ministry of Health. (2010c). *Service delivery for people with co-existing mental health and addiction problems: Integrated solutions*. Wellington: Ministry of Health.
- Ministry of Health. (2011a). *Better, sooner, more convenient health care in the community*. Wellington: Ministry of Health.

- Ministry of Health (2011b). *Primary/secondary mental health integration project: Review report on demonstration sites*. Wellington: Ministry of Health.
- Ministry of Health. (2012a). *Rising to the challenge: The mental health and addiction service development plan, 2012-2017*. Wellington: Ministry of Health.
- Ministry of Health. (2012b). *Survey of DHBs smoke-free policies in mental health services*. Unpublished report.
- Ministry of Health. (2012c). *The health of New Zealand adults 2011/2012: Key findings of the New Zealand health survey*. Wellington: Ministry of Health.
- Ministry of Health. (2013). *Health loss in New Zealand: A report from the New Zealand burden of diseases, injuries and risk factors study, 2006-2016*. Wellington: Ministry of Health. Retrieved from <https://www.health.govt.nz/system/files/documents/publications/health-loss-in-new-zealand-final.pdf>
- Ministry of Health. (2014) Material extracted from Ministry of Health website 27 March 2014: <http://www.health.govt.nz/your-health/healthy-living/addictions/smoking/health-effects-smoking>.
- Mitchell, A. J., Malone, D., & Doebbeling, C. C. (2009). Quality of medical care for people with and without comorbid mental illness and substance misuse: Systematic review of comparative studies. *The British Journal of Psychiatry*, 194(6), 491–499. doi:10.1192/bjp.bp.107.045732
- Mitchell, A. J., Vancampfort, D., Sweers, K., van Winkel, R., Yu, W., & De Hert, M. (2013). Prevalence of metabolic syndrome and metabolic abnormalities in schizophrenia and related disorders: A systematic review and meta-analysis. *Schizophrenia Bulletin*, 39(2), 306-318.
- Melchior, M., Moffitt, T. E., Milne, B. J., Poulton, R., & Caspi, A. (2007). Why do children from socioeconomically disadvantaged families suffer from poor health when they reach adulthood? A life-course study. *American Journal of Epidemiology*, 166(8), 966-974.
- Mental Health Commission. (2012). *Blueprint II: How things need to be*. Wellington: Mental Health Commission.
- Montebugnoli, L., Servidio, D., Miaton, R., Prati, C., Tricoci, P., & Melloni, C. (2004). Poor oral health is associated with coronary heart disease and elevated systemic inflammatory and haemostatic factors. *Journal of Clinical Periodontology*, 31(1), 25–29.
- Montejo, A. -L. (2010). The need for routine physical health care in schizophrenia. *European Psychiatry*, 25, S3–S5.
- Moss, T. G., Weinberger, A. H., Vessicchio, J. C., Mancuso, V., Cushing, S. J., Pett, M., ... George, T. P. (2010). A tobacco reconceptualization in psychiatry: Toward the development of tobacco-free psychiatric facilities. *The American Journal on Addictions*, 19(4), 293–311.
- Muir-Cochrane, E. (2006). Medical co-morbidity risk factors and barriers to care for people with schizophrenia. *Journal of Psychiatric and Mental Health Nursing*, 13(4), 447–452. doi:10.1111/j.1365-2850.2006.01002.x
- Nease, D. E. (2014). Addressing the health care needs of patients with serious mental illness – it takes a system. *Journal of Primary Healthcare*, 6(1), 6.
- New Zealand Guidelines Group. (2012). *Effective health behaviour change in long-term conditions: A review of New Zealand and international evidence*. Wellington: Ministry of Health.
- New Zealand Mental Health Metabolic Working Group. (2008). *Intervention guide for mental health service users on antipsychotic therapy*. New Zealand: Janssen-Cilag Ltd.
- NICE. (2002). *Schizophrenia: Core interventions in the treatment and management of schizophrenia in primary and secondary care. Clinical Guideline 1*. London: National Institute for Clinical Excellence.
- NICE. (2009). *Schizophrenia: Core interventions in the treatment and management of schizophrenia in adults in primary and secondary care. NICE clinical guideline 82*. London: National Institute for Clinical Excellence.

