Mental illness: Why is cardiometabolic risk monitoring important?

[Abstract Monitoring of cardiometabolic effects in people with severe mental illness helps to identify those at risk of developing metabolic-related disorders and provides an opportunity for timely interventions]

People with mental illness, especially those with severe mental illness (SMI) such as psychosis, have a life expectancy shortened by 20 years compared with the general population (Pradhan and Joshi 2018). Leading causes of premature death are physical illness, especially cardiovascular disease (CVD), respiratory diseases and diabetes (Mwebe and Roberts 2019). In people with SMI, 45% of premature mortality is linked to CVD (Taipale et al 2020).

Antipsychotic medications routinely used in the treatment of people with SMI are associated with weight gain, lipid and glucose dysregulation. These are known risks for the development of metabolic syndrome, a cluster of conditions that increase the risk of CVD, type 2 diabetes and stroke (Kaar et al 2020, Taipale et al 2020). Cardiometabolic disease describes a spectrum of health conditions beginning with overweight issues, insulin resistance and lipid abnormalities progressing to metabolic syndrome (Taipale et al 2020). For example, a third of people with schizophrenia have metabolic syndrome, with rates as high as 69% in those with chronic illness (Vancampfort et al 2015).

Olanzapine and clozapine are associated with the highest incidence of weight gain among all antipsychotics (Ballon et al 2018). Weight gain occurs early after initiating treatment and may be challenging to address so body mass index (BMI) and weight should be monitored. The National Institute for Health and Care Excellence (NICE) (2014) recommends measuring waist circumference alongside BMI where patients are carrying excess abdominal weight (central obesity).

Changes in blood pressure and pulse have been reported during treatment with antipsychotics, for example, hypotension and hypertensive events (Mwebe 2021). Monitoring should be undertaken at treatment initiation and during maintenance treatment.

Increases in glucose can occur early after initiating treatment with antipsychotics. The glycated haemoglobin (HbA_{1c}) test should be used for long-term glycaemic control/monitoring (Holt 2019). As HbA_{1c} provides a longer-term glycaemic measure, early on during treatment fasting or random glucose tests may offer a more appropriate glycaemic measure. Urinalysis should also be used to monitor for antipsychotic-induced metabolic effects, for example glucose and ketones (Mutsatsa 2015).

High total cholesterol and/or triglycerides and raised non-high-density lipoprotein cholesterol levels increase the risk of CVD (Cooper et al 2016). An electrocardiogram is a useful indicator when screening for cardiovascular events in patients with SMI, particularly where there is past abnormalities or other risk factors (i.e., smoking, overweight, substance use). It should be done on admission and if indicated by clinical picture after dose changes, and during annual physical health check-ups in patients who are taking antipsychotics (NICE 2021; Taylor et al 2021).

Mental illness by itself is also considered a cardiometabolic risk factor, independent of well-described factors such as smoking, sedentary behaviour and unhealthy diets. Discrimination and stigma towards people with SMI can also increase the risk of social isolation, poor access to healthcare facilities and interventions (Mwebe 2021).

The Lester Positive Cardiometabolic tool

This is a screening and intervention Health Resource for people with SMI (Shiers et al 2014). The tool uses a traffic-light system and emphasises early identification and screening strategies for six known cardiometabolic risk factors to target appropriate and timely interventions:

- Smoking.
- Lifestyle and life skills.

- BMI and weight.
- Blood pressure.
- Glucose regulation.
- Blood lipids.

An outline of the recommended monitoring intervals and targets for these risk factors is provided in Table 1. Detailed information is available at Shiers et al (2014).

Table 1. Cardiometabolic risk factors: recommended monitoring intervals and targets

Risk factor	**Baseline**	**Weekly for first 6 weeks**	**12 weeks**	**Annually**	**Target**
*Smoking *Poor diet and/or sedentary behaviour (lifestyle and life skills)	**√**	Ongoing monitoring to be offered during treatment			• Stop smoking • Improve quality of diet, contain calorie intake, daily exercise of 30 minutes
Body mass index (BMI)	**√**	**√**	**√**	**√**	• BMI 18.5-24.9kg/m² (18.5-22.9kg/m² if South Asian or Chinese)
Waist circumference	**√**			**√**	• Men <94cm (37in) • Women <80cm (31.5in)
Blood pressure and pulse	**√**		**√**	**√**	• <140/90mmHg (<130/80mmHg for people with cardiovascular disease or diabetes) • 60-90 beats per minute
Glucose regulation	**√**		**√**	**√**	• Prevent or delay diabetes onset • HbA_{1c} <42mmol/mol (<6%) • Fasting plasma glucose (FPG) <5.5mmol/L (applies to patients at high risk of diabetes that is, HbA_{1c} 42-47mmol/mol [6.0-6.4%] and FPG 5.5-6.9mmol/L) • For patients with diabetes that is, HbA_{1c} ≥48mmol/mol (≥6.5%) **and** • FPG ≥7.0mmol/L **and** • Random plasma glucose ≥11.1mmol/L • Target is HbA_{1c} 47-58mmol/mol (6.5-7.5%)
Blood lipids	**√**		**√**	**√**	• Primary prevention: consider statin if ≥10% risk based on QRISK3 https://qrisk.org/ • Secondary prevention: aim to reduce non-high-density lipoprotein cholesterol levels by 40% and review in 3 months

(Adapted from Shiers et al 2014)

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