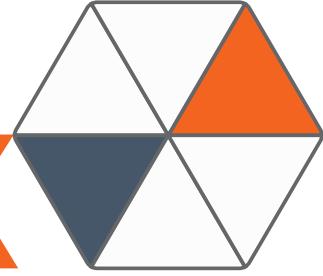


# Equally Well UK



**Healthy Weight Management in People with a Severe Mental Illness:  
a review of the literature to identify effective weight management interventions**



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## Foreword from the Equally Well UK Lived Experience Advisory Group

We welcome this review of the evidence base of healthy weight management interventions to support people living with a mental illness.

We've all had experience of mental illness ourselves – either as someone living with it or as a carer for a loved one – and so we understand first-hand the importance of maintaining good physical and mental health to help us live long and fulfilling lives. For all of us, managing our weight in a healthy way is an important part of achieving good overall health.

Yet, historically, we have been made to feel as though we have to choose between our physical or mental health. But we don't want someone to decide that putting on weight is an acceptable price to pay for taking a medication that might help our mental health.

We want professionals to want better for people, to not see weight gain as the status quo. We want healthcare professionals to engage with a patient who has a history of mental health issues just as much as with one who doesn't on the topic of weight management.

We recognise that this is a nuanced issue, and so we urge healthcare professionals to be aware of disordered eating behaviours such as restricting, binge-eating and purging, as well as night-eating syndrome – all of which someone with a mental illness may be more vulnerable to.

We want you to recognise the role of hearing voices in food and eating and to understand that simplistic messages of weight loss aren't appropriate for us and that the psychological elements of healthy weight management should be understood. For example, food is often a coping strategy for many of us. This is why positive motivation rather negative motivation is much more effective – we want to be encouraged and supported and not frightened into having to change.

We feel that within mental health care, inpatient settings can make weight management difficult. For example, food quality and exercise opportunities are often limited. Community settings also have their own challenges, and access to support is difficult for both service users and carers. Therefore, many of us are referred to commercial weight management programmes which can be quite unhelpful. A lot of us have felt the ineffectiveness of short-term or 'fad' diets offered that often result in drastic weight-fluctuation that adds to our distress.

This review has analysed the efficacy of a number of interventions from existing research. We feel that there is still scope to radically transform how we support people to healthily manage their weight. The need for both psychological and peer support when managing weight is incredibly important, and so we encourage you to look towards innovative ways to approach weight management within your organisations.

### Signed by the Equally Well UK Lived Experience Group:

Ben Russell  
Chris Lynch  
Elle Todd  
Francoise Holland  
Hannah Moore

Kevin James  
Marsha McAdam  
Nikita Egan  
Nina Bibi  
Sofija Opacic



## EXECUTIVE SUMMARY

People with a severe mental illness are more likely to have a higher body mass index (BMI) than the general population.

A higher BMI is associated with an increased risk of physical health problems such as cardiovascular disorders, type 2 diabetes, musculoskeletal disorders such as osteoarthritis, and some cancers. These can lead to a shortened life expectancy, irrespective of the added effect of tobacco smoking.

Anti-psychotic medication plays a significant role but is not the sole cause of a higher BMI. Other factors to consider include lifestyle and socio-economic factors.

Selecting an anti-psychotic medication that is less likely to cause weight gain should be considered by the prescribing clinician and ensure that the adverse effects are discussed with the patient and plans are made with them to manage this risk.

Interventions that are effective in reducing BMI in people with a severe mental illness include a combination of lifestyle interventions such as increased exercise and dietary advice. However, for these to be effective, the interventions need to be sustained beyond six months, and delivered by qualified health professionals such as dietitians.

- Most interventions only achieved a 5% decrease in BMI in research studies.
- Lifestyle interventions were more likely to be effective for people who were about to start antipsychotic medication for the first time than for those who had been established on medication for some months or years.
- Metformin, a medication used in diabetes care, is effective in reducing BMI. Bariatric surgery is likewise effective in reducing BMI.
- There is little evidence that indicates ways to improve access to services that deliver healthy weight management programmes.

## INTRODUCTION

This review of the literature is written for the Equally Well UK collaborative. The review is limited to the latest evidence related to weight management interventions for people with a severe mental illness. It is intended to help clinicians support people using their services to manage their weight if they wish to do so.

