

Bridging the gap: What have we done and what more can we do to reduce the burden of avoidable death in people with psychotic illness?

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Despite overwhelming evidence demonstrating a persisting gap in life expectancy between those with psychotic illness and the general population, there has been no widespread implementation of interventions to improve the physical wellbeing of people with psychotic illness. This article explores opportunities to 'Bridge the Gap' in life expectancy. We describe an Australian evidence-based intervention that has substantially improved the physical health of young people recently commenced on antipsychotic medication. Further epidemiological research, accompanied by cultural change within mental health services, is an essential precursor to the implementation of effective and sustainable lifestyle interventions. There are other relatively neglected areas of physical wellbeing for people with psychotic illness, such as screening and diagnosis of malignancies, which need more research and clinical attention. While there has been progress with intervention development and evaluation, translation of evidence-based short-term intervention studies into feasible and sustainable system-wide changes within routine mental health service settings remains a challenge. Developing an implementation framework to support such change is an urgent priority so as to bridge the persisting premature mortality in people living with psychotic illness.

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Introduction

A landmark systematic review by Saha *et al.* (2007) demonstrated a worsening differential mortality between people with schizophrenia and those without. While suicide was an important factor, this review found that people with schizophrenia have excessive mortality risks mainly due to a wide range of physical comorbidities. In 2010, drawing on these findings, Crompton *et al.* (2010) asked; 'What can we do to reduce the burden of avoidable deaths in those with serious mental illness?', and argued for the importance of improving the physical wellbeing of people with psychotic illness in this very journal. They proposed that implementation strategies such as better integration of mental health and primary care sectors,

provision of interventions aimed at reducing physical comorbidity risk factors like smoking and obesity, and promotion of social inclusion for people with psychotic illness may reduce this unacceptable burden of premature death. At the same time, the authors acknowledged that context-specific solutions would be required in different health service settings to ensure the development of corroborated effort to bridge the long-standing philosophical, and service provision, silo between the physical and mental wellbeing of people with psychotic illness.

More than 5 years on, despite numerous publications on the topic (Stewart, 2015), there remains a gap in life expectancy (Chesney *et al.* 2014). Since 2010, a range of studies from various countries, including the UK (Chang *et al.* 2011), the Nordic countries (Laursen, 2011; Laursen *et al.* 2013), the USA (Druss *et al.* 2011) and Australia (Lawrence *et al.* 2013), have repeatedly highlighted that people with psychotic illness have reduced life expectancy, ranging between 10 and 20 years, compared with the general

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population. A recent meta-analysis (Walker *et al.* 2015) estimated the relative risk for all-cause mortality to be up to 2.5 times higher for those with psychotic illness, suggesting that the life expectancy gap may be continuing to widen. Furthermore, a recent USA cohort study, examining more than one million individuals with schizophrenia (Olfson *et al.* 2015), demonstrated that people with schizophrenia had an all-cause standardised mortality ratio of 3.5 compared with the general population, translating to a mean 28.5 years of potential life lost per death. Perhaps most importantly, it was found that more than 85% of the known all-cause deaths were attributed to physical illnesses such as cardio-metabolic diseases and cancer. These 'shocking but not surprising' findings (Suetani *et al.* 2015) led to yet another urgent call to address this significant gap, adding to several similar calls (Prince *et al.* 2007; Maj, 2009; Bartels, 2015; Moore *et al.* 2015), emphasising the significance of the issue.

The persisting gap in life expectancy exists despite considerable progress in developing and evaluating interventions. A number of randomised controlled trials (RCTs) of behavioural interventions have shown promising outcomes in reducing cardiovascular risk among people with psychotic illness (Bartels *et al.* 2013; Daumit *et al.* 2013; Green *et al.* 2015). A recent comprehensive review (McGinty *et al.* 2015) found lifestyle interventions, along with metformin, to be effective interventions with high strength of evidence for reducing risk of cardio-metabolic disease in people with psychotic illness. Similarly, another comprehensive review on non-pharmacological interventions in people with psychotic illness concluded that attenuation of weight gain, as opposed to reduction of weight, is more achievable with lifestyle interventions, but the benefit may not be sustainable beyond the end of the interventions (Gates *et al.* 2015).

So, why does the gap in life expectancy still exist? How far have we come in the last 5 years? Is it time to move away from RCTs and focus on the wider implementation (Bartels, 2015) – if so, how can we best implement effective, feasible and sustainable interventions? And finally, is there too great a focus on cardio-metabolic health compared with other health conditions?

An Australian experience – the Bondi keeping the body in mind (KBIM) program

The KBIM Program, developed at the Bondi Centre in South Eastern Sydney Local Health District, Australia, provides a pragmatic example of how lifestyle interventions can be successfully integrated within a community mental health service setting. KBIM evolved

over a number of years, beginning with the implementation of routine metabolic screening in a first-episode psychosis (FEP) service (Curtis *et al.* 2011, 2012). Mental health clinicians were seeing first-hand the rapid onset of substantial weight gain in large numbers of young people recently commenced on anti-psychotic medication, which prompted a new focus on documenting the time-course of changes in key metabolic measures.