- NICE. (2014) *Behaviour change: Individual approaches. NICE public health guidance 49*. London: National Institute for Clinical Excellence.
- Nolan, L. J., & Scagnelli, L. M. (2007). Preference for sweet foods and higher body mass index in patients being treated in long-term methadone maintenance. *Substance Use & Misuse*, 42(10), 1555–1566. doi:10.1080/10826080701517727
- NYS Center of Excellence for Cultural Competence. (2010). *Improving the physical health of people with serious mental illness: A systematic review of the lifestyle interventions*. New York: New York State Psychiatric Institute.
- Oakley-Browne, M., Wells, J. E., & Scott, K. M. (2006). *Te rau hinengaro: The New Zealand mental health survey*. Wellington: Ministry of Health.
- O'Connor, P., & Schottenfeld, R. (1998). Patients with alcohol problems. *New England Journal of Medicine*, 338, 592–602.
- Office of the Prime Minister's Science Advisory Committee. (2011). *Improving the transition: Reducing social and psychological morbidity during adolescence*. Auckland: Office of the Prime Minister's Science Advisory Committee.
- O'Keefe, J. H., Bybee, K. A., & Lavie, C. J. (2007). Alcohol and cardiovascular health: The razor-sharp double-edged sword. *Journal of the American College of Cardiology*, 50, 1009-1014.
- Olivier, D., Lubman, D. I., & Fraser, R. (2007). Tobacco smoking within psychiatric inpatient settings: Biopsychosocial perspective. *Australasian Psychiatry*, 41(7), 572–580.
- Park, A. -L., McDaid, D., Weiser, P., Von Gottberg, C., Becker, T., & Kilian, R. for the HELPS Network. (2013). Examining the cost effectiveness of interventions to promote the physical health of people with mental health problems: a systematic review. *BMC Public Health*, 13(1), 787. doi:10.1186/1471-2458-13-787
- Parthasarathy, S., Mertens, J., Moore, C., & Weisner, C. D. (2003). Utilization and cost impact of integrating substance abuse treatment and primary care. *Medical Care March 2003*, 41(3), 357–367.
- Pathways. (2013). *Smoking cessation and healthy lifestyle activity report: -31 January 2013*. Auckland: Pathways.
- Patton, R. (2013). Identification and management of physical health problems among an injecting drug using population. *PeerJ PrePrints*, 1. Retrieved from <https://peerj.com/preprints/108v1.pdf>
- Peres, M. A., Barros, A. J., Peres, K. G., Araujo, C. L., & Menezes, A. (2009). Life course dental caries determinants and predictors in children aged 12 years: A population-based birth cohort. *Community Dentistry and Oral Epidemiology*, 37(2), 123–133.
- Peterson, D., Pere, L., Sheehan, N., & Surgenor, G. (2007). Experiences of mental health discrimination in New Zealand. *Health & Social Care in the Community*, 15(1), 18–25. doi:10.1111/j.1365-2524.2006.00657.x
- Petit, A., Karila, L., & Chalmin, F. (2012). Methamphetamine addiction: A review of the literature. *Journal of Addiction Research & Therapy*, 1(S1). doi:10.4172/2155-6105.S1-006
- Pickett, K. E., & Wilkinson, R. C. (2010). Inequality: An underacknowledged source of mental illness and distress. *The British Journal of Psychiatry*, 197, 426-428.
- Porter, J., & Evans, S. (2008). Nutrition and mental health research in Australia and New Zealand: A review of progress and directions for the future. *Nutrition & Dietetics*, 65(1), 6–9. doi:10.1111/j.1747-0080.2007.00168.x
- Poulton, R., Caspi, A., Milne, B. J., Thomson, W. M., Taylor, A., Sear, M. R., & Moffitt, T. E. (2002). Association between children's experience of socioeconomic disadvantage and adult health: A life-course study. *The Lancet*, 360, 1640-1645.
- Prebble, C. M., Kidd, J., O'Brien, A., Carlyle, D., McKenna, B., Crowe, M., Deering, D., & Gooder, C. (2011). Nurse-led healthy living programmes in forensic inpatient settings: An illustrative case study. *Journal of the American Psychiatric Nurses Association*, 17(2), 127-138.