This review is written with the general public in mind as an audience, however there will be inevitably some technical terms. The two most frequent technical terms used are Body Mass Index (BMI) and obesity. BMI is calculated from a person's height and weight. Health systems currently consider a BMI range of 18.5 – 24.9 as 'normal'; a range of 25 – 29.9 as 'overweight'; a range of 30 – 39.9 as 'obese' and a BMI above 40 is considered to be 'severely obese'.

In preparing this review, the above terms have been used as the basis of the search for evidence, as these are currently widely accepted scientific terms used in academic and peer reviewed journals. However, we remain open-minded to consider other measures of health and fitness, rather than just body shape and size, when the evidence base to support these new measures becomes available.

In the same way, we remain concerned about the concept of weight stigma and its association with terms such as 'obesity'. To try and avoid such stigma, the phrase 'weight management' has been introduced where this is possible, such as in the title of this review. However, since much of this review cites evidence from published studies, the term 'obesity' has been retained where it was used by the original authors.

## OTHER DEFINITIONS/DESCRIPTIONS THAT ARE USED FREQUENTLY IN THIS REVIEW:

- **Severe mental illness (SMI):** This is an ill-defined description<sup>1</sup> that has three components, all of which need to be present:
  - **Diagnosis** – usually a psychotic disorder such as schizophrenia, or bipolar disorder, but can include other possible diagnoses such as personality disorder, or severe depression or anxiety
  - **Disability** – the disorder causes significant disability and interferes with the activities of daily living
  - **Duration** – the disorder is a long-term problem lasting for months and years.
- **Anti-psychotic medication:** This is a group of medications prescribed by doctors to treat people suffering from schizophrenia, and/or bipolar disorder. Examples are chlorpromazine, haloperidol, olanzapine, risperidone, and clozapine, although there are many more available.
- **Systematic Review:** A systematic review summarises the results of carefully designed healthcare studies (controlled trials) and provides a high level of evidence on the effectiveness of healthcare interventions. Judgments may be made about the evidence and inform recommendations for healthcare.
- **Meta-analysis:** If individual papers are methodologically similar, data can be combined so that previously small sample sizes (with statistically questionable results because of the small numbers) may be taken together and the sample size increased to allow new, more accurate statistical analyses. Together with systematic reviews they represent a powerful way of reviewing published evidence and drawing conclusions on effectiveness.

## IS OBESITY MORE COMMON AMONG PEOPLE WITH A SEVERE MENTAL ILLNESS?

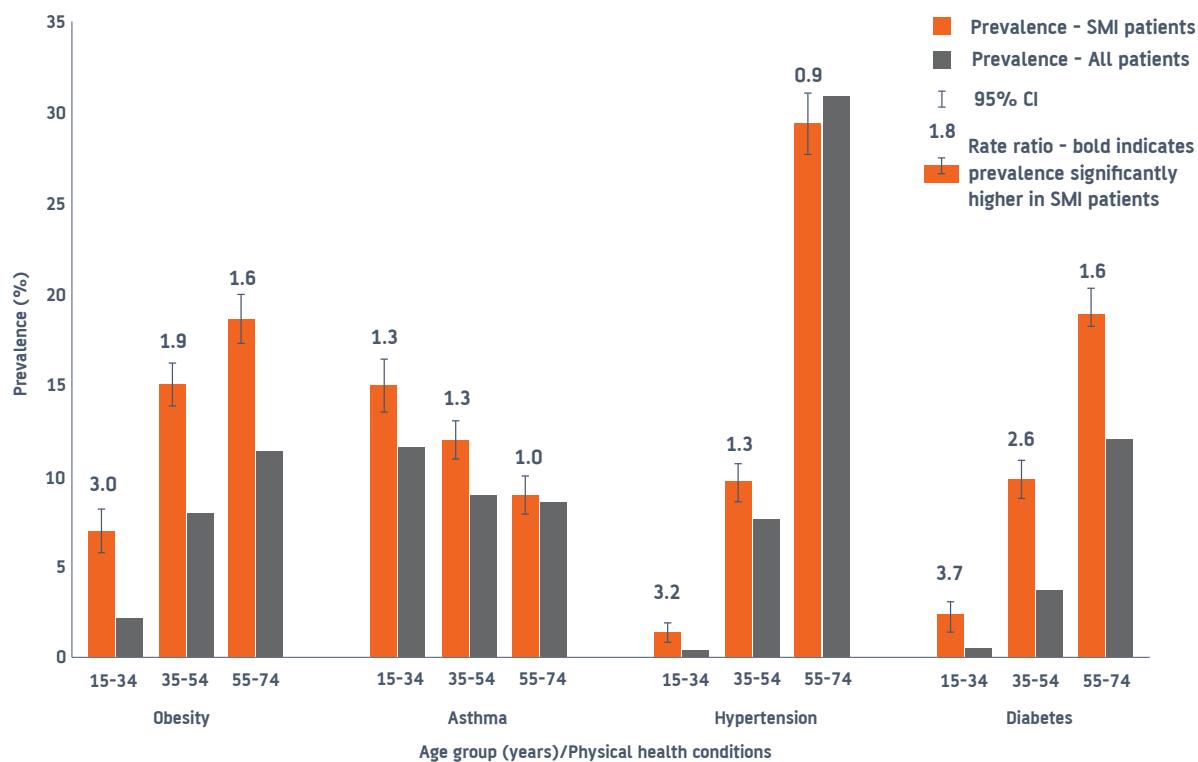
Public Health England undertook an analysis of over two million GP records, and compared how many people were obese in the general population, compared to those with a severe mental illness<sup>2</sup>. They found that for people aged 15 – 74 years, obesity was 1.8 times more common in people with severe mental illness compared to the general population.

