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Inequalities in health care provision for people with severe mental illness

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Running head: Inequalities in health care for SMI

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Abstract

There are many factors that contribute to the poor physical health of people with SMI, including lifestyle factors and medication side-effects. However, there is increasing evidence that disparities in health care provision contribute to poor physical health outcomes. These inequalities have been attributed to a combination of factors including systemic issues, such as the separation of mental health services from other medical services, health care provider issues including the pervasive stigma associated with mental illness, and consequences of mental illness and side effects of its treatment. A range of solutions have been proposed. To tackle systemic barriers to health care provision integrated care models could be employed including co-location of physical and mental health services or the use of case managers or other staff to undertake a co-ordination or liaison role between services. The health care sector could be targeted for programmes aimed at reducing the stigma of mental illness. The cognitive deficits and other consequences of SMI could be addressed through the provision of health care skills training to people with SMI or by the use of peer supporters. Population health and health promotion approaches could be developed and targeted at this population, by integrating health promotion activities across domains of interest. To date there have only been small-scale trials to evaluate these ideas suggesting that a range of models may have benefit. More work is needed to build the evidence base in this area.

Key words: Severe mental illness, schizophrenia, bipolar disorder, health status, comorbidity, quality of care

Introduction

The excess mortality associated with severe mental illness (SMI) is well known and has been long-documented (Harris and Barraclough, 1998; Brown, 1997, Saha *et al.*, 2007). While much attention has been focussed on suicide and homicide which are associated with higher rate ratios, the public health burden associated with major chronic diseases is much higher in people with SMI. The majority of excess deaths in this population are due to physical illnesses, in particular cardiovascular disease, respiratory illness and cancer (Lawrence *et al.*, 2001; Kisely *et al.*, 2005; Leucht *et al.*, 2007). Both incidence rates and mortality rates are elevated for cardiovascular disease and respiratory illness, but mortality is higher than expected based on incidence alone so higher incidence of disease and worse outcomes both contribute to the excess mortality (Laursen *et al.*, 2009, Lawrence *et al.*, 2001). For cancers there is little evidence of excess incidence, but worse case fatality has been reported (Kisely *et al.*, 2008; Lawrence *et al.*, 2000), suggesting that factors associated with diagnosis, progression and treatment of disease play a role.

Although substance use, unhealthy lifestyles, and the side effects of medications increase the risk of physical illness in people with SMI, there is a growing body of evidence that unequal health care provision also plays a role in this disparity. In some cases, unequal quality of healthcare provision seemed to explain much of the subsequent excess mortality (Druss *et al.*, 2001a). Although the highest number of excess deaths in schizophrenia is associated with cardiovascular disease, people with schizophrenia have low rates of surgical interventions

such as stenting and bypass grafting (Druss *et al.*, 2000; Lawrence *et al.*, 2003; Kisely *et al.*, 2007; Laursen *et al.*, 2009). People with psychosis are less likely to receive cerebrovascular arteriography or warfarin following stroke (Kisely *et al.*, 2009). Quality of medical care contributes to excess mortality in older people with mental disorders after heart failure (Rathore *et al.*, 2008). Diabetes patients with mental health conditions are less likely to receive standard levels of diabetes care (Frayne *et al.*, 2005; Desai *et al.*, 2002, Nasrallah *et al.*, 2006). People with SMI are less likely to receive routine cancer screening (Xiong *et al.*, 2008; Carney and Jones, 2006). Schizophrenia patients with appendicitis have been found to be more likely to present late, have more complications such as gangrene or perforation of the appendix, and have worse outcomes from surgery (Cooke *et al.*, 2007). Patients with psychotic disorders are less likely to receive medical treatments for arthritis (Redelmeier *et al.*, 1998). Mitchell *et al.* (2009), in a recent meta-analysis of quality of medical care for people with comorbid mental illness, reported that the majority of studies demonstrate significant inequalities in receipt or uptake of medical care for people with SMI. McIntyre *et al.* (2007) reviewed medical comorbidity in bipolar disorder and found that chronic health problems are very common in patients with bipolar disorder, and tend to be under-recognised and sub-optimally treated. Patients with SMI are more likely to have physical comorbidities, more likely to have physical health problems that are not being treated, and more physical comorbidities are associated with worse mental health (Dixon *et al.*, 1999).

The aim of this review was to consider the evidence in relation to health care provision for people with SMI, identify gaps in knowledge and provide an overview of the field.

Method

Due to the large number of physical conditions indexed, the lack of standardised key words in the area of inequalities in health care provision, and the very large number of papers that would need to be searched in a broad-based search strategy, this review was not conducted as a systematic review. Instead, papers were initially selected by undertaking a search of Medline (1966-December 2009). We identified papers relevant to SMI by searching for 'schizophrenia', 'psychotic disorders', 'mood disorders', 'affective disorders', and 'depressive disorder'. We then selected papers that overlapped with any of the following search terms 'health status', 'quality of health care', 'cardiovascular disease', 'neoplasms', 'stroke' or 'diabetes'. We supplemented this search with reviews of the bibliographies of relevant articles. As most of the relevant papers found related to describing the excess of physical health problems in people with SMI we have only included a representative selection of articles in this area, and we have focussed on articles that discuss levels and standards of health care provision, factors influencing access and use of health care services and the small number of trials that have investigated ways of improving physical health care outcomes for people with SMI.

