Cardiovascular disease risk and management in people who experience serious mental illness: an evidence review

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What this review found:

- People who experience serious mental illness (SMI) have a greater relative risk of cardiovascular disease (CVD) than the general population after controlling for other risk factors.
- This increased risk is present at an earlier age.
- Current CVD risk assessment tools may underestimate the risk for this population.
- There are inequities in the assessment and management of CVD risk and CVD for people who experience SMI.
- People who experience SMI have a significantly higher risk of dying from CVD than their general population counterparts.

Background

People who experience serious mental illness (SMI)*, particularly schizophrenia, have significantly reduced life expectancy and a premature mortality rate two to three times higher than the general population (1). It is estimated that cardiovascular disease (CVD) accounts for 40 to 50 per cent of this excess mortality (2). However people diagnosed with SMI are not specifically mentioned in New Zealand guidelines for assessing and managing cardiovascular risk.

*The terms 'serious mental illness' and 'severe mental illness' (SMI) are widely used to include people with a diagnosis of schizophrenia, major depressive disorder, bipolar disorder and schizoaffective disorder. However major depressive disorder is not always included.

Aims

We reviewed the literature to identify:

1. The relative increase in CVD risk associated with SMI
2. The recommended assessment and management of CVD and CVD risk in people with SMI.

Methods and results

We reviewed systematic reviews, meta-analyses and relevant single studies published since 2000 or of particular relevance to the New Zealand context. 102 articles passed abstract screening, 42 met the inclusion criteria and were assessed in full for relevance. 34 papers were found to be relevant.

Key findings

People who experience SMI have a greater relative risk of CVD than the general population, even after controlling for other risk factors.

There is strong evidence to indicate that the risk of developing CVD is higher in people diagnosed with SMI (See Table 1). This increased risk is due in part to established risk factors including smoking and diet but is also related to the metabolic effects of psychotropic medication. Studies that controlled for known CVD risk factors still found an increased relative risk. Some studies have identified mental illness as an independent risk factor for CVD (3, 4, 5).

Table 1: Pooled estimates of relative risk of CVD in people with SMI from meta-analyses published between 2000 and 2015.

Diagnosis	Relative risk[a]	References	Number of studies
Psychosis[b]	1.53 (CI=1.27-1.86) CVD	Fan et al., 2013 (16)	13 studies (3,549,950 participants)
	1.71 (1.91-2.46) Stroke		
	1.20 (0.53-1.53) CHD		
Major depression	2.5 (CI=1.73-3.60) IHD	Charlson et al., 2013 (17)	8 studies (35,000 participants)
	2.54 (CI=2.07-3.10) CVD	Van der Kooy et al., 2007 (4)	28 studies (80,000 participants)
	2.69 (CI=1.63-4.43) CHD	Rugulies, 2002 (10)	11 studies
Depression / depressive symptoms	1.46 (CI=1.37-2.08) CVD	Van der Kooy et al., 2007 (4)	28 studies (80,000 participants)
	1.56 (CI=1.30-1.87) IHD	Charlson et al., 2013 (17)	8 studies (35,000 participants)
	1.64 (CI=1.41-1.90) CHD	Wulsin, 2004 (5)	47 studies
	1.90 (CI=1.48-2.42) CHD	Nicholson et al., 2003 (18)	21 studies (124,509 participants)

CVD=cardiovascular disease, SMI=serious mental illness, IHD=ischaemic heart disease, CHD=coronary heart disease

Notes: **a.** The risk estimates from single studies were adjusted for a variety of confounders including age, sex, ethnicity, diabetes, hypertension, hyperlipidaemia, smoking, diet, physical exercise, alcohol consumption. **b.** While only one meta-analysis is identified in this table for people with psychosis, there were several large recent cohort studies which found higher CVD risk and mortality from CVD for people with psychosis.

The increased CVD risk is present at an earlier age than in the general population.

For people with psychosis, CVD risk factors are present from a very early age (6, 7, 8, 9). This evidence of increased risk and at an earlier age is reflected in the National Institute for Health and Care Excellence (NICE) 2015 Quality Outcomes Framework recommendations (NM129), that all people over 18 years of age on anti-psychotic medication should have annual recording of total cholesterol: hdl ratio.

Current CVD risk assessment tools are likely to underestimate the risk for this population.

Studies have found that CVD risk assessment tools underestimate cardiovascular risk for this group (9, 10). One study has looked at modifying risk assessment protocols specifically for this population (11).

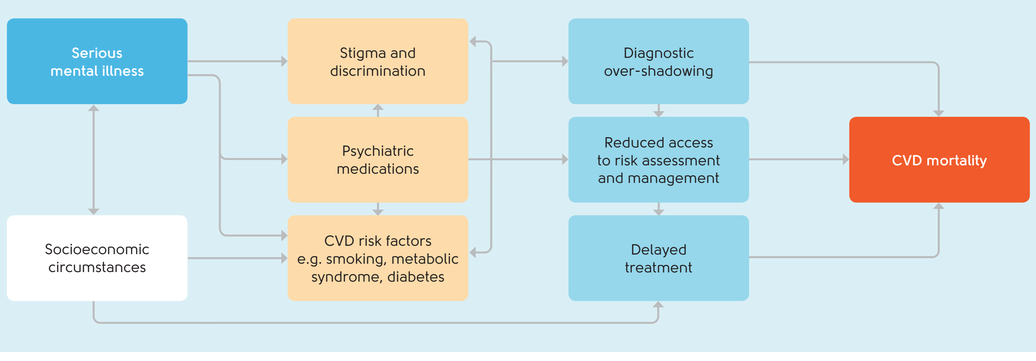
There are inequities in assessment and management of CVD risk and CVD for people diagnosed with SMI.

Several studies point to inequities in assessment and management of CVD risk and CVD in people who experience SMI (12, 13). The evidence for specific interventions to reduce CVD risk among people with SMI is limited, although there is evidence to support behavioural and pharmacological interventions particularly in the area of weight loss (14, 15).

People who experience SMI have a significantly higher risk of dying from CVD than their general population counterparts

In the only New Zealand study, the standardised mortality ratio (SMR) from CVD for people using mental health services compared to the general population was 1.69 (1). This is consistent with international studies which have found SMR for people with SMI from 1.6 to 2.5 (2). A large UK study (19) found that people with SMI aged 18-49 were three times more likely to die from heart disease as those without SMI, while in people aged 50-75 the risk was doubled.

Figure 1: Potential causal pathways to increased CVD mortality for people with serious mental illness.



Conclusions

People who experience SMI have a greater risk of CVD than their counterparts in the general population. The causal pathways are complex (See Figure 1). Established risk factors such as smoking and diet do not fully account for this increased risk. Inequities in assessment and management of CVD risk are likely contributors along with the cardio metabolic effects of psychotropic medications.

Ensuring guideline-concordant cardiovascular risk assessment and management is particularly important for this population. It is also necessary to bear in mind that current risk assessment tools are likely to underestimate the risk. The utility of adapting a general population tool to adjust for mental illness, or of creating a specific tool, should be assessed in a New Zealand context.

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