- Proude, E. M., Britt, H., Valenti, L., & Conigrave, K. M. (2006). The relationship between self-reported alcohol intake and the morbidities managed by GPs in Australia. *BMC family practice*, 7(1), 17.
- Rehm, J., Gmel, G., Sempos, C., & Trevisan, M. (2003). Alcohol-related morbidity and mortality. *Alcohol Res Health*, 27, 39–51.
- Rehm, J., Mathers, C., Popova, S., Thavorncharoensap, M., Teerawattananon, Y., & Patra, J. (2009). Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *The Lancet*, 373(9682), 2223–2233.
- Rehm, J., Samokhvalov, A., & Shield, K. (2013). Global burden of alcoholic liver diseases. *Journal of Hepatology*, 59, 160–168.
- Reilly, S., Planner, C., Gask, L., Hann, M., Knowles, S., Druss, B., & Lester, H. (2012). Collaborative care approaches for people with severe mental illness (protocol). *Cochrane Database of Systematic Reviews*. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD009531/abstract>
- Reilly, S., Planner, C., Gask, L., Hann, M., Knowles, S., Druss, B., & Lester, H. (2013). Collaborative care approaches for people with severe mental illness (review). *Cochrane Database of Systematic Reviews*. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD009531.pub2/abstract>
- Rethink Mental Illness. (2013). *Lethal discrimination: Why people with mental illness are dying needlessly and what needs to change*. London: Rethink Mental Illness.
- Richards, J., Hillsdon, M., Thorogood, M., & Foster, C. (2013). Face-to-face interventions for promoting physical activity. *Cochrane Database of Systematic Reviews*, 9, article number CD010392.
- Roberts, S. H., & Bailey, J. E. (2011). Incentives and barriers to lifestyle interventions for people with severe mental illness: A narrative synthesis of quantitative, qualitative and mixed methods studies. *Journal of Advanced Nursing*, 67(4), 690–708. doi:10.1111/j.1365-2648.2010.05546.x
- Robson, D., & Gray, R. (2007). Serious mental illness and physical health problems: A discussion paper. *International Journal of Nursing Studies*, 44(3), 457–466. doi:10.1016/j.ijnurstu.2006.07.013
- Roche, A. M., & Freeman, T. (2004). Brief interventions: Good in theory but weak in practice. *Drug and alcohol review*, 23(1), 11–18.
- Rodenburg, H., Bos, V., O'Malley, C., McGeorge, P., Love, T., & Dowell, A. (2004). General practice care of enduring mental health problems: An evaluation of the Wellington Mental Health Liaison Service. *Journal of the New Zealand Medical Association*, 117, 1202.
- Room, R., Babor, T., & Rehm, J. (2005). Alcohol and public health. *The Lancet*, 365(9458), 519–530.
- Rosen, D., Smith, M. L., & Reynolds, C. F. (2008). The prevalence of mental and physical health disorders among older methadone patients. *American Journal of Geriatric Psychiatry*, 16(6), 488–497. doi:10.1097/JGP.0b013e31816ff35a
- Roshanaei-Moghaddam, B., & Katon, W. (2009). Premature mortality from general medical illnesses among persons with bipolar disorder: A review. *Psychiatric Services*, 60, 147–56.
- Rubin, A. S. (2005). Effects on processes and costs of care associated with the addition of an internist to an inpatient psychiatry team. *Psychiatric Services*, 56(4), 463–467. doi:10.1176/appi.ps.56.4.463
- Rummel-Kluge, C., Komossa, K., Schwartz, S., Hunger, H., Schmid, F., Lobos, C. A., Kissling, W., Davis, J. M., & Leucht, S. (2010). Head-to-head comparisons of metabolic side effects of second generation antipsychotics in the treatment of schizophrenia: A systematic review and meta-analysis. *Schizophrenia Research*, 123(2-3), 225-233.
- Saha, S., Chant D., & McGrath J. (2007). A systematic review of mortality in schizophrenia: Is the differential mortality gap worsening over time? *Arch. Gen. Psychiatry*, 64(10), 1123-1131.

