Don't Just Screen – Intervene: Protecting the cardiometabolic health of people with severe mental illness

Johanna Taylor, David Shiers

People with severe mental illness (SMI) have a reduction in life expectancy of around 15–20 years. A higher prevalence of diabetes and its complications contributes to this health inequality. The risk of diabetes and barriers to managing the condition alongside SMI require more tailored lifestyle interventions, regular monitoring of risk from the onset of psychosis, high-quality antipsychotic prescribing, smoking cessation, support for self-management and collaborative care. Increasing awareness about the particular risks that people with SMI face and the proactive approach that is needed to sufficiently screen and intervene for diabetes may help to ensure that these individuals are better supported. The Lester resource provides practitioners with a useful tool to help facilitate this.

People with severe mental illness (SMI; e.g. schizophrenia, bipolar disorder) have a reduction in life expectancy of around 15–20 years. While suicide and accidents account for a quarter of premature deaths, most arise from illnesses that shorten lives in the general population, cardiovascular disease (CVD) being the single most common cause (Brown et al, 2010).

Diabetes is a particular concern, contributing to the morbidity and mortality gap and increasing the likelihood of premature CVD (Ward and Druss, 2015). Despite this, little is currently done to improve diabetes care in this population. This article aims to raise awareness about the particular risks that people with SMI face and the strategies that may help to better prevent and manage diabetes in this population.

Why is diabetes a problem for people with SMI?

Around 1% of the overall population per year experiences an SMI (Reilly et al, 2015). Psychotic features may include altered perceptions, thoughts, mood and behaviour, and can be highly distressing for the individuals and their family and friends. Some recover but the majority continue to experience difficulties. These include not only psychological difficulties but also poor physical health, which is often compounded by inequalities in healthcare (Ward and Druss, 2015).

Diabetes affects around 10–15% of people with SMI, a rate two to three times higher than in the general population (Reilly et al, 2015). Type 2 diabetes accounts for most of the excess cases and typically commences 10–20 years earlier in those with SMI, the relative risk being highest in younger individuals (Holt and Mitchell, 2015). People with comorbid SMI and diabetes, when compared to those with diabetes alone, experience more diabetes complications (microvascular and macrovascular), and have a significantly increased risk of death (Vinogradova et al, 2010).

The path to premature diabetes and CVD may be heralded by the onset of psychosis and the initiation of antipsychotic treatment. Aggressive early weight gain, averaging 12 kg in the first

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Article points

1. People with severe mental illness (SMI) are at increased risk of diabetes and experience more diabetes complications than those without SMI.
2. Antipsychotic medication can cause weight gain and metabolic disturbances that increase the risk of diabetes, although other factors also play a part.
3. The Lester resource provides a practical framework for assessing and managing cardiometabolic risk in people with SMI.

Key words

– Bipolar disorder
– Cardiovascular risk
– Psychosis
– Severe mental illness
– Schizophrenia

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Page points

1. People with psychosis are typically exposed to increased cardiometabolic risk below the age when primary care would normally consider active primary cardiovascular disease prevention.
2. Despite this, less than a third of people with schizophrenia in the UK are receiving annual health checks to assess cardiometabolic risk.
3. Around 50% of diabetes cases go undetected in people with severe mental illness, compared to 15% of cases in the general population.
4. It is, therefore, essential not only to screen for cardiometabolic risk in this population but also to act in order to mitigate the risk.

24 months of treatment (Alvarez-Jiménez et al, 2008; *Figure 1*), increases the risk of future type 2 diabetes.

Other metabolic disturbances also increase the risk of type 2 diabetes in this population. The literature supports an association between antipsychotics and diabetes, but not a causal effect (Holt, 2015). A systematic review demonstrated significant glucose and lipid disturbance within 8 weeks of antipsychotic initiation, which worsened over the 12 months studied (Foley and Morley, 2011), and there is some evidence to suggest that second-generation antipsychotics are associated with a small increased risk for diabetes compared with first-generation antipsychotics in people with schizophrenia (Smith, 2008). Another review showed that antipsychotics could cause type 2 diabetes in people under the age of 24 years (Galling et al, 2016).

Metabolic syndrome, which describes a clustering of CVD risks, reliably predicts a five-fold increased risk of type 2 diabetes in the general population (Alberti et al, 2006). Prior to antipsychotic initiation, metabolic syndrome is no more likely in people experiencing a first episode of psychosis than in peers without psychosis (Fleischhacker et al, 2013). Yet by age 40 years, people with schizophrenia have a three-fold increased rate of metabolic syndrome compared with age-matched people from the general population (De Hert et al, 2006).