Health care provision for people with SMI

Barriers to effective health care provision for the mentally ill can be split into system level issues, provider issues and patient-related factors (Lambert *et al.*, 2003; Druss, 2007).

Systemic issues include the geographic, managerial and resource separation of physical and mental health care facilities, lack of clarity as to who takes responsibility for the physical health of patients with SMI, fragmentation of care across providers, lack of integration between medicine and psychiatry, lack of continuity of care, and under-resourcing of mental health care that provides little opportunity for specialists to focus on issues outside their core specialty (Druss, 2007). At the provider level there are the effects of stigma, time and resource constraints, and the possibility of regarding physical complaints as psychosomatic symptoms (Leucht *et al.*, 2007). Patient-related factors include health risk factors and lifestyle factors such as substance use, diet, lack of exercise and obesity (Kendrick, 1996; Brown *et al.*, 1999); side-effects of medications (Mitchell and Malone, 2006); and the effects of mental illness including cognitive impairment, social isolation and lack of family support, higher pain threshold or reduced sensitivity to pain, suspiciousness or fear, self-neglect, lack of motivation, socio-economic factors and difficulties communicating health needs (Sokal *et al.*, 2004; Dworkin, 1994).

It has been suggested that not only do patients with schizophrenia have less access to medical care, and consume less medical care, they are also less compliant with medical care (Brugha, 1989; Hennekens, 2007). This lack of compliance with follow-up care has been suggested as a

reason why patients with schizophrenia may be less likely to receive invasive cardiac procedures (Shander, 2000). People with schizophrenia also have higher rates of adverse events during medical and surgical care (Daumit *et al.*, 2006). More aggressive or high risk treatments such as more complex surgeries or chemotherapy may be contra-indicated if the patient has multiple comorbidities. There can also be ethical and consent issues in undertaking high risk procedures. Mateen *et al.* (2008) undertook a small study of lung cancer care for patients with schizophrenia. They described a small number of cases where non-optimal cancer care was provided. In some cases the patient declined chemotherapy treatment or was considered unable to consent to it, while in others the presence of comorbid physical conditions was considered a contra-indication for chemotherapy.

Who should provide primary health care for physical problems?

There has long been concern as to whether psychiatrists should provide primary health care assessments for people with SMI, or whether people with SMI have access to, and utilise appropriately, primary care physicians. McIntyre and Romano (1977) reported that most psychiatrists acknowledge the importance of physical examination of their patients, but that few routinely undertake these assessments, either because they believe the patient's physical health is being assessed by another physician or they do not feel competent to perform such an examination. Psychiatrists often delegate the responsibility for physical examination of their patients (Patterson, 1978). Not all psychiatrists keep up to date on the management of chronic medical conditions (Cradock-O'Leary *et al.*, 2002).

At the same time, there are barriers to people with SMI accessing primary care. Some primary care physicians see patients with SMI as being disruptive to their practices or feel uncomfortable treating them (Goodwin *et al.*, 1979; Karasu *et al.*, 1980). The likeability of patients has also been linked to the amount of attention they receive in primary care (Gerbert, 1984; Hall *et al.*, 1993). However, problems in access to primary care are not the entire explanation. For instance, in the Australian Study of Low Prevalence Disorders, 81% of people with psychosis had been seen by a general practitioner in the year prior to the survey (Jablensky *et al.*, 2000). It is possible that primary care physicians feel that they have insufficient time to provide both physical and mental health care for patients with SMI, limiting opportunities for health screening (Jaen *et al.*, 1994). Both primary care settings and psychiatric settings regularly fail to diagnose physical illnesses in patients with mental illness (Koranyi, 1979; Koranyi, 1982; Koran, 1989).

Because patients with SMI fare poorly in primary care, there have been calls for psychiatrists to take primary responsibility for the overall health of their patients (Lancet, 1979; Lamb, 1989; Shore, 1996). However, these calls have had little impact (Daumit *et al.*, 2002). As the treating psychiatrist may only see the patient infrequently, it has also been suggested that this responsibility needs to be shared with the mental health care team. Two consensus conferences have called on mental health care providers to take responsibility for the physical health of their patients (Marder *et al.*, 2004; Fleischhacker *et al.*, 2008). As the burden of physical illness is so high in this population the risk of over-servicing is considered to be

minimal even if patients are also seen in primary care, and more frequent monitoring would increase the likelihood of early detection of medical conditions. To address the concern that mental health care professionals do not feel competent to take on this responsibility, these calls have been accompanied by calls for better and more comprehensive training in primary health care for mental health professionals. With appropriate medical support, psychiatrists have been considered as appropriate treatment providers for many physical conditions (Golomb *et al.*, 2000). However, it should be recognised that mental health care facilities in many countries are under-resourced compared with other health care facilities, and that many mental health care providers are already stretched in attempting to manage the mental health of their patients (Sartorius, 2007a). It is unlikely that calls such as these will be successful in improving the primary health care of people with SMI unless they are accompanied by investments and resourcing models that recognise the time requirement associated with this expanded role, as well as addressing the logistical and cultural barriers to their implementation.