In the age range 15 – 34 years obesity was three times as common, but there was little difference in obesity between the sexes, and for people were living in areas of higher deprivation.

Figure 1 overleaf shows age-specific prevalence of physical health conditions for severe mental illness (SMI) patients and all patients aged 15 to 74.

## <sup>2</sup>Figure 1: PHE Severe mental illness and physical health inequalities

Age-specific prevalence of physical health conditions for severe mental illness (SMI) patients and all patients aged 15 to 74



Graph used with kind permission from Public Health England

## WHAT ARE THE PHYSICAL HEALTH CONSEQUENCES OF OBESITY?

There are physical health consequences of a raised BMI, irrespective of whether or not an individual has a severe mental illness. The World Health Organisation (WHO) describe the consequences as:

***“Being overweight or obese can have a serious impact on health. Carrying extra fat leads to serious health consequences such as cardiovascular disease (mainly heart disease and stroke), type 2 diabetes, musculoskeletal disorders like osteoarthritis, and some cancers (endometrial, breast and colon). These conditions cause premature death and substantial disability.”<sup>3</sup>***

A meta-analysis of data from around the world<sup>4</sup> found that there was an increased risk of death from all causes, for people whose BMI classed them as overweight or obese.

The authors of that study believe that:

***“It is not that the obesity itself causes the increased risk of death, but that people who are obese, are more likely to die compared to those who are not obese.”***

Broadly, for people living in Europe, for every increase in BMI of five points the risk of death increased by 39%. For people aged between 35 and 49 years, for every five-point increase in the BMI, the increased risk was 52%, whereas for those who were older (75 to 89 years) for every increase of five points in the BMI, the risk was lower, at 21%.

It should be noted that this study excluded people who had smoked, and that tobacco smoking separately increases the risk of premature death.

## THE ROLE OF ANTI-PSYCHOTIC MEDICATION

Anti-psychotic medication, both typical and the newer atypical antipsychotic drugs, cause weight gain<sup>5</sup>. Examples of typical antipsychotic medication are haloperidol and chlorpromazine. Newer, atypical drugs include clozapine, olanzapine, risperidone, aripiprazole and amisulpride. However, it is important to be clear that different drugs have a different effect on weight gain, with some being relatively neutral, and some causing significant weight gain.

What is less clear is how anti-psychotic medications can cause weight gain. There are at least two theories to explain why there is both drug variability as well as individual susceptibility to weight gain<sup>6</sup>. The first theory concerns the effect of the drug on dopamine receptors, serotonin receptors and histamine receptors in the brain. The second theory concerns the effect of the drugs on recently identified pro-hormones that control weight, and satiety (how full you feel after eating) called ghrelin and leptin. Individual genetic differences may also explain why different people respond differently to the same medication.

Whilst anti-psychotic medication is clearly linked to weight gain it should also be noted that medication is not the sole cause of weight gain. It was an issue for people with severe mental illness before anti-psychotic medication was in routine use, noted by researchers in the late nineteenth and early twentieth centuries.

When describing dementia praecox (the original name of the illness that is now called schizophrenia) in the 1890s, Sir Henry Maudsley identified that diabetes and weight gain were more common in people with the disorder than in the general population. Similar results were identified by Kraepelin and Bleuler well before antipsychotics were in routine use. The weight gain was believed to be in part due to the more sedentary characteristics of people with severe mental illness, and that in part this was linked to deprivation and unemployment.