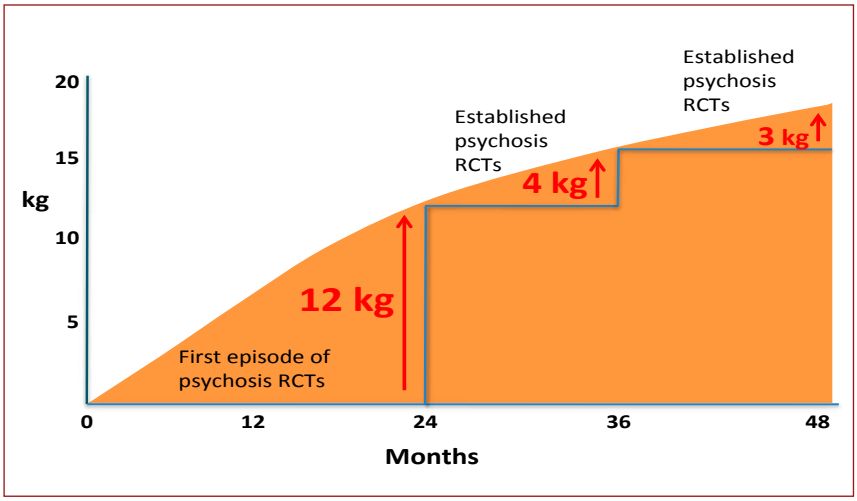


Figure 1. Weight gain on antipsychotic medication following a first episode of psychosis. Data from Alvarez-Jiménez et al (2008). Published with permission from Prof. Alvarez-Jiménez. RCT=randomised controlled trial.

Although antipsychotic treatment plays an important role in increasing the risk of type 2 diabetes, to understand this population's vulnerability to metabolic disturbance requires awareness of how psychosis impacts beyond simply the distress of symptoms and medication side effects. Social consequences, often profound, include damaged relationships and social isolation, stigma and discrimination, disrupted education and employment, and financial and accommodation uncertainties. SMI can also reduce motivation and cause paranoid thinking, and treatment side effects include sedation and appetite stimulation (Holt and Mitchell, 2015). Combined, these can influence lifestyles that predispose to type 2 diabetes, in particular physical activity, diet and smoking:

- **Physical activity** – fewer than 30% of people with schizophrenia are regularly active compared to 62% of their non-psychiatric peers (Lindamer et al, 2008). A systematic review found people with psychosis were sedentary for more than 11 hours per day, 3 hours more than their non-psychiatric peers (Stubbs et al, 2016).
- **Diet** – diet in people with SMI tends to be high in fat and refined sugar, low in dietary fibre and with inadequate fruit and vegetable intake (Dipasquale et al, 2013).
- **Smoking** – this is the single greatest preventable cause of premature death in people with SMI; smoking rates are two to three times higher than in the general population (Brown et al, 2010).

A list of cardiovascular risk factors in people with SMI can be found in *Table 1*.

What about healthcare?

Unfortunately, people with SMI do not always receive the care they need for their physical health. This inequality occurs for several reasons, including the lack of coordination and sharing of information between primary and mental healthcare providers, inadequate attention to physical health problems, limited

understanding among healthcare professionals about the risk of diabetes and the challenges of managing diabetes alongside SMI, and barriers to accessing healthcare experienced by people with SMI due to their psychological, social and economic vulnerabilities (Mitchell et al, 2009; McGinty et al, 2015).

People with SMI describe primary care as the cornerstone of their physical and mental healthcare, and they especially value continuity and holistic approaches (Lester et al, 2005). However, annual GP consultation rates for people with SMI have plummeted from about 13 per year in the mid 1990s to around three per year more recently, only marginally higher than for the wider practice population. Additionally, practice nurses, who are key providers of health education and support for people with long-term conditions, are half as likely to see people with SMI as they are the wider population (Reilly et al, 2012).