This issue has been compounded by a long tradition of separation of mental health care facilities from general health care — in the physical location of facilities and in the resourcing and management models employed. Patients do not necessarily perceive this separation, and do not always appreciate that they should seek the help of multiple care providers.

In recent years, some jurisdictions have issued guidelines on health care for people with SMI that have included minimum standards of physical health care. For instance, the European

Psychiatric Association has recently issued a position statement on cardiovascular disease and diabetes management that sets out standards for monitoring body weight, blood lipids, blood glucose and smoking status on a regular basis (de Hert *et al.*, 2009). Responsibility for coordinating assessment and management is assigned to psychiatrists, ideally as part of a shared care arrangement. The Spanish Societies of Psychiatry and Biological Psychiatry call for six-monthly monitoring of blood pressure, blood lipids, blood glucose, height, weight, and medication reviews for schizophrenia patients in outpatient treatment (Sáiz Ruiz *et al.*, 2008). In recognition of the metabolic effects of antipsychotic medications, both the US and the UK have guidelines for the monitoring of metabolic risk factors in schizophrenia patients on antipsychotic medications (NICE, 2002; ADA *et al.*, 2004). Where applied these guidelines may be cost-effective, as screening costs are more than offset by savings in chronic disease management and care (Bruggeman *et al.*, 2008). However, while these guidelines are helpful in setting expectations for standards of care, compliance is often low (Citrome and Yeomans, 2005; Haupt *et al.*, 2009), and health of people with SMI may not have improved (Mackin *et al.*, 2007). Work is required to develop and fund systems that allow these standards of care to be routinely applied. To date, the development of standards has mainly been in response to the metabolic effects of antipsychotics, and focus on these risk factors. More general guidelines for physical health care of people with SMI, regardless of medication, remain to be developed.

Integrated care trials

To address the systemic separation of mental health and physical health care, a range of integrated care models have been proposed (Vreeland, 2007). These include co-location of services, having staff from one service visit another on a regular basis, or appointing case managers to liaise between services and co-ordinate the overall care for the patient.

Some small-scale trials have been conducted which show benefits associated with various types of integrated care models. Griswold *et al.* (2005) and Griswold *et al.* (2008) found that nurse case managers were effective in increasing the percentage of patients with SMI who were successfully linked to primary care services. A randomised trial of an integrated care model within a Veterans Administration mental health clinic found a significantly improvement in overall health status after one year, and increased likelihood of patients receiving a range of preventive health measures (Druss *et al.*, 2001b).

Shared care with primary care physicians is another approach that has several advantages. These include accessibility, reduction in stigma, and potential for long-term continuity of care, and integration with management of medical problems. In the United States, the use of care managers for liaison with primary care physicians was associated with significant improvements in the quality and outcomes of primary care (Druss *et al.*, 2010a). The Consultation and Liaison in Primary Care Psychiatry (CLIPP) project in Victoria, Australia (Meadows, 1998) provides a protocol to support primary care physicians in managing people

with SMI as they reintegrate into the community. This includes a management plan with support to the primary care physician after the transfer. Involvement of the primary care physician is encouraged early with an increasing degree of shared care in transition towards discharge. The development of “super-clinics” affords the opportunity to develop “one stop shops” that increase the opportunity and capacity to promote access, early intervention with respect to mental and physical health care while also enabling engagement with specialised medical services (Crompton *et al.*, 2010). Larger scale and longer-term trials are required to determine if these models of care can improve morbidity and mortality of people with SMI.

Addressing patient level factors

People with SMI may be naturally disadvantaged in their ability to maintain good physical health and attend to their physical health needs due to the range of patient-level factors that commonly accompany SMI including cognitive impairment, social isolation and lack of family support, self-neglect, lack of motivation and socio-economic factors. Countering these factors may help address the inequality in health outcomes for people with SMI. It is widely recognised that additional investments and infrastructures are entirely appropriate to compensate for physical disabilities to allow people with disabilities to participate more fully in life. Steps that actively redress the negative consequences of mental illness may also be appropriate for people with SMI.

There is an extensive literature relating adverse socio-economic factors to poor health outcomes in the general population (Marmot and Wilkinson, 2006). Socio-economic disadvantage is more common in people with SMI, and adversely affects the course of their mental illness (Muntaner *et al.*, 2004; Saraceno *et al.*, 2005). Socio-economic disadvantage is associated with unhealthy lifestyles and reduced access to health care. While these factors would be expected to impact the physical health of people with SMI, they do not fully explain the differential in health outcomes between people with SMI and the general population. Studies that have adjusted for socio-economic status still find significantly worse morbidity and mortality for people with SMI (Kisely *et al.*, 2007; Kisely *et al.*, 2009).

The cognitive impairment associated with schizophrenia has been estimated as a reduction of around one standard deviation of IQ across a range of domains (Fioravanti *et al.*, 2005), and often persists after remission of other symptoms (Szöke *et al.*, 2008). Impairment may be particularly severe in the area of social cognition (van Os and Kapur, 2009) which affects the ability to understand and interact with our surroundings which may impair the ability to distinguish between health promotional and advertising messages, and to understand and prioritise various sources of health information or mis-information.