Dayabandara<sup>6</sup> reviewed the various systematic reviews and meta-analyses of studies that compare weight gain caused by antipsychotic medication, shown in Table 1.

**Table 1: Likelihood of weight gain with antipsychotics**

Antipsychotic	Propensity to cause weight gain
Clozapine	High
Olanzapine	High <sup>a,b</sup>
Chlorpromazine	Moderate <sup>b</sup>
Quetiapine	Moderate <sup>b</sup>
Risperidone	Moderate
Paliperidone	Moderate <sup>c</sup>
Aripiprazole	Low <sup>c</sup>
Amisulpride	Low
Asenapine	Low <sup>d</sup>
Haloperidol	Low <sup>c,d</sup>
Ziprasidone	Low <sup>d</sup>
Lurasidone	Low

Notes: <sup>a</sup>Significantly greater increase in weight at >38 weeks, when compared with <6 weeks period in both antipsychotic previously prescribed and naïve groups in the meta-analysis by Bak et al.<sup>13</sup> <sup>b</sup>Significant weight gain seen in antipsychotic naïve group even <6 weeks in the meta-analysis by Bak et al.<sup>13</sup>

<sup>c</sup>Weight neutral with duration of antipsychotic use in the meta-analysis by Bak et al<sup>13</sup> <sup>d</sup>No significant difference in weight when compared with placebo in multiple treatment meta-analysis by Leucht et al.<sup>10</sup> Data from studies:<sup>9-11,13</sup>

## BEST PRACTICE STATEMENTS:

The World Health Organisation published guidelines on the management of physical health problems in those with a severe mental illness. The guidelines<sup>7</sup> made two best practice statements that note the different nature of individual antipsychotic drugs:

- “For people with severe mental disorders who are overweight or obese or at risk of becoming overweight or obese, initiating a psychotropic medication with lower propensity for weight gain should be considered, taking into account clinical benefits and potential adverse effects.”
- “For people with severe mental disorders who are overweight or obese, switching to a psychotropic medication with a lower propensity for weight gain may be considered, taking into account clinical benefits and potential adverse effects.”

## NON-MEDICATION INTERVENTIONS

There are a number of systematic reviews that look at non-medication interventions. Non-medication interventions mean interventions that are either described as ‘lifestyle’, or changes in behaviour of the individual. For example, these could include dietary or exercise interventions.

Bartels et al<sup>8</sup> found that lifestyle interventions of more than 12-month duration produced “modest” but significant reductions in BMI. Significant in these cases was a reduction in BMI of more than 5%. The results from similar studies of less than 6-month duration were more difficult to interpret, and therefore difficult to draw meaningful conclusions. There was considerable variation in the types of interventions offered, and so the authors were unable to identify which interventions were more likely to be effective.

Verhaege<sup>9</sup> found that “small improvements” in BMI and quality of life are possible through psycho-education and/or behavioural interventions. However, none of these studies produced a reduction in BMI of more than 5%.

Teasdale<sup>10</sup> found that nutritional interventions produced greater changes in BMI if they were offered when antipsychotic medication was being started, compared to when people had been established on anti-psychotic medication for some months and years. Dietitians were more effective than other health professionals in producing both a reduction in BMI and a reduction in weight. The effect size for all the interventions considered was in the “small to moderate” range.

Pearsall<sup>11</sup> identified an absence of randomised trials investigating the effect of dietary change as a single intervention in schizophrenia. Dietary advice is presently offered to people with serious mental illness but there is a lack of evidence to support it. Dietary advice has been used in a number of multi-modal healthy living interventions including other components such as exercise and weight reduction.

Pearsall<sup>12</sup> undertook a systematic review of exercise therapy in people with severe mental illness. He found that although exercise therapy can lead to increased exercise activity, this alone did not result in improved mental health symptoms, or reduction in BMI or body weight. However, a later systematic review<sup>13</sup> demonstrated that aerobic physical activity can reduce psychiatric symptoms, improve cognition and improve cardio-respiratory fitness, whilst its impact on weight, waist circumference and BMI was inconsistent.