Although annual physical health checks for people with SMI in primary care have been incentivised since 2004 as part of the Quality and Outcomes Framework (QOF), the National Audit of Schizophrenia (NAS) revealed that only 29% of 5091 people with this SMI had cardiometabolic risk (weight, smoking status, glucose, lipids and blood pressure) adequately assessed within the previous 12 months (Crawford et al, 2014). Moreover, only 53% of those found to have abnormal blood glucose levels had a record of appropriate intervention. The NAS found unacceptably wide variation in the prescribing of antipsychotics as well, including polypharmacy (multiple antipsychotic use, contrary to the evidence) and doses exceeding British National Formulary recommendations (Patel et al, 2014).

Inequalities in diabetes care may also contribute to poor outcomes in people with SMI and diabetes (Chwastiak et al, 2015). However, the evidence is unclear; some studies show that, compared to those with diabetes alone, people with SMI are less likely to be prescribed effective medications and tend to receive less monitoring and diabetes education. Other studies show no difference, while some suggest that people with SMI actually receive more diabetes care (Mitchell et al, 2009; McGinty et al, 2015). However, no research has investigated these healthcare inequalities in the UK (Ward and Druss, 2015).

Table 1. Cardiovascular risk factors for people with severe mental illness: Estimated prevalence and relative risk compared to the general population.

	Schizophrenia		Bipolar disorder	
Risk factors	**Prevalence**	**Relative risk**	**Prevalence**	**Relative risk**
Tobacco smoking*	50–80%	2–3	54–68%	2–3
Physical inactivity†	70%	2	No data	No data
Obesity*	45–55%	1.5–2	21–49%	1–2
Hypertension*	19–58%	2–3	35–61%	2–3
Diabetes*	10–15%	2–3	8–17%	1.5–3
Dyslipidaemia*	25–69%	≤5	23–38%	≤3

*Data from De Hert et al (2011). †Data from Lindamer et al (2008).

What can be done? "Don't Just Screen – Intervene"

Consider the following scenario:

> *Tim consults with you following your surgery's invitation to attend for a check-up. He is 34 years old, has experienced schizophrenia for 10 years and receives a repeat prescription for an antipsychotic medicine. You check his blood pressure and enquire of his smoking and alcohol consumption, just as QOF incentivises. You can find no problems. Job done. Or is it?*

Psychosis typically emerges in early adulthood, accelerating exposure to cardiometabolic risk below the age when primary care would normally consider active primary CVD prevention. Awareness of diabetes in people with SMI is also variable (Foley et al, 2016), and symptoms of psychosis can mask early indicators of metabolic disturbance.

Around 50% of cases of diabetes may go undetected in those with SMI (Foley et al, 2016), compared with about 15% in the general population (Diabetes UK, 2015). In an Australian study, the authors screened 1153 adults with psychosis and found that 12% had

"The Lester resource provides a practical framework for assessing and managing cardiometabolic risk in people with severe mental illness."

type 2 diabetes and 19% were biochemically at high risk; however, 54% of these participants were not previously aware of this, and awareness was lowest in the age group of 25–34 years (Foley et al, 2016). Failure to monitor this young at-risk population lies at the root of this health inequality.

The **Lester resource** (*Figure 2*) provides a practical framework for assessing and managing cardiometabolic risk in people with SMI. Developed in a process led by the late Professor Helen Lester, the resource has been endorsed by NICE, relevant Royal Colleges, Diabetes UK, NHS England and Public Health England. The Lester resource's mantra, "Don't Just Screen – Intervene", highlights that, whilst identifying risk is essential, it is not sufficient in and of itself.

Let's return to our scenario:

You decide to use the Lester resource. This means that, in addition to checking Tim's blood pressure and enquiring about his smoking and alcohol consumption, you check his BMI and test his total/HDL cholesterol ratio and HbA_{1c}. Tim's risk of developing diabetes is now much clearer. Do you have all the information you need to intervene? And what's next?

For the purpose of this article, let's assume Tim's BMI is 29 kg/m^2 and his lipid results are normal. However, his HbA_{1c} results place him in the high-risk category for diabetes. There are numerous interventions that may help Tim. But first and foremost you need to gain a holistic understanding of him, including both the personal challenges he may face in making