Folsom (2009) suggested that one possible approach to addressing the sequelae of SMI is to provide health care skills training for patients. This approach aims to develop skills in accessing and understanding health information and the health care system. There have been a couple of specific trials of this type of approach. McKibben *et al.* (2006) trialed a skills

training intervention aimed at older schizophrenia patients with diabetes which achieved a significant reduction in weight gain at 6 months. Wu *et al.* (2008) undertook a lifestyle intervention aimed at reducing antipsychotic induced weight gain, which achieved significant benefits at 12 weeks. Further trials are needed to assess longer-term benefits and applicability of the approach to broader health needs than just weight control.

Another approach to this problem has been the use of peer supporters. In this model, former patients provide support services which may take the form of peer-led training, facilitation of access to or liaison with health care providers, or the provision of support services such as case management (Davidson *et al.*, 2006). Peer support is more established in areas such as addiction and cancer, and is a relatively recent innovation in mental health care. As yet there is little evidence base to support long-term benefits because of the lack of trials in the area (Kemp *et al.*, 2009), although a trial of a peer support service in Western Australia has shown initial promising results (Bates *et al.*, 2008). Additionally Druss *et al.* (2010b) have reported the results of a trial of a peer-led medical self-management program, in which mental health peer leaders deliver a six-session programme. After six months there was a significantly elevated rate of access to primary care.

Stigma

The stigma of mental illness pervades all aspects of society, including the health care system. Severe mental illness too often robs people of the characteristics that otherwise we find most

endearing. If there is one sector of society that should be able to recognise that the behaviours that are otherwise seen as signs of a difficult or negative person are actually symptoms of illness it would be expected to be the health care sector. Sartorius (2007b) has suggested that, as part of the overall goal of reducing the stigma of mental illness, the health care sector should be particularly targeted. As noted previously, one issue in the reduced access to primary care for people with SMI is the way that some practitioners regard people with SMI as being difficult or disruptive, attributing abnormal behaviour as an individual characteristic rather than one of the symptoms of an illness. Sartorius (2007b) has suggested that a campaign to reduce stigma and discrimination within the health care sector should be a high priority in efforts to reduce the stigma associated with mental illness in the population at large.

Population health care and health promotion

Population health programmes have been credited with improvements in health risk factor profiles and improved life expectancy in developed countries. Common chronic diseases such as cardiovascular disease, cancers, and diabetes have been major targets for these strategies which combine a range of legislative and promotional approaches to reduce exposure to known health risk factors. Probably the biggest success in this regard is the reduction in smoking rates, but major programmes have also been developed to address other substance misuse including alcohol, diet and exercise, and sun exposure.

As inpatient treatment for psychiatric illness has been reduced and community-based care has become the norm in most western countries, preventive health care measures are becoming more important for improving the health of people with SMI (Salokangas, 2007). The need to integrate general medical and mental health care and to treat the person rather than specific diseases has been recognised for some time. However population health has been significantly slower to respond to this trend, with most population health initiatives targeted at single diseases or risk factors. Agencies taking responsibility for population health initiatives are often organised around specific diseases, such as heart disease, diabetes or cancer, with mental illness seen as a separate group. Population-health based groups that address major chronic diseases are reluctant to view people with mental illness as an important target group. There is evidence that people with SMI can quit smoking, become more physically active and improve their diets but programmes should be tailored to address the neurological, cognitive, behavioural and social deficits associated with SMI (Robson and Gray, 2007; Addington *et al.*, 1998).

Despite the high rate of smoking in people with SMI (de Leon and Diaz, 2005), it is rare to see population-health based anti-smoking measures targeted at people with SMI. Where mental illness is identified as an important target in smoking cessation, the suggested strategies are almost always service-based, such as smoke-free units, with often disappointing long-term results (Lawn and Pols, 2005; Prochaska *et al.*, 2006). For instance, of 100 patients admitted to a smoke-free psychiatric unit, all resumed smoking within about 5 weeks of discharge. The median time from discharge to first cigarette was 5 minutes, and the range was a few seconds

to 36 days (Prochaska *et al.*, 2006). While some have argued that the entire population, including people with SMI, respond to general smoking cessation programmes (Chapman, 2007), the persistent high rate of smoking in this group would suggest these programmes are not equally effective in this group. People with SMI could well benefit from targeted messages, as there are specific issues around smoking in people with SMI that need to be addressed. The interactions between nicotine and anti-psychotics and anti-depressive medications mean that people with SMI may need to have their medications or doses adjusted when quitting smoking, and the possibility that nicotine withdrawal symptoms can be mistaken for symptoms of mental illness are specific areas where people with SMI could benefit from targeted information (Ziedonis *et al.*, 2008). Some of the general anti-smoking messages are also less relevant in this group. For instance, campaigns around the idea that an early smoking-related death may mean you will not be around to see your children and loved ones as they grow older may be less relevant for people who do not have children or who are estranged from their families – demographic groups over-represented among people with SMI (Compton *et al.*, 2006). Similarly the attempt to stigmatise smoking behaviour (Chapman and Freeman, 2008) may have less impact on a population already facing the stigma of mental illness, and a strategy that may be effective in those without mental illness, may cause harm to those with SMI (Bayer and Stuber, 2006).