- Samele, C., Hoadley, A., & Seymour, L. (2006). *A systematic review of the effectiveness of interventions to improve the physical health of people with severe mental health problems*. London: The Sainsbury Centre for Mental Health.
- Samet, J. H., Larson, M. J., Horton, N. J., Doyle, K., Winter, M., & Saitz, R. (2003). Linking alcohol- and drug-dependent adults to primary medical care: A randomized controlled trial of a multi-disciplinary health intervention in a detoxification unit. *Addiction*, 98(4), 509–516. doi:10.1046/j.1360-0443.2003.00328.x
- SAMHSA – Substance Abuse and Mental Health Services Administration. (2013). *Systems-level implementation of screening, brief intervention and referral to treatment. Technical assistance publication series TAP 33*. US Department of Health and Human Services.
- Schoos, R., & Cohen, C. (2003). Medical health in aging persons with schizophrenia. In J. Meyer & H. Nasrallah (Eds.), *Medical illness and schizophrenia* (pp. 141–162). Vancouver: American Psychiatric Publishing.
- Scott, D., & Happell, B. (2011). The high prevalence of poor physical health and unhealthy lifestyle behaviours in individuals with severe mental illness. *Issues in Mental Health Nursing*, 32(9), 589–597. doi:10.3109/01612840.2011.569846
- Scott, K. M., Bruffaerts, R., Simon, G. E., Alonso, J., Angermeyer, M., de Girolamo, G., ... Von Korff, M. (2007). Obesity and mental disorders in the general population: Results from the world mental health surveys. *International Journal of Obesity*, 32(1), 192–200. doi:10.1038/sj.ijo.0803701
- Scott, K. M., Oakley Browne, M. A., McGee, M. A., & Wells, J. E. (2006). Mental–physical comorbidity in te rau hinengaro: The New Zealand mental health survey. *Australian and New Zealand Journal of Psychiatry*, 40(10), 882–888. doi:10.1111/j.1440-1614.2006.01907.x
- Seikkula, J., Alakare, B., & Aaltonen, J. (2011). The comprehensive open-dialogue approach in Western Lapland: II. Long-term stability of acute psychosis outcomes in advanced community care. *Psychosis: Psychological, Social and Integrative Approaches*, 3(3), 192-204.
- Sellman, J. D., Connor, J. L., & Robinson, G. M. (2012). Will brief interventions in primary care change the heavy drinking culture in New Zealand? *Journal of the New Zealand Medical Association*, 125(1354).
- Shearin, I. (2003). *Outcomes of methadone maintenance from a client perspective*. A presentation at the Cutting Edge AOD Conference, New Zealand.
- Shen, C., Sambamoorthi, U., & Rust, G. (2008). Co-occurring mental illness and health care utilization and expenditures in adults with obesity and chronic physical illness. *Disease Management*, 11(3), 153–160. doi:10.1089/dis.2007.0012
- Sheridan, J., Wheeler, A., & Walters, C. (2005). Health problems and help-seeking activities of methadone maintenance clients at Auckland Methadone Service (AMS): Potential for community pharmacy service expansion. *Harm reduction journal*, 2(1), 25.
- Sigmon, S., & Patrick, M. (2012). The use of financial incentives in promoting smoking cessation. *Journal Devoted to Practice and Theory*. doi:http://dx.doi.org/10.1016/j.jpmed.2012.04.007
- Stanley, S. & Laugharne, J. (2010). *Clinical guidelines for the physical care of mental health Consumers*. Community, Culture and Mental Health Unit, School of Psychiatry and Clinical Neurosciences, The University of Western Australia. Perth: Retrieved from http://www.law.uwa.edu.au/__data/assets/pdf_file/0017/1502414/Clinical-Guidelines-Report.pdf
- Strang, J., Babor, T., Caulkins, J., Fischer, B., Foxcroft, D., & Humphreys, K. (2012). Drug policy and the public good: evidence for effective interventions. *The Lancet*, 379(9810), 71–83. doi:10.1016/S0140-6736(11)61674-7
- Stubbs, J., Haw, C., & Gardner, L. (2004). Survey of staff attitudes to smoking in a large psychiatric hospital. *Psychiatric Bulletin*, 28, 204–207.
- Sullivan, M. A., & Covey, L. S. (2002). Current perspectives on smoking cessation among substance abusers. *Current Psychiatry Reports*, 4(5), 388–396. doi:10.1007/s11920-002-0087-5