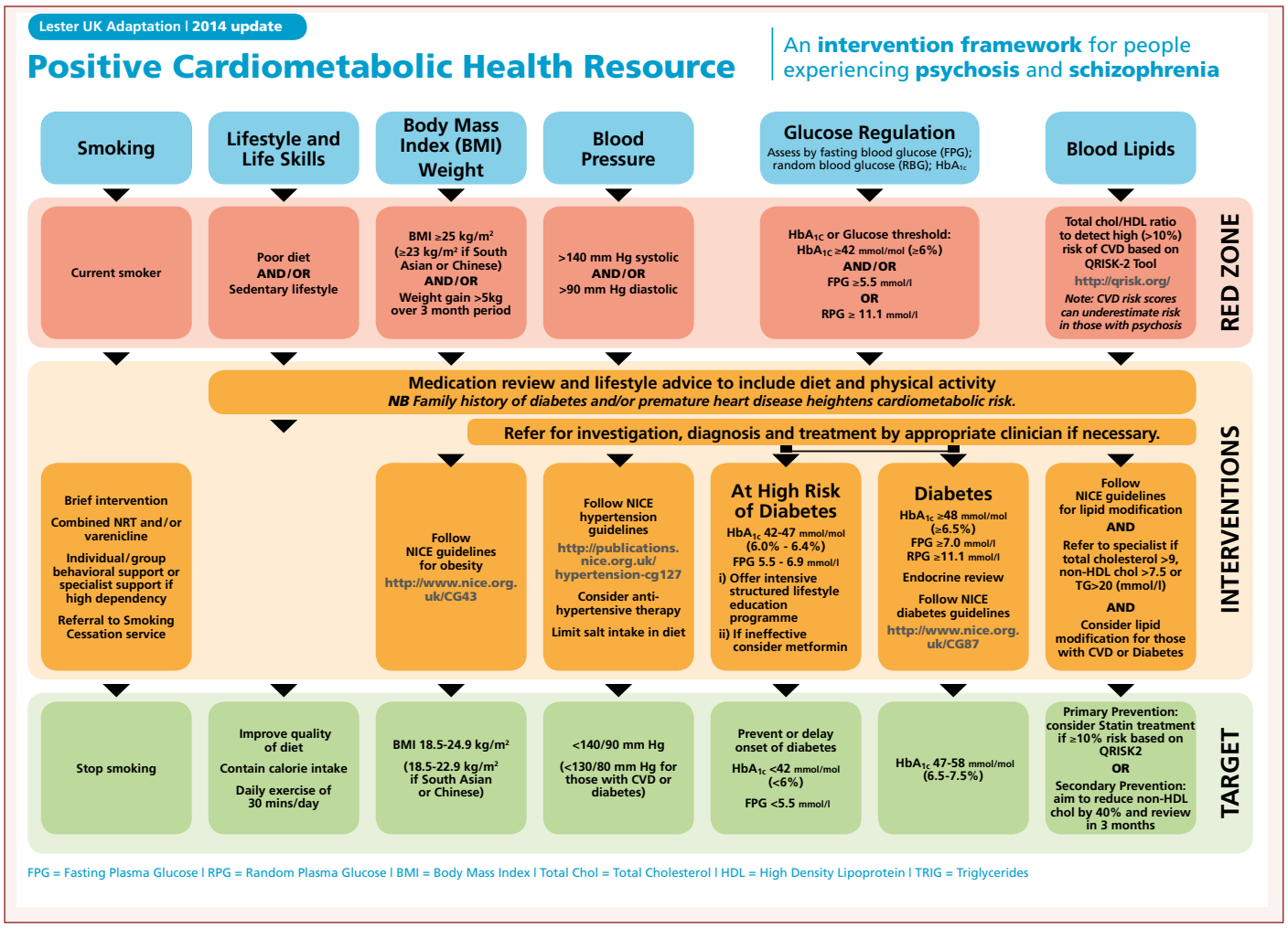


Figure 2. About the Lester resource. The full framework is available to download at: http://www.rcpsych.ac.uk/quality/nas/resources.

lifestyle changes and the positive resources he might be able to access. A shared approach to decision-making is essential; intervention adherence and treatment outcomes are both enhanced when people are involved in decisions about their care (Hamann and Heres, 2014). The interventions that may help Tim include the following.

Lifestyle interventions

NICE (2014) guidelines recommend that people with SMI who are at risk of diabetes should be offered lifestyle interventions. Systematic reviews show that these interventions can alleviate antipsychotic-induced weight gain and metabolic disturbances compared with routine care (McGinty et al, 2016). There is less understanding about the specific components and behaviour change techniques that lead to positive and sustainable lifestyle changes, and identifying suitable interventions tailored for people with SMI may therefore be a particular challenge.