Conclusion

People with SMI have higher rates of mortality and reduced life expectancy, with deaths from common physical illnesses such as cardiovascular disease, cancers and respiratory illnesses representing the largest number of excess deaths. There is a range of contributing factors that may be responsible for this excess mortality, and while we do not know how much these various factors contribute to the overall excess mortality, inequalities in health care access and delivery have been repeatedly documented and are likely to be a contributing cause. These inequalities can be attributed to a combination of factors including systemic issues, such as the common separation of mental health services from other medical services, health care provider issues including the pervasive stigma associated with mental illness, and consequences of mental illness and side effects of its treatment.

Fleishhacker *et al.* (2008) have suggested that parity in health care for people with mental illness should be regarded as a basic human right. This raises the question of whether we would regard equality in health as meaning equality in access to health care, equality in use of health care, use of health care in proportion to need, or equality in health outcomes. A human rights argument could be made that people with a higher burden of physical illness, such as people with SMI, should be entitled to higher use of health care given the higher level of health need.

There have been some small-scale trials examining ways to address these issues which have shown promise (Druss and von Esenwein, 2006), however there is a need to build the evidence base on which to formulate programmes to address the inequities in health care provision in this population. To build this evidence base, it is important to include a trial and evaluation component in policy and programme changes, to determine which strategies are effective and aid in their refinement. With the increasing availability of administrative data in electronic form, evaluations can be carried out at minimal cost using record linkage methodologies.

The complex and multifactorial nature of the problems underlying the inequalities in health care provision for people with SMI will require multifaceted solutions. It is unlikely that any one of the initiatives mentioned above will completely resolve the problem. The growing literature in the field including some trials suggests that there is building momentum to address health inequalities in people with SMI. The health system has long been better at treating people with single problems. While recognising that treating multiple health problems concurrently is more difficult, it may well be the case that this approach would have substantial benefits including possible long term cost savings, as treating the physical health problems of people with SMI may improve their mental health as well as their physical health and vice versa.

References

Addington J, el Guebaly N, Campbell W, Hodgins D C, Addington D (1998) Smoking cessation treatment for patients with schizophrenia. *Am J Psychiat* 155: 974–976

American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, North American Association for the Study of Obesity (2004) Consensus development conference on antipsychotic drugs and obesity and diabetes. *Diabetes Care* 27: 596–601

Bates A J, Kemp V, Isaac M K (2008) Peer support shows promise in helping persons living with mental illness address their physical health needs. *Can J Community Mental Health* 27: 21–36

Bayer R, Stuber J (2006) Tobacco control, stigma, and public health: Rethinking the relations. *Am J Public Health* 96: 47–50

Brown S (1997) Excess mortality of schizophrenia. A meta-analysis. *Br J Psychiat* 171: 502–508

Brown S, Birtwistle J, Roe L, Thompson C (1999) The unhealthy lifestyle of people with schizophrenia. *Psychol Med* 29: 697–701

Bruggeman R, Schoor S G, Van der Elst K, Postma M J, Taxis K (2008) Cost-effectiveness of screening for diabetes in a cohort of patients with schizophrenia. *Schizophrenia Res* 102 (suppl. 2): 161–162

Brugha T S, Wing J K, Smith B L (1989) Physical health of the long-term mentally ill in the community. Is there unmet need? *Br J Psychiat* 155: 777–781

Carney C P, Jones L E (2006) The influence of type and severity of mental illness on receipt of screening mammography. *J Gen Intern Med* 21: 1097–1104

Chapman S (2007) Falling prevalence of smoking: how low can we go? *Tob Control* 16: 145–147

Chapman S, Freeman B (2008) Markers of the denormalisation of smoking and the tobacco industry. *Tob Control* 18: 25–31

Citrome L, Yeomans D (2005) Do guidelines for severe mental illness promote physical health and well-being? *J Psychopharm* 19 (suppl.): 102–109

Compton M T, Daumit G L, Druss B G (2006) Cigarette smoking and overweight/obesity among individuals with serious mental illnesses: a preventive perspective. *Harv Rev Psychiat* 14: 212–222

Cooke B K, Magas L T, Virgo K S, Feinberg B, Aditjanjee A, Johnson F E (2007) Appendectomy for appendicitis in patients with schizophrenia. *Am J Surg* 193: 41–48

Cradock-O’Leary J, Young A S, Yano E M, Wang M, Lee M L (2002) Use of general medical services by VA patients with psychiatric disorders. *Psychiatr Serv* 53: 874–878

Crompton D, Groves A, McGrath J (2010) What can we do to reduce the burden of avoidable deaths in those with serious mental illness? *Epidemiologia e Psichiatria Sociale* 19: 4–7

Daumit G L, Crum R M, Guallar E, Ford D E (2002) Receipt of preventive medical services at psychiatric visits by patients with severe mental illness. *Psychiatr Serv* 53: 884–887

Daumit G L, Pronovost P J, Anthony C B, Guallar E, Steinwachs D M, Ford D E (2006) Adverse events during medical and surgical hospitalizations for persons with schizophrenia. *Archs Gen Psychiat* 63: 267–272

Davidson L, Chinman M, Sells D, Rowe M (2006) Peer support among adults with serious mental illness: A report from the field. *Schizophr Bull* 32: 443–450