- Taylor G., McNeill A., Girling A., Farley A., Lindson-Hawley N., & Aveyard P. (2014). Change in mental health after smoking cessation: Systematic review and meta-analysis. *BMJ*, *348*; g1151.
- The Lancet. (2013). Mental health care in the UK: Time for change. *The Lancet*, *382*(9899), 1154. doi:10.1016/S0140-6736(13)62045-0
- The Mental and Physical Health Platform. (2013). *Mental and physical health: A call to action*. London: The Mental and Physical Health Platform.
- Therapeutic Guidelines Ltd. (2003). *Therapeutic guidelines: Psychotropic, version 5*. Melbourne: Therapeutic Guidelines Ltd.
- Thomson, W., Poulton, R., Milne, B., Caspi, A., Broughton, J., & Ayers, K. (2004). Socioeconomic inequalities in oral health in childhood and adulthood in a birth cohort. *Community Dentistry and Oral Epidemiology*, *32*, 345–353.
- Thornicroft, G. (2013). Premature death among people with mental illness. *British Medical Journal*, *346*. Retrieved from http://www.bmj.com.ezproxy.auckland.ac.nz/content/346/bmj.f2969?goback=.gde_135759_member_243393961
- Thornley, S. (2009). *The prevalence and care of mental disorders in Counties Manukau District Health Board from linked health data*. Auckland: Counties Manukau District Health Board. Retrieved from http://www.cmdhb.org.nz/About_CMDHB/Planning/Health-Status/Mental-Health/prevalence-care-mentaldisorders.pdf
- Todd, F. C. (2010). *Te ariari o te oranga: The assessment and management of people with co-existing mental health and substance use problems*. Wellington: Ministry of Health.
- Tosh, G., Clifton, A., & Bachner, M. (2011). General physical health advice for people with serious mental illness. *Cochrane Database of Systematic Reviews*, *2*. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008567.pub2/abstract>
- Tosh, G., Clifton, A., Mala, S., & Bachner, M. (2010). Physical health care monitoring for people with serious mental illness. *Cochrane Database of Systematic Reviews*, *3*. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD008298.pub2/abstract>
- Umbricht-Schneiter, A., Ginn, D. H., Pabst, K. M., & Bigelow, G. E. (1994). Providing medical care to methadone clinic patients: Referral vs on-site care. *American Journal of Public Health*, *84*(2), 207–210. doi:10.2105/AJPH.84.2.207
- Van Boekel, L., Brouwers, E. P., van Weeghel, J., & Garretsen, H. F. (2013). Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: Systematic review. [References]. *Drug and Alcohol Dependence*, *23–35*. doi:<http://dx.doi.org/10.1016/j.drugalcdep.2013.02.018>
- Vancampfort, D., Wampers, M., Mitchell, A. J., Correll, C. U., De Herdt, A., Probst, M., & De Hert, M. (2013). A meta-analysis of cardio-metabolic abnormalities in drug naïve, first-episode and multi-episode patients with schizophrenia versus general population controls. *World Psychiatry*, *12*, 240–250.
- Volkow, N. D., & Li, T. -K. (2005). Drugs and alcohol: Treating and preventing abuse, addiction and their medical consequences. *Pharmacology & Therapeutics*, *108*(1), 3–17. doi:10.1016/j.pharmthera.2005.06.021
- Vreeland, B. (2007). Bridging the gap between mental and physical health: A multi-disciplinary approach. *Journal of Clinical Psychiatry*, *68*(4), 26–33.
- Vreeland, B., Minsky, S., Menza, M., Radler, D. R., Roemheld-Hamm, B., & Stern, R. (2003). A program for managing weight gain associated with atypical antipsychotics. *Psychiatric Services*, *54*(8), 1155–1157.
- Wagenaar, A. C., Salois, M. J., & Komro, K. A. (2009). Effects of beverage alcohol price and tax levels on drinking: A meta-analysis of 1003 estimates from 112 studies. *Addiction*, *104*(2), 179–190.
- Watt, R. (2007). From victim blaming to upstream action: Tackling the social determinants of oral health inequalities: Commissioned review. *Community Dentistry and Oral Epidemiology*, *35*, 1–11.