Smoking cessation

A systematic review showed that smoking cessation interventions that work for the general population are equally effective for those with SMI (Banham and Gilbody, 2010), and a more recent study demonstrated that a bespoke intervention was acceptable to people with SMI and those who support them (Knowles et al, 2016). Currently, however, smoking cessation services are poorly suited to people with SMI, despite the fact that many who smoke wish to give up. For example, stopping smoking can cause a rapid increase in blood levels of medications such as antipsychotics and certain antidepressants, and it may require accompanying dosage reductions (Banham and Gilbody, 2010). A useful guide to smoking cessation in people with SMI can be found at: http://bit.ly/2c25bdJ.

Antipsychotic medication

Careful antipsychotic selection and dosage is vital given these agents' potential impact on cardiometabolic risk. It is important that prescribers in both primary and mental health settings provide clear information to patients about the risk of weight gain and metabolic disturbance. Treatment should be reviewed as a priority if there is rapid (e.g. <3 months) metabolic disturbance or weight gain (e.g. >5 kg in <3 months). Improving access to a dietitian at an early stage may help patients to make lifestyle changes alongside taking their medication. Considering an alternative antipsychotic medication associated with an improved metabolic profile may lessen these impacts (Mizuno et al, 2014), but any decision to change treatment should be carefully balanced against the risk of psychosis relapse and should always involve the patient's psychiatrist.

Metformin

NICE (2012) recommends use of metformin for the prevention of diabetes when other measures prove unsuccessful, and growing evidence suggests this agent may also lessen the weight gain and metabolic disturbance associated with antipsychotic medication (Mizuno et al, 2014) but these are off licence uses of the drugs.

Monitoring risk

Monitoring risk is important for diabetes management as well as prevention. An annual diabetes check may help early detection of diabetes complications. This should include assessing for diabetes distress, which is correlated with poor diabetes control and comorbid depression (Snoek et al, 2015). For many people with diabetes, the annual check may be the only time they visit their GP. However, people with comorbid SMI may need more tailored and regular monitoring than this. For example, psychotic episodes or a change in antipsychotic treatment may increase CVD risk and impede efforts to maintain a healthy lifestyle.

Supporting self-management

Like the general diabetes population, people with SMI and diabetes need support for self-managing their diabetes.

Improving access to diabetes self-management education is essential; however, generic interventions may need to be tailored, for

Page points

1. As with the general population, people with severe mental illness should be offered lifestyle interventions, which not only improve diabetes risk but also lessen the weight gain and metabolic disruption associated with antipsychotic medication.
2. Smoking cessation, the single most effective way to improve cardiometabolic risk, should be encouraged; however, currently in the UK, smoking cessation services are poorly suited to treat people with severe mental illness.

"We hope the current focus on improving diabetes prevention and management for people with severe mental illness will increase the opportunities to intervene as well as to screen."

example, to address specific challenges such as poor locus of control, stigma and stress, motivational deficits affecting self-management, and limited social support (Blixen et al, 2016).

Care coordination

People with SMI and diabetes identify fragmentation of care as a key barrier to self-management (Blixen et al, 2016). Poor continuity of care and limited sharing of information between different services are also identified as significant barriers. A collaborative approach to case management between primary and mental health services is needed; collaborative care models consistently show improvements in health outcomes for people with depression and comorbid physical illness (Coventry et al, 2014).

Conclusions

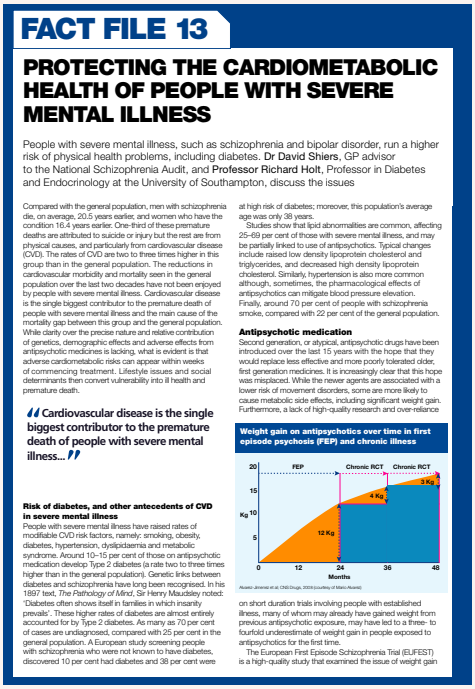
People with SMI currently receive inferior care for diabetes, partly as a result of inequalities in healthcare provision but also because their exposure to risk and the challenges they face in accessing appropriate care mean that a more tailored and intensive approach is required. Primary care is ideally placed to tackle this health inequality. Nurse practitioners have the necessary skills and knowledge to proactively manage cardiometabolic risk and, moreover, are well placed to coordinate management of detected abnormalities within the low-stigma setting of primary care.