Three systematic reviews looked particularly at the role of exercise and fitness in people with severe mental illness. Stubbs<sup>14</sup> identified that whilst physical activity improves health outcomes, people with schizophrenia took significantly less physical activity (light, moderate or vigorous) than people without schizophrenia. A further study by Stubbs<sup>15</sup> described that people with schizophrenia are also more likely to experience sedentary behaviour, which is a risk factor for cardiovascular disease. Finally, Stubbs<sup>16</sup> identified that exercise improved cardiorespiratory fitness and drew the conclusion that the “...treatment of schizophrenia should include a focus on both improving “fitness” and reducing “fatness” in order to reduce all-cause mortality”.

## WHO GUIDELINES

The World Health Organisation published guidelines on weight management for people with severe mental illness<sup>6</sup>. The process of guideline production was rigorously applied, with an extensive review of the literature. Their recommendation is that “Behavioural lifestyle (healthy diet, physical activity) interventions should be considered in all people with severe mental disorders who are overweight or obese or at risk of becoming overweight or obese in accordance with WHO’s Package of Essential Noncommunicable Disease Interventions (WHO PEN) for primary care in low-resource settings (2010). These interventions should be appropriate and tailored to the needs of this population.” (Strength of recommendation: Strong; Quality of evidence: Very low).

The WHO PEN interventions<sup>17</sup> are:

- Advise overweight patients to reduce weight by following a balanced diet.
- Advise patients to give preference to low glycaemic-index foods (beans, lentils, oats and unsweetened fruit) as the source of carbohydrates in their diet.
- Advise patients to reduce sedentary behaviour and practise regular daily physical activity appropriate for their physical capabilities (e.g. walking).

## PHARMACOLOGICAL OR SURGICAL INTERVENTIONS

There are two other groups of interventions that can be considered for people with a severe mental illness who are obese: pharmacological or surgical interventions.

### Pharmacological interventions

The WHO guidelines<sup>7</sup> reviewed the evidence for a number of medications and found that there was evidence for limited effectiveness for just one drug, metformin. Metformin is a drug that is considered as the first line medication treatment for people with Type 2 diabetes. Metformin works by increasing the sensitivity of cells in the body to insulin. Type 2 diabetes is closely linked to a higher BMI and is characterised by the body's cells becoming resistant to the effects of insulin – so that the body experiences a relative “deficiency” of insulin. Metformin increases the sensitivity of the cells to insulin, thus reversing, partially, the resistance to insulin in the body. Clinical effects include a slight but significant decrease in weight of 1 to 2 kilos. The evidence is sufficiently strong for the WHO<sup>7</sup> to make the following advice:

***“For people with severe mental disorders who are overweight or obese, and where lifestyle interventions and/ or switching psychotropic medication do not appear successful, adjunctive metformin may be considered. This should be considered under close clinical supervision and monitoring.***

Although other medications were reviewed by the WHO guidelines there was no evidence to support adding any other medications to the advice above. However, it is worth highlighting that there is a newly introduced group of drugs for diabetes called GLP 1 agonists (examples are liraglutide, semaglutide) for which systematic reviews demonstrate significant weight loss in people who have a higher BMI. However, these systematic reviews have not been focussed on people with a severe mental illness, but on the general population, and therefore the results may not be applicable.

### Surgical interventions

There are a number of different surgical procedures that are designed to reduce weight in people who have a higher BMI. Together, these are described as bariatric surgical procedures. A systematic review<sup>18</sup> demonstrated that bariatric surgery is as effective in people with a severe mental illness as it is for people from the general population. The review identified that between 30 – 70% of excess body weight was lost in the first year, following surgery; this figure was the same as the control (non SMI) group. However, as in the general population, some weight gain occurred in the 12 – 24 months following surgery, but not to the pre-surgery level.