Following implementation of the screening program, clinicians began to explore novel strategies to counter the rapid weight gain frequently observed. Individual dietetic consultations were trialled, and found to be acceptable to the young FEP clients. An in-house gym was developed in the community centre, with an exercise physiologist (EP) working one-on-one with clients to prescribe and supervise exercise programs reflecting the fitness levels and goals of each young person. The multidisciplinary KBIM team included a senior nurse with experience in FEP and metabolic expertise, a dietitian, an EP and a peer-support worker, with medical input from psychiatrists and an endocrinologist. The program included individual sessions with members of the KBIM team, along with the opportunity to participate in weekly sports groups, shopping tours and cooking groups with a focus on skill acquisition, in addition to access to an on-site gym supervised by both EPs and EP students.

With this combination of individualised and group-based interventions, antipsychotic-induced weight gain was prevented among young people experiencing FEP, when targeted interventions were delivered soon after antipsychotic initiation and as a core part of routine clinical services. Metabolic data were collected from a control group receiving care from an early psychosis program without access to the KBIM lifestyle interventions. The KBIM intervention group experienced significantly less weight gain compared with the standard care group (Curtis *et al.* *in press*).

Following this successful pilot program, the local mental health district have funded the establishment of additional KBIM teams to provide lifestyle interventions to the entire mental health service in a staged roll-out, first targeting early psychosis clients, those receiving clozapine and eventually all clients at an increased risk of cardio-metabolic disease. The KBIM intervention drew on already established evidence-based intervention strategies, for example individualised exercise and dietetic consultations (Rosenbaum *et al.* 2014; Teasdale *et al.* 2015), which were integrated as routine elements of the mental health service. The KBIM experience provides an example of research translation, and the importance of obtaining 'real-world' evidence for treatment effectiveness that does not rely on RCT methodology.

An epidemiological perspective

In his seminal paper published over 30 years ago, Professor Geoffrey Rose proposed the concept of the prevention paradox; 'a measure that brings large benefits to the community offers little to each participating individual' (Rose, 1981). It is becoming increasingly clear that interventions targeting physical health in people with psychosis are most effective when conducted within multidisciplinary settings with multimodal targets and high intensity (McGinty *et al.* 2015; Ward *et al.* 2015). But would such interventions be feasible on a large scale, and if so, would they be sustainable long-term? Unfortunately, in most regions in the world, the likely answer is no to both of these questions. Previous research suggests that even with an effective intervention, the benefit is unlikely to be sustained after the cessation of the study (Alvarez-Jimenez *et al.* 2010; Gates *et al.* 2015). Maintaining physical wellbeing is a life-long issue, and for the intervention to be meaningful, the benefit needs to be ongoing. In applying the concept of prevention paradox, perhaps we need to look for a 'good enough' intervention that is feasible and sustainable.

Epidemiology may be able to guide the way forward. We may be able to develop more theory-driven interventions to target mechanisms of change (Gates *et al.* 2015) by using the behavioural epidemiology framework (Sallis *et al.* 2000) to gain a better understanding of unique factors that influence the behaviour of interest in people with psychotic illness. Consider physical activity (PA), one of the core components of most behavioural interventions (Rosenbaum *et al.* *in press a*), as an example. PA is a complex behaviour. In order to understand why some people exercise and others do not, we need to appreciate the correlates and determinants of PA by utilising an epidemiological approach (Bauman *et al.* 2012). In essence, correlates are the factors that show statistical associations with the behaviour identified through cross-sectional studies. Determinants, on the other hand, are the factors that show causal relationships with the behaviour which can only be identified through studies of aetiological design such as longitudinal studies or experimental studies (Bauman *et al.* 2012). These factors exist at multiple levels ranging from the individual (e.g., type of antipsychotic medications people are taking), the regional policy (e.g., accessibility of recreational parks nearby), to the global environment (e.g., social and cultural attitude towards PA) (Bauman *et al.* 2012). Gaining a better understanding of these factors will likely reveal useful insights into the essential components of effective interventions. While there is an increasing amount of evidence base for PA correlates in people with psychotic illness

(Vancampfort *et al.* 2012, 2013), there remains limited evidence on PA determinants based on longitudinal and experimental studies.

Once the 'essential components' of an effective PA, or any other behavioural intervention are identified through epidemiological studies, such evidence can be used to strengthen arguments for more funding to be put towards implementing population wide (e.g., targeted and specific lifestyle promotions), and service provision changes (e.g., making EPs and dieticians an essential part of mental health services) to reduce modifiable risk factors in people with psychotic illness. In other words, finding correlates and determinants may, at policy and global levels, aid us in changing the environment rather than the individuals to facilitate an improved lifestyle, thus bringing a large benefit to the people with psychotic illness as a population.