Let's return a final time to our scenario:

Having established that Tim is at high risk of diabetes, you refer him to a lifestyle intervention programme, which includes guidance on regular physical activity and nutritional counselling. You also arrange to review his antipsychotic medication. Tim has a care coordinator as part of the care he receives from specialist mental health services. You share information with Tim's consent about his risk of diabetes so that the coordinator can also help to support him as he makes lifestyle changes.

Increasing awareness about the particular risks that people with SMI face and the proactive

Other useful resources



FACT FILE 13

PROTECTING THE CARDIOMETABOLIC HEALTH OF PEOPLE WITH SEVERE MENTAL ILLNESS

People with severe mental illness, such as schizophrenia and bipolar disorder, run a higher risk of physical health problems, including diabetes. **Dr David Shiers**, GP advisor to the National Schizophrenia Audit, and **Professor Richard Holt**, Professor in Diabetes and Endocrinology at the University of Southampton, discuss the issues

Compared with the general population, men with schizophrenia die, on average, 20.5 years earlier, and women who have the condition 16.4 years earlier. One-third of these premature deaths are attributed to suicide or injury but the rest are from physical causes, and particularly from cardiovascular disease (CVD). The rates of CVD are two to three times higher in this group than in the general population. The reductions in cardiovascular morbidity and mortality seen in the general population over the last two decades have not been enjoyed by people with severe mental illness. Cardiovascular disease is the single biggest contributor to the premature death of people with severe mental illness and the main cause of the mortality gap between this group and the general population. While clarity over the precise nature and relative contribution of genetics, demographic effects and adverse effects from antipsychotic medicines is lacking, what is evident is that adverse cardiometabolic risks can appear within weeks of commencing treatment. Lifestyle issues and social determinants then convert vulnerability into ill health and premature death.

"Cardiovascular disease is the single biggest contributor to the premature death of people with severe mental illness..."

Risk of diabetes, and other antecedents of CVD in severe mental illness

People with severe mental illness have raised rates of modifiable CVD risk factors, namely: smoking, obesity, diabetes, hypertension, dyslipidaemia and metabolic syndrome. Around 10–15 per cent of those on antipsychotic medication develop Type 2 diabetes (a rate two to three times higher than in the general population). Genetic links between diabetes and schizophrenia have long been recognised. In his 1897 text, *The Pathology of Mind*, Sir Henry Maudsley noted: 'Diabetes often shows itself in families in which insanity prevails'. These higher rates of diabetes are almost entirely accounted for by Type 2 diabetes. As many as 70 per cent of cases are undiagnosed, compared with 25 per cent in the general population. A European study screening people with schizophrenia who were not known to have diabetes, discovered 10 per cent had diabetes and 38 per cent were at high risk of diabetes; moreover, this population's average age was only 38 years.

Studies show that lipid abnormalities are common, affecting 25–69 per cent of those with severe mental illness, and may be partially linked to use of antipsychotics. Typical changes include raised low density lipoprotein cholesterol and triglycerides, and decreased high density lipoprotein cholesterol. Similarly, hypertension is also more common although, sometimes, the pharmacological effects of antipsychotics can mitigate blood pressure elevation. Finally, around 70 per cent of people with schizophrenia smoke, compared with 22 per cent of the general population.

Antipsychotic medication

Second generation, or atypical, antipsychotic drugs have been introduced over the last 15 years with the hope that they would replace less effective and more poorly tolerated older, first generation medicines. It is increasingly clear that this hope was misplaced. While the newer agents are associated with a lower risk of movement disorders, some are more likely to cause metabolic side effects, including significant weight gain. Furthermore, a lack of high-quality research and over-reliance on short duration trials involving people with established illness, many of whom may already have gained weight from previous antipsychotic exposure, may have led to a three- to fourfold underestimate of weight gain in people exposed to antipsychotics for the first time.