De Hert M, Dekker J M, Wood D, Kahl K G, Holt R I G, Möller H-J (2009) Cardiovascular disease and diabetes in people with severe mental illness position statement from the European Psychiatric Association (EPA), supported by the European Association for the Study of Diabetes (EASD) and the European Society of Cardiology (ESC). *Eur Psychiat* 24: 412–424

de Leon J, Diaz F J (2005) A meta-analysis of worldwide studies demonstrates an association between schizophrenia and tobacco smoking behaviors. *Schizophr Res* 76: 135–157

Desai M M, Rosenheck R A, Druss B G, Perlin J B (2002) Mental disorders and quality of diabetes care in the Veterans Health Administration. *Am J Psychiat* 159: 1584–1590

Dixon L, Postrado L, Delahanty J, Fischer P, Lehman A (1999) The association of medical comorbidity in schizophrenia with poor physical and mental health. *J Nerv Ment Dis* 187: 496–502

Druss B G, Bradford D W, Rosenheck R A, Radford M J, Krumholz H M (2000) Mental disorders and use of cardiovascular procedures after myocardial infarction. *J Am Med Assoc* 283: 506-511

Druss B G, Bradford D, Rosenheck R A, Radford M J, Krumholz H M (2001a) Quality of medical care and excess mortality in older patients with mental disorders. *Archs Gen Psychiat* 58: 565–572

Druss B G, Rorhbaugh R M, Levinson C M, Rosenheck R A (2001b) Integrated medical care for patients with serious psychiatric illness: a randomized trial. *Archs Gen Psychiat* 58: 861–868

Druss B G, von Esenwein S A (2006) Improving general medical care for persons with mental and addictive disorders: systematic review. *Gen Hosp Psychiat* 28: 145–153

Druss B G (2007) Improving medical care for persons with serious mental illness: challenges and solutions. *J Clin Psychiat* 68 (suppl. 4): 40–44

Druss B G, von Esenwein S A, Compton M T, Rask K J, Zhao L, Parker R M (2010a) A randomized trial of medical care management for community mental health settings: The primary care access, referral and evaluation (PCARE) study. *Am J Psychiat* 167: 151–159

Druss B G, Zhao L, von Esenwein S A, Bona J R, Fricks L, Jenkins-Tucker S, Sterling E, DiClemente R, Lorig K (2010b) The health and recovery peer (HARP) program: a peer-led intervention to improve medical self-management for persons with serious mental illness.

Schizophr Res doi:10.1016/j.schres.2010.01.026

Dworkin R H (1994) Pain insensitivity in schizophrenia: a neglected phenomenon and some implications. *Schizophr Bull* 20: 235–248

Fioravanti M, Carlone O, Vitale B, Cinti M E, Clare L (2005) A meta-analysis of cognitive deficits in adults with a diagnosis of schizophrenia. *Neuropsychol Rev* 15: 73–95

Fleischhacker W W, Cetkovich-Bakmas M, De Hert M, Hennekens C H, Lambert M, Leucht S, Maj M, McIntyre R S, Naber D, Newcomer J W, Olfson M, Ösby U, Sartorius N, Lieberman J A (2008) Comorbid somatic illnesses in patients with severe mental disorders: clinical, policy, and research challenges. *J Clin Psychiat* 69: 514–519

Folsom D (2009) Improving physical health care for patients with serious mental illness. In Meyer J M, Nasrallah H A (eds), *Medical illness and schizophrenia*. Second Edition. American Psychiatric Publishing, Arlington

Frayne S M, Halanych J H, Miller D R, Wang F, Lin H, Pogach L, Sharkansky E J, Keane T M, Skinner K M, Rosen C S, Berlowitz D R (2005) Disparities in diabetes care. Impact of mental illness. *Archs Intern Med* 165: 2631–2638

Gerbert B (1984) Perceived likeability and competence of simulated patients: influence in physicians' management plans. *Soc Sci Med* 18: 1053–1059

Golomb B A, Pyne J M, Wright B, Jaworski B, Lohr J B, Bozzette S A (2000) The role of psychiatrists in primary care of patients with severe mental illness. *Psychiatr Serv* 51: 766–773

Goodwin J M, Goodwin J S, Kellner R (1979) Psychiatric symptoms in disliked medical patients. *J Am Med Assoc* 241: 1117–1120

Griswold K S, Servoss T J, Leonard K E, Pastore P A, Smith S J, Wagner C, Stephan M, Thrist M (2005) Connections to primary medical care after psychiatric crisis. *J Am Board Fam Pract* 18: 166–172

Griswold K S, Zayas L E, Pastore P A, Smith S J, Wagner C M, Servoss T J (2008) Primary care after psychiatric crisis: a qualitative analysis. *Ann Fam Pract* 6: 38–43

Hall J A, Epstein A M, DeCiantis M L, McNeil B J (1993) Physicians' liking for their patients: more evidence for the role of affect in medical care. *Health Psychol* 12: 140–146

Harris E C, Barraclough B (1998) Excess mortality of mental disorder. *Br J Psychiat* 173: 11–

53

Haupt D W, Rosenblatt L C, Kim E, Baker R A, Whitehead R, Newcomer J W (2009)

Prevalence and predictors of lipid and glucose monitoring in commercially insured patients

treated with second-generation antipsychotic agents. *Am J Psychiat* 166: 345–353

Hennekens C H (2007) Increasing global burden of cardiovascular disease in general populations and patients with schizophrenia. *J Clin Psychiat* 68 (suppl. 4): 4–7