In addition, the significant correlates and determinants found at the individual level can aid us in finding helpful modifiable risk factors to improve our patients' lifestyle. Each service can then build on these to create its own unique programme depending on the financial and resource constraints as well as its particular patient characteristics within the service. In fact, as KBIM suggests, such non-essential or site-specific components of the intervention may even hold the key to the success. Although not a psychiatric example, the Football Fans In Training study (Hunt *et al.* 2014) showed that by making a lifestyle intervention to be relevant to the participants' interest (i.e., football), nearly 90% of a traditionally difficult-to-engage population (obese middle-aged men) were able to complete a 12-month behavioural intervention programme with favourable outcomes. On the other hand, the implementation of smoke-free hospital policies in psychiatry wards, with little consideration to personal relevance for one of the most important modifiable risk factors for cardio-metabolic health, appears to have little effect on long-term smoking habits of the patients (Prochaska *et al.* 2006). This is despite some evidence that a majority of people with psychotic illness want to quit smoking (Ashton *et al.* 2013), and they are able to do so when effective interventions are offered (Ashton *et al.* 2013; Stubbs *et al.* 2015). Therefore, such policies may, when combined with appropriate interventions that consider personal relevance to each patient, actually provide an ideal opportunity for mental health care providers to modify patients' smoking habits.

Changing culture

One of the most important foundations for systemic change in how mental health services respond to the physical health of their patients lies in changing staff

attitudes. For too long, mental health staff have focussed solely on improving patients' mental well-being, while largely ignoring physical health issues. Re-establishing good physical health as a key treatment goal for mental health services is essential, with this goal being met by whatever means are available in a particular treatment service setting. We believe, as was the case 5 years ago (Crompton *et al.* 2010), that if shared care models with primary care providers can be successfully implemented, this goal can be achieved. However, if this is not achievable, due to systemic difficulties in integrating primary care and mental health services, then mental health services will need to ensure that the physical health needs of their patients are met.

A key element for both scenarios is making mental health care providers aware of the importance of long-term physical health outcomes for their patients; obesity, hypertension, dyslipidaemia and sedentary behaviour may not be as readily apparent as extrapyramidal side effects or deliberate self-harm, yet they can seed long-term morbidity that will directly impact life expectancy. For example, this may mean favouring antipsychotic medications with less metabolic side effects and avoiding excess polypharmacy, in combination with appropriate non-pharmacological interventions (Gates *et al.* 2015). Another strategy to achieve such awareness may be wellness programs that target mental health staff, demonstrating directly what PA and nutrition interventions entail, and developing a positive physical health culture that will drive change among mental health practitioners (Rosenbaum *et al.* *in press b*). Such cultural change is likely to be essential in achieving sustainable outcomes (Gates *et al.* 2015) – the 'holy grail' of translating short-term interventions into improved life expectancy in people with psychotic illness.

Preventing mortality from other causes

While there has been an emphasis on addressing mortality associated with cardiovascular risk factors, we must also address the gap in survival attributable to cancer in people living with psychotic illness. Even though the risk of developing cancer in people with psychotic illness is equivalent to that of the general population (Osborn *et al.* 2013), the mortality arising from it is significantly higher (Kisely *et al.* *in press*). In a population based New Zealand study (Cunningham *et al.* 2015), people with psychotic illness were approximately two and a half times more likely to die within 5 years following diagnosis with breast cancer and three times more likely to die from colorectal cancer compared with those with no recent mental health service

contact diagnosed with the same malignancies. Later stage of malignancy at the time of diagnosis explained more than one-third of the survival difference while the presence of other physical comorbidities in those with psychotic illness further contributed to reduced survival outcomes (Cunningham *et al.* 2015). Even after adjusting for stage of cancer at diagnosis and comorbidities, there still remained a significant survival disadvantage for people with psychotic illness, possibly as a result of them being less likely to receive surgery or chemotherapy (Baillargeon *et al.* 2011; Kisely *et al.* 2013).

Congruent with lower rates of screening for cardiovascular risk factors, people with psychotic illness are less likely to be screened for breast, cervical, prostate and colorectal cancer (Happell *et al.* 2012) contributing to diagnostic delays. For example, population-based retrospective studies of health records in Canada revealed that women with schizophrenia were approximately 30% less likely to have received cervical cancer screening (Martens *et al.* 2009) and almost 40% less likely to have had mammography (Chochinov *et al.* 2009). This further emphasises the importance of improved integration in service delivery between mental health, primary care and specialist oncology sectors to address the sub-optimal screening and treatment of cancer.

Conclusion

There are encouraging signs that effective interventions are being developed that will enhance the physical wellbeing of people with psychotic illness. The challenge remains as to how these short-term interventions can be translated into feasible and sustainable system-wide changes within routine mental health service settings. Developing an implementation framework to support such change must be an urgent priority if we are to bridge the persisting differential life expectancy gap in people living with psychotic illness. Considering the clinical and research developments that have been made in the past 5 years, we are optimistic that the rapidly increasing accumulation of awareness and knowledge about the potential means to address the life expectancy gap will lead to a tipping point where a sustainable change will become the new normal.

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Conflict of Interest

None.

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