The European First Episode Schizophrenia Trial (EUFEST) is a high-quality study that examined the issue of weight gain

Weight gain on antipsychotics over time in first episode psychosis (FEP) and chronic illness

Adapted: Jönsson et al. CNS Drugs. 2009 (courtesy of Mário Álvarez)

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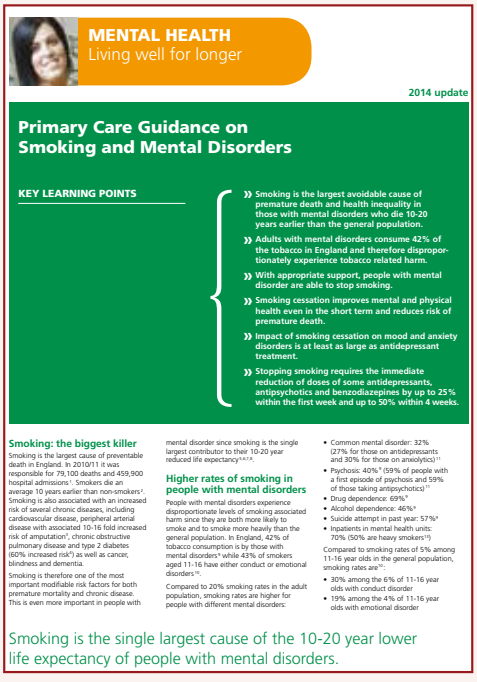

MENTAL HEALTH
Living well for longer

2014 update

Primary Care Guidance on Smoking and Mental Disorders

KEY LEARNING POINTS

- Smoking is the largest avoidable cause of premature death and health inequality in those with mental disorders who die 10-20 years earlier than the general population.
- Adults with mental disorders consume 42% of the tobacco in England and therefore disproportionately experience tobacco related harm.
- With appropriate support, people with mental disorder are able to stop smoking.
- Smoking cessation improves mental and physical health even in the short term and reduces risk of premature death.
- Impact of smoking cessation on mood and anxiety disorders is at least as large as antidepressant treatment.
- Stopping smoking requires the immediate reduction of doses of some antidepressants, antipsychotics and benzodiazepines by up to 25% within the first week and up to 50% within 4 weeks.

Smoking: the biggest killer

Smoking is the largest cause of preventable death in England. In 2010/11 it was responsible for 79,100 deaths and 459,900 hospital admissions [1]. Smokers die an average 10 years earlier than non-smokers[2]. Smoking is also associated with an increased risk of several chronic diseases, including cardiovascular disease, peripheral arterial disease with associated 10-16 fold increased risk of amputation[3], chronic obstructive pulmonary disease and type 2 diabetes (60% increased risk[4]) as well as cancer, blindness and dementia.

Smoking is therefore one of the most important modifiable risk factors for both premature mortality and chronic disease. This is even more important in people with mental disorder since smoking is the single largest contributor to their 10-20 year reduced life expectancy[5,6,7,8].

Higher rates of smoking in people with mental disorders

People with mental disorders experience disproportionate levels of smoking associated harm since they are both more likely to smoke and to smoke more heavily than the general population. In England, 42% of tobacco consumption is by those with mental disorders[9] while 43% of smokers aged 11-16 have either conduct or emotional disorders[10].

Compared to 20% smoking rates in the adult population, smoking rates are higher for people with different mental disorders:

- Common mental disorder: 32% (27% for those on antidepressants and 30% for those on anxiolytics)[11]
- Psychosis: 40%[9] (59% of people with a first episode of psychosis and 59% of those taking antipsychotics)[12]
- Drug dependence: 69%[9]
- Alcohol dependence: 46%[9]
- Suicide attempt in past year: 57%[9]
- Inpatients in mental health units: 70% (50% are heavy smokers[13])

Compared to smoking rates of 5% among 11-16 year olds in the general population, smoking rates are[10]:

- 30% among the 6% of 11-16 year olds with conduct disorder
- 19% among the 4% of 11-16 year olds with emotional disorder

Smoking is the single largest cause of the 10-20 year lower life expectancy of people with mental disorders.

http://bit.ly/2c25bdJ

Psychosis and schizophrenia in adults: prevention and management [CG178]
www.nice.org.uk/guidance/cg178

approach that is needed to sufficiently screen and intervene for diabetes may help to ensure that individuals are better supported. The Lester resource provides a useful tool to facilitate this. However, only recently has policy and research prioritised this health inequality, and tailored diabetes interventions for this population are still lacking. We hope the current focus on improving diabetes prevention and management for people with SMI will increase the opportunities to intervene as well as to screen. ■

Publisher's note

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