Jablensky A, McGrath J, Herrman H, Castle D, Gureje O, Evans M, Carr V, Morgan V, Korten A, Harvey C. Psychotic disorders in urban areas: an overview of the Study on Low Prevalence Disorders. *Aust N Z J Psychiat* 34: 221–236

Jaen C R, Stange K C, Nutting P A (1994) Competing demands of primary care: a model for the delivery of clinical preventive services. *J Fam Pract* 38: 166–171

Karasu T B, Waltzman S A, Linder Mayer J, Buckley P J (1980) The medical care of patients with psychiatric illness. *Hosp Community Psychiat* 31: 463–472

Kemp V, Bates A, Isaac M (2009) Behavioural interventions to reduce the risk of physical illness in persons living with mental illness. *Curr Opin Psychiat* 22: 194–199

Kendrick T (1996) Cardiovascular and respiratory risk factors and symptoms among general practice patients with long-term mental illness. *Br J Psychiat* 169: 733–739

Kisely S, Smith M, Lawrence D, Maaten S (2005) Mortality in individuals who have had psychiatric treatment: Population-based study in Nova Scotia. *Br J Psychiat* 187: 552–558

Kisely S, Cox M, Smith M, Lawrence D, Maaten S (2007) Inequitable access for mentally ill patients to some medically necessary procedures. *Can Med Assoc J* 176: 779–784

Kisely S, Sadek J, MacKenzie A, Lawrence D, Campbell L A (2008) Excess cancer mortality in psychiatric patients. *Can J Psychiat* 53: 753–761

Kisely S, Campbell L A, Wang Y (2009) Treatment of ischaemic heart disease and stroke in individuals with psychosis under universal healthcare. *Br J Psychiat* 195: 545–550

Koran L M, Sox H C, Marton K I, Moltzen S, Sox C H, Kraemer H C, Imai K, Kelsey T G, Rose T G, Levin L C, Chandra S (1989) Medical evaluation of psychiatric patients. I. Results in a state mental health system. *Archs Gen Psychiat* 46: 733–740

Koranyi E K (1979) Morbidity and rate of undiagnosed physical illnesses in a psychiatric clinic population. *Archs Gen Psychiat* 36: 414–419

Koranyi E K (1982) Undiagnosed physical illness in psychiatric patients. *Ann Rev Med* 33: 309–316

Lamb H R (1989) Improving our public mental health systems. *Archs Gen Psychiat* 46: 743–744

Lambert T J R, Velakoulis D, Pantelis C (2003) Medical comorbidity in schizophrenia. *Med J Australia* 178: S67–S70

Lancet (1979) Psychiatrists with blinkers. *Lancet* 2(8133): 81.

Laursen T M, Munk-Olsen T, Agerbo E, Gasse C, Mortensen P B (2009) Somatic hospital contacts, invasive cardiac procedures, and mortality from heart disease in patients with severe mental disorder. *Archs Gen Psychiat* 66: 713–720

Lawn S, Pols R (2005) Smoking bans in psychiatric inpatient settings: a review of the research. *Aust N Z J Psychiat* 39: 866–885

Lawrence D, Holman C D J, Jablensky A V, Threlfall T J, Fuller S A (2000) Excess cancer mortality in Western Australian psychiatric patients due to higher case fatality rates. *Acta Psychiatr Scand* 2000: 382–388.

Lawrence D, Holman C D J, Jablensky A V (2001) Preventable physical illness in people with mental illness. The University of Western Australia, Perth

Lawrence D, Holman C D J, Jablensky A V, Hobbs M S (2003) Death rate from ischaemic heart disease in Western Australian psychiatric patients 1980-1998. *Br J Psychiat* 182: 31–36

Leucht S, Burkhard T, Henderson J, Maj M, Sartorius N (2007) Physical illness and schizophrenia: A review of the evidence. Cambridge University Press, Cambridge

Mackin P, Bishop D R, Watkinson H M O (2007) A prospective study of monitoring practices for metabolic disease in antipsychotic-treated community psychiatric patients. *BMC Psychiat* 7: 28

Marder S R, Essock S M, Miller A L, Buchanan R W, Casey D E, Davis J M, Kane J M, Lieberman J A, Schooler N R, Covell N, Stroup S, Weissman E M, Wirshing D A, Hall C S, Pogach L, Pi-Sunyer X, Bigger J T, Friedman A, Kleinberg D, Yevich S J, Davis B, Shon S (2004) Physical health monitoring of patients with schizophrenia. *Am J Psychiat* 161: 1334–1349

Marmot M, Wilkinson R (2006) Social determinants of health. Oxford University Press, Oxford.

