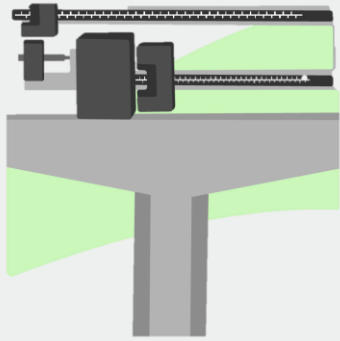


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## Higher Risk of Metabolic Syndrome

People living with a mental illness may have a higher rate of metabolic syndrome compared to the general population due to:

- Higher **smoking** rate
- Higher level of **obesity** and **abdominal obesity** (larger waistline)
- Increased level of **cortisol** (stress hormone)
- Some **psychiatric medications**
- Lower level of **physical activity**
- Poor **diet**
- Less likely to **access general health care**

**Metabolic syndrome** is a group of risk factors that can increase a person's risk of having a stroke, heart disease (including having a heart attack), and diabetes. The risk factors for metabolic syndrome include:

- Abdominal obesity (larger waistline)
- High fasting blood sugar or diagnosed with diabetes
- Low levels of HDL cholesterol (the "good" cholesterol) in blood
- High levels of triglycerides (fat) in blood
- High blood pressure

Approximately **1 out of 3** Americans currently meet criteria for metabolic syndrome. It is becoming more common as the rates of obesity and diabetes in the United States continues to increase. People with mental illness may experience higher rates of metabolic syndrome than the general population for several reasons (see side panel), including treatment with medications that increase this risk. Metabolic syndrome can lead to a shorter life expectancy as well as a poorer quality of life.

## Metabolic Effects of Common Psychiatric Medications:

- Weight gain is the most common metabolic side effect associated with psychiatric medications (see table on next page)
  - Medications affect everyone differently → not everyone will experience the same side effects
- Weight gain can lead to problems with blood pressure, cholesterol, or maintaining a regular blood sugar
  - These side effects may sometimes occur even without weight gain
    - Example: Venlafaxine (Effexor®) may contribute to a high blood pressure

## What role do medications have in causing or worsening metabolic syndrome?

- A loss of appetite is sometimes a symptom of mental illness. When medications are taken, appetite may improve which may cause weight gain.
- May cause craving for fatty and sweet foods
- May cause a slower metabolism
- Possible impact on the feeling of being full and satisfied with food

Medications that May Affect Weight		
Antidepressants	Mood Stabilizers	Antipsychotics
<b>Weight Loss</b>		
Bupropion (Wellbutrin <sup>®</sup> )	Topiramate (Topamax <sup>®</sup> )	
<b>Small to No Effect on Weight</b>		
Fluoxetine (Prozac <sup>®</sup> ) Sertraline (Zoloft <sup>®</sup> ) Duloxetine (Cymbalta <sup>®</sup> ) Venlafaxine (Effexor <sup>®</sup> ) Citalopram (Celexa <sup>®</sup> ) Escitalopram (Lexapro <sup>®</sup> ) Vilazodone (Viibryd <sup>®</sup> ) Vortioxetine (Trintellix <sup>®</sup> )	Lamotrigine (Lamictal <sup>®</sup> ) Oxcarbazepine (Trileptal <sup>®</sup> )	Ziprasidone (Geodon <sup>®</sup> ) Aripiprazole (Abilify <sup>®</sup> ) Haloperidol (Haldol <sup>®</sup> ) Fluphenazine (Prolixin <sup>®</sup> ) Perphenazine (Trilafon <sup>®</sup> ) Brexpiprazole (Rexulti <sup>®</sup> ) Cariprazine (Vraylar <sup>®</sup> ) Lurasidone (Latuda <sup>®</sup> )
<b>Weight Gain</b>		
Amitriptyline (Elavil <sup>®</sup> ) Nortriptyline (Pamelor <sup>®</sup> ) Imipramine (Tofranil <sup>®</sup> ) Mirtazapine (Remeron <sup>®</sup> ) Paroxetine (Paxil <sup>®</sup> )	Valproate (Depakote <sup>®</sup> ) Carbamazepine (Tegretol <sup>®</sup> ) Lithium (Eskalith <sup>®</sup> , Lithobid <sup>®</sup> )	Clozapine (Clozaril <sup>®</sup> ) Olanzapine (Zyprexa <sup>®</sup> ) Quetiapine (Seroquel <sup>®</sup> ) Risperidone (Risperdal <sup>®</sup> ) Paliperidone (Invega <sup>®</sup> ) Thioridazine (Mellaril <sup>®</sup> ) Chlorpromazine (Thorazine <sup>®</sup> )

### Key components of weight management:

#### Diet

- Weight loss occurs by using more calories or energy than caloric intake through the diet
- Increase vegetable and protein portions and decrease carbohydrate (starch) and sugar portions
- Avoid trendy crash diets that are not possible to continue over an extended period of time

#### Exercise

- Design an exercise plan focusing on the F.I.T.T. formula
- Think about the frequency, intensity, time, and type of exercise that is possible and enjoyable

Goals for Exercise (F.I.T.T)	
<b>Frequency</b>	3-5 times per week
<b>Intensity</b>	Include a variety of easy, moderate, and vigorous
<b>Time</b>	Start small and increase over time to a total of 150 minutes of moderate-intensity exercise per week
<b>Type</b>	Mixture of cardio, strength, and flexibility training

### Sleep

- Poor and not enough sleep can slow the body's metabolism and increase appetite by increasing levels of hormones in the body

### Medications

- Talk with a provider about weight gain concerns
- Switch to an antipsychotic, antidepressant, or mood stabilizer that does not cause weight gain (with help of a provider)
- Some studies suggest metformin can help prevent weight gain caused by antipsychotics
  - Metformin is commonly used to treat diabetes or pre-diabetes

### Support

- Consider the In SHAPE Fitness Plan (Self-Health Action Plan for Empowerment). Health mentors and patients made diet and exercise goals based on individual goals, motivation, and readiness for making changes in behavior and routine.
  - Exercise activities included: classes at local gyms, walking, swimming, tai-chi, yoga, strength training, or cardiovascular training
  - Progress was assessed on a weekly basis; points and prizes were awarded for certain milestones
  - At the end of 9 months, patients had a reduction in waist circumference, greater fitness satisfaction, mental health function, and a decrease in negative symptoms
- Takeaway: Team up with a fitness trainer or friend to help establish goals and a plan, make exercise more sociable and enjoyable, assess progress, and celebrate success.



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