- Weinstock, J., Wadeson, H. K., & VanHeest, J. L. (2012). Exercise as an adjunct treatment for opiate agonist treatment: Review of the current research and implementation strategies. *Substance Abuse*, 33(4), 350–360. doi:10.1080/08897077.2012.663327
- Weisner, C., Mertens, J., Parthasarathy, S., Moore, C., & Lu, Y. (2001). Integrating primary medical care with addiction treatment: A randomized controlled trial. *JAMA*, 286(14), 1715–1723. doi:10.1001/jama.286.14.1715
- Welthagen, E., Talbot, S., Harrison, O., & Phelan, M. (2004). Providing a primary care service for psychiatric in-patients. *Psychiatric Bulletin*, 28(5), 167–170.
- Werneke, U., Taylor, D., Sanders, T., & Wessley, S. (2003). Behavioural management of antipsychotic weight gain: A review. *Acta Psychiatrica Scandinavica*, 108, 252–259.
- Wheeler, A., Harrison, J., & Homes, Z. (2010a). Cardiovascular risk assessment and management in mental health clients: Perceptions of mental health and general practitioners in New Zealand. *Journal of Primary Health Care*, 1(1), 11–19.
- Wheeler, A., Harrison, J., Mohini, P., Nardan, J., Tsai, A., & Tsai, E. (2010b). Cardiovascular risk assessment and management in mental health clients: Whose role is it anyway? *Community Mental Health Journal*, 46(6), 531–539. doi:10.1007/s10597-009-9237-0
- Wheeler, A., McKenna, B., & Madell, D. (2013). Stereotypes do not always apply: Findings from a survey of the health behaviours of mental health consumers compared with the general population in New Zealand. *The New Zealand Medical Journal*, 126(1385), 35–46.
- Wheeler A., McKenna B., & Madell D. (2014). Access to general health care services by a New Zealand population with serious mental illness. *Journal of Primary Health Care*, 6(1), 7–16.
- Willenbring, M., & Olson, D. (1999). A randomized trial of integrated outpatient treatment for medically ill alcoholic men. *Archives of Internal Medicine*, 159(16), 1946–1952. doi:10.1001/archinte.159.16.1946
- Williams, D. J., & Streat, W. B. (2004). Physical activity as a helpful adjunct to substance abuse treatment. *Journal of Social Work Practice in the Addictions*, 4(3), 83–100. doi:10.1300/J160v04n03_06
- Williams, J. M., & Ziedonis, D. (2004). Addressing tobacco among individuals with a mental illness or an addiction. *Addictive Behaviours*, 29, 1067–1083.
- Wodak, A., & Cooney, A. (2005). Effectiveness of sterile needle and syringe programmes. *International Journal of Drug Policy*, 16, 31–44. doi:10.1016/j.drugpo.2005.02.004
- Woodward, A., & Kawachi, I. (2000). Why reduce health inequalities? *Journal of Epidemiology and Community Health*, 54, 923–929.
- World Health Organization. (2011). *Alcohol fact sheet*. Geneva: World Health Organization.
- World Health Organization. (2013). *Mental health action plan 2013–2020*. Geneva: World Health Organization. Retrieved from <http://www.who.int/iris/handle/10665/89966>
- Zeng, J., Williams, S. M., Fletcher, D. J., Cameron, C. M., Broadbent, J. M., Shearer D. M., & Thomson W. M. Re-examining the association between smoking and periodontitis in the Dunedin Study with an enhanced analytical approach. *Journal of Periodontology*, Vol. 0, Pages 1–12 (doi: 10.1902/jop.2014.130577)
- Ziedonis, D., Williams, J., & Smelson, D. (2003). Serious mental illness and tobacco addiction: A model program to address this common but neglected issue. *Am J Med Sci*, 326, 223–230.
- Zschucke, E., Heinz, A., & Strohle, A. (2012). Exercise and physical activity in the therapy of substance use disorders. *The Scientific World Journal*, 2012. doi:10.1100/2012/901741

Appendix One

Introduction

The following summary is the result of an online call for evidence made in November 2013 from the Te Pou website and e-bulletin, to identify work that has been happening at a service level, particularly where this work has been evaluated.

This appendix provides an illustrative snap shot of what is happening in parts of New Zealand. It is biased towards developments within the mental health and addictions sectors. Following the close of the call for evidence, the project team continued to receive phone calls and emails from across the country with people keen to discuss the initiatives they have underway, to hear more about this evidence review and generally give their support to working together to improve the physical health of people with a mental illness and/or addiction.

Systems-level interventions

1. Auckland District Health Board has a **policy for physical health observation** within acute mental health services. The purpose of the policy is to ensure that all service users receive effective nursing. On admission, all service users have physical observations completed, e.g. pulse, blood pressure, weight etc, which are recorded on a physical observation chart. These observations are continued daily, or more often, depending on personal medications and other health issues.
2. Auckland District Health Board's acute mental health services also provide a programme to **up skill, coach and educate the mental health workforce on physical health monitoring**. Carried out in the inpatient unit, the aim is to ensure physical health checks, with a view to expanding this to community services.
3. Southern District Health Board provides **training for mental health nurses**. These one day workshops include information and practical experience, and aim to increase participants' confidence and skills to undertake physical health checks. Pre- and post-training evaluation is undertaken, along with an audit of physical health equipment.
4. Hawkes Bay District Health Board recently won health innovation funding for a project to **shift the culture of tobacco use in mental health services**.
5. One primary health organisation (Health Hawkes Bay) has been funding a **service for mental health service users in partnership with two mental health non-government organisations**; the Lighthouse initially, and then WIT (Whatever it Takes). The service enables the clients of these organisations to access free GP services in the Lighthouse building, which is a consumer-run day facility. This model seems to depend on having a GP champion.
6. **Whanau ora wellness checks** for people living rurally with serious and enduring mental illness are delivered by a community health nurse at Te Hiku o Te Ika in Kaitaia, Northland. A Health improvement profile, sourced from Scotland, enables a comprehensive health check with 28 parameters, including BMI, oral health and smoking status. Clients are linked to