Mateen F J, Jatoi A, Lineberry T W, Aranguren D, Creagan E T, Croghan G A, Jett J R, Marks R S, Molina J R, Richardson R L (2008) Do patients with schizophrenia receive state-of-the-art lung cancer therapy? a brief report. *Psychooncology* 17: 721–725

McIntyre J S, Romano J (1977) Is there a stethoscope in the house (and is it used)? *Archs Gen Psychiat* 34: 1147–151

McIntyre R S, Soczynska J K, Beyer J L, Woldeyohannes H O, Law C W Y, Miranda A, Konarski J Z, Kennedy S H (2007) Medical comorbidity in bipolar disorder: reprioritizing unmet needs. *Curr Opin Psychiat* 20: 406–416

McKibben C L, Patterson T L, Norman G, Patrick K, Jin H, Roesch S, Mudaliar S, Barrio C, O’Hanlon K, Griver K, Sirkin A, Jeste D V (2006) A lifestyle intervention for older schizophrenia patients with diabetes mellitus: a randomized controlled trial. *Schizophr Res* 86: 36–44

Meadows G N (1998) Establishing a collaborative service model for primary mental health care. *Med J Aust* 168: 162–165

Mitchell A J, Malone D (2006) Physical health and schizophrenia. *Curr Opin Psychiat* 19: 432–437

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. *Br J Psychiat* 194: 491–499

Muntaner C, Eaton W W, Miech R, O'Campo P (2004) Socioeconomic position and major mental disorders. *Epidemiol Rev* 26: 53–62

Nasrallah H A, Meyer J M, Goff D C, McEvoy J P, Davis S M, Stroup T S, Lieberman J A (2006) Low rates of treatment for hypertension, dyslipidemia and diabetes in schizophrenia: Data from the CATIE schizophrenia trial sample at baseline. *Schizophr Res* 86: 15–22

National Institute for Clinical Excellence (NICE) (2002) Schizophrenia: core interventions in the treatment and management of schizophrenia in primary and secondary care. *Clinical Guideline 1*, London.

Patterson C W (1978) Psychiatrists and physical examinations: a survey. *Am J Psychiat* 135: 967–968

Prochaska J J, Fletcher L, Hall S E, Hall S M (2006) Return to smoking following a smoke-free psychiatric hospitalisation. *Am J Addict* 15: 15–22

Rathore S S, Wang Y, Druss B G, Masoudi F A, Krumholz H M (2008) Mental disorders, quality of care, and outcomes among older patients hospitalized with heart failure. An analysis of the National Heart Failure Project. *Archs Gen Psychiat* 65: 1402–1408

Redelmeier D A, Tan S H, Booth G L (1998) The treatment of unrelated disorders in patients with chronic medical diseases. *N Engl J Med* 338: 1516–1520

Robson D, Gray R (2007) Serious mental illness and physical health problems: a discussion paper. *Int J Nursing Studies* 44: 457–466

Saha S, Chant D, McGrath J (2007) A systematic review of mortality in schizophrenia. Is the differential mortality gap worsening over time? *Archs Gen Psychiat* 64: 1123–1131

Sáiz Ruiz J, Bobes García J, Vellejo Ruiloba J, Giner Ubago J, García-Portilla González MP, Work group on the physical health of the patient with schizophrenia (2008) Consensus on physical health of patients with schizophrenia from the Spanish Societies of Psychiatry and Biological Psychiatry. *Actas Esp Psiquiatr* 36: 251–264

Salokangas R K R (2007) Medical problems in schizophrenia patients living in the community (alternative facilities). *Curr Opin Psychiat* 20: 402–405

Saraceno B, Levav I, Kohn R (2005) The public mental health significance of research on socio-economic factors in schizophrenia and major depression. *World Psychiat* 4: 181–185

Sartorius N (2007a) Physical illness in people with mental disorders. *World Psychiat* 6: 3–4

Sartorius N (2007b) Stigmatized illnesses and health care. *Croat Med J* 48: 396–397

Shander D (2000) Cardiovascular procedures in patients with mental disorders. *J Am Med Assoc* 283: 3198–3199

Shore J H (1996) Psychiatry at a crossroad: our role in primary care. *Am J Psychiat* 153: 1398–1403

Sokal J, Messias E, Dickerson F B, Kreyenbuhl J, Brown C H, Goldberg R W, Dixon L B (2004) Comorbidity of medical illnesses among adults with serious mental illness who are receiving community psychiatric services. *J Nerv Ment Dis* 192: 421–427

Szöke A, Trandafir A, Dupont M E, Méary A, Schürkoff F, Leboyer M (2008) Longitudinal studies of cognition in schizophrenia: meta-analysis. *Br J Psychiat* 192: 248–257

van Os J, Kapur S (2009) Schizophrenia. *Lancet* 374: 635–645

Vreeland B (2007) Bridging the gap between mental and physical health: a multidisciplinary approach. *J Clin Psychiat* 68 (suppl. 4): 26–33

Wu R R, Zhao J P, Jin H, Shao P, Fang M S, Guo X F, He Y Q, Liu Y J, Chen J D, Li L H (2008)

Lifestyle intervention and metformin for treatment of antipsychotic-induced weight gain. A

randomized controlled trial. *J Am Med Assoc* 299: 183–193

Xiong G L, Bermudes R A, Torres S N, Hales R E (2008) Use of cancer-screening services

among persons with serious mental illness in Sacramento county. *Psychiatr Serv* 59: 929–932

Ziedonis D, Hitsman B, Beckham J C, Zvolensky M, Adler L E, Audrain-McGovern J, Breslau

N, Brown R A, George T P, Williams J, Calhoun P S, Riley W T (2008) Tobacco use and

cessation in psychiatric disorders: National Institute of Mental Health report. *Nicotine Tob*

Res 10: 1691–1715