## THE ORGANISATION OF WEIGHT MANAGEMENT SERVICES IN THE NHS

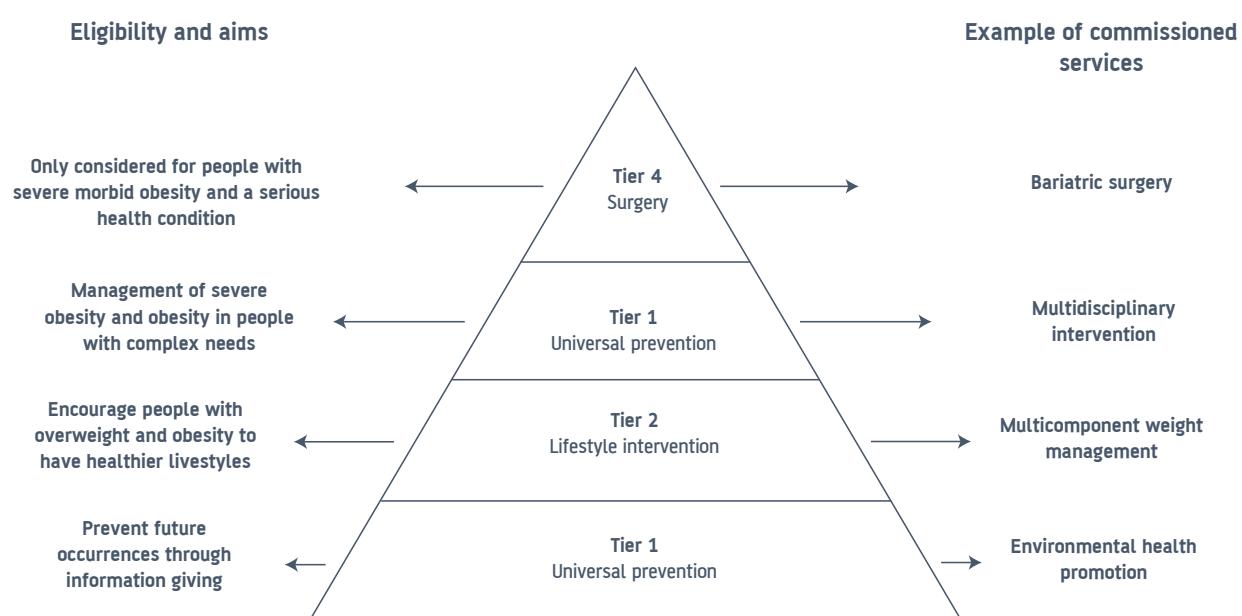
Services to manage weight loss are currently organised into four tiers, or levels, of care, as shown in Figure 2<sup>20</sup>.

There is little evidence that describes the access that people with a severe mental illness have to any of the tiers of care. Barriers to access are not well described in the literature, and there is little published evidence of effective interventions to overcome those barriers.

A systematic review<sup>18</sup> looked at interventions to increase uptake of, or access to, physical health screening programmes internationally.

This review included cancer screening programmes, infection prevention programmes, and metabolic syndromes (the group of illnesses including diabetes and cardiovascular disease). The conclusions that the review drew were applicable to all aspects of physical health screening, and not limited specifically to weight management. The authors concluded that barriers included resource constraints, environmental barriers, unclear boundaries between professional roles and patient resistance. Facilitators to overcome these barriers were found to include “champions” or key workers, closer working between primary and secondary care, and increasing trust between clients and staff.

<sup>20</sup>Figure 2: UK Obesity Care Pathways



Graphic from The UK Obesity Care Pathway (Department of Health 2013)

## CONCLUSION AND IMPLICATIONS

This evidence review has looked at a range of ways in which people with a severe mental illness can be supported with healthy weight management. The picture that emerges is of a limited evidence base with significant gaps. It is vital that research and practice are developed to help us know more about what works for people at every stage of life. This should include support to prevent weight gain as well as interventions for people with a high BMI.

Equally Well UK is committed to making a difference in this vital area. We hope to shine a light on good practice and to share research evidence as it emerges as well as supporting organisations and individuals to make a difference.

While the evidence we have reviewed has its limitations, there is a clear and compelling case for action to support people with a severe mental illness with healthy weight management. This cannot be left to chance or be seen by practitioners as too difficult to take seriously. Doing nothing is not an option if we are to reach our goal of equal health for people with a mental illness.

## ACKNOWLEDGEMENTS

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Dr Alan Cohen FRCGP  
Chair of the Clinical Group, Equally Well (2019)  
[www.equallywell.co.uk](http://www.equallywell.co.uk)

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# Equally Well UK



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Equally Well is a collaboration of organisations with a shared aim to improve the physical health of people with long-term mental health conditions.

Equally Well UK is hosted by Centre for Mental Health and is a collaboration between three partner groups:

- People with lived experience of severe mental illness hosted by Rethink Mental Illness
- Health and social care professionals convened by Royal Medical Colleges
- Equally Well member organisations

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Centre for  
Mental Health



Centre for Mental Health  
Office 2D21, South Bank Technopark,  
90 London Road, London SE1 6LN  
Tel 020 3927 2924  
[www.centreformentalhealth.org.uk](http://www.centreformentalhealth.org.uk)  
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