services, and practical and financial assistance is provided, e.g. paying to see a GP or dentist, transport to medical appointments etc. Patients have been monitored on progress over the past year, and the 6-month results show 20 to 50 per cent improvements in most areas. About half of the clients for the service are Māori.

7. East Tamaki Primary Health Organisation is trialling a Stanford **self-management education programme** for people with both mental health and physical health issues.
8. General practices within Compass Health Primary Health Organisation have been monitoring the frequency of physical health checks for enrolled patients who are on psychotropic medications and **used Careplus funding to offer free health checks** to these patients.
9. The metabolic monitoring project is a nurse-led collaborative project between Mosgiel Health Centre (primary care), the Family Mental Health Service (primary mental health) and Otago District Health Board's adult community mental health teams. The project is an example of **primary and secondary mental health service integration and collaboration** offering physical health checks and care to people being prescribed antipsychotic medication.

Individual behaviour change

10. A **service-user-designed recovery plan and health passport** to help service users keep on track with their physical health has been introduced by Tairāwhiti District Health Board, and was adapted from the US Wellness Recovery Action Plan (WRAP). The pilot phase was evaluated in 2013 (formative) and was found to be positively received by service users as part of the recovery process. It has been continued and further developed into the Recovery Action Plan (RAP)/Health Passport. A formative evaluation informed the new programme and enabled a call to be made on whether it would be helpful as part of a recovery process for service users. There was clearly enough positive feedback to proceed with the next stage in service development.
11. The Activity Based Experience (ABE) lifestyle modification programme in Christchurch (Richmond Services) offers **client-centred individualised programmes of 3-month duration, incorporating exercise and nutritional advice**. A well-designed evaluation (Master's thesis) showed no significant changes in physical measurements, but significant improvements in self-esteem.
12. Activelinks is a **physical activity programme to improve mental wellbeing and lifestyle**, offering individual and group support in Canterbury (Comcare Trust). A comprehensive 2009 evaluation demonstrated positive results, including measureable changes in health eating and exercise, weight loss and fewer psychological symptoms, which were sustained after 4 months. The evaluation found that core aspects of a successful programme included group belonging; emphasis on healthy living not just weight; positive attitude to exercise; dedicated facilitators; personal goal setting; fun; and a mix of service users and the general public for social integration.
13. A **comprehensive wellness programme** at Bay of Plenty Community Homes Trust, which is based on Te Whare Tapa Wha and linked to local services, is beginning to demonstrate

positive results. No evaluation has been undertaken, but individual progress is monitored and anecdotal evidence indicates that physical exercise in particular is found to be helpful.

14. Centre 401 Trust, a peer support resource centre in Hamilton, provides **Health Watch workshops on a whole range of physical health issues, and an online Warrant of Fitness** programme, which enables people to design their own wellbeing plans. The approach is service-user controlled, with support from the trust.
15. A men's activity group in an opioid substitution service in Bay of Plenty provides a **recovery programme with a focus on the whole person as a social being**, with commitment to increasing service-user control and leadership. It includes social and physical activities, e.g. fishing, mini-golf, baking etc.
16. Pathways Health Limited, as part of their **smoke-free and healthy lifestyles** programme, have been piloting the new nicotine mouth spray Quickmist to help service users and staff to stop smoking. The nicotine mouth spray is designed to relieve cravings reactively, in contrast to nicotine patches, gum and lozenges, which are proactive. Of the 30 staff and service users on the programme, 17 (57 per cent) were successfully smoke-free 4 weeks later (53 per cent were staff and 62 per cent were people using services). Another 53 per cent (64 per cent staff and 41 per cent people using services) reported having significantly reduced their tobacco consumption.

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