

## What Is Metabolic Syndrome?

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Metabolic syndrome is a constellation of conditions that together increase the risk of type 2 diabetes, stroke, and cardiovascular problems, including heart attack. The features of metabolic syndrome are hypertension (high blood pressure), high blood sugar, dyslipidemia (abnormal levels of cholesterol and fat in the blood), and excess abdominal fat.

Metabolic syndrome affects between 30% and 40% of adults by age 65. It's rare to have metabolic syndrome symptoms—so the diagnosis depends on blood tests and other clinical measures.

Lifestyle changes are the first choice for treating metabolic syndrome, although in some cases medication is necessary.

### Also Known As

- MetSyn
- MetS
- Syndrome X
- Insulin resistance syndrome
- Dysmetabolic syndrome

## Metabolic Syndrome Symptoms

One of the main features of metabolic syndrome is that it is typically asymptomatic. That's important for you to know because the individual components of the syndrome can worsen without you realizing it.

However, several symptoms can be associated with the condition; you may or may not experience them if you have metabolic syndrome. The most noticeable sign of metabolic syndrome is weight gain, and you could have the condition if you are overweight and/or have a large waist circumference.

Clinical symptoms associated with metabolic syndrome include:

- Dizziness
- Fatigue
- Signs commonly associated with diabetes, such as increased thirst and frequent urination
- Snoring
- Difficulty sleeping

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- Headaches

The symptoms you can experience when you have metabolic syndrome are due to the effects of each individual component of the syndrome. Hypertension can cause dizziness, fatigue, and headaches. High blood sugar can cause sleep issues, fatigue, dizziness, thirst, dry mouth, and frequent urination.

While the fact that metabolic syndrome is usually asymptomatic can seem scary, it's important for you to know that diagnosis is not elusive. Routine physicals can identify the syndrome.

## Causes and Risk Factors

Metabolic syndrome is caused by a mix of lifestyle factors, genetic predisposition, and other health risk factors you can't control. Some factors overlap and amplify each other. For example, obesity is associated with hypertension and high triglyceride levels. And hypertension is associated with high blood glucose levels.

Risk factors for metabolic syndrome include:

- Obesity
- Insulin resistance
- A high calorie or a high carbohydrate diet
- Sedentary lifestyle
- Sleep deprivation
- Family history of diabetes or metabolic syndrome
- Advancing age
- Having diabetes
- Being overweight
- Having polycystic ovary syndrome (PCOS)
- Taking medications that cause weight gain or increases in blood pressure, triglyceride levels, and blood sugar levels

Although a distinct cause of metabolic syndrome has not been identified, it is strongly linked to insulin resistance, a condition in which the body isn't able to effectively use insulin to transfer glucose (sugar) from the blood into the cells so it can be used for energy. With insulin resistance, sugar can build up in the blood, which may eventually lead to type 2 diabetes.

Excess body weight is associated with visceral (in the abdomen) adipose tissue (fat). Also referred to as belly fat, visceral fat surrounds the internal organs and is associated with insulin resistance. Insulin resistance contributes to weight gain and weight gain, in turn, contributes to insulin resistance.

In addition, research suggests that visceral abdominal fat is pro-inflammatory and may release toxins that can affect insulin sensitivity.

A number of health conditions often co-exist with metabolic syndrome, including type 2 diabetes, nonalcoholic fatty liver disease, polycystic ovary syndrome, and sleep apnea. These conditions are also linked to altered insulin/glucose metabolism and chronic inflammation.

## Diagnosis

The diagnosis of metabolic syndrome is straightforward and based on specific criteria. Screening for the components of metabolic syndrome is part of a routine medical check-up. If you regularly keep up with your health maintenance appointments, your tests would likely show signs of the condition at an early stage.

If you have three or more of these five clinical markers, you would be diagnosed with metabolic syndrome:

- **A waist circumference of** 40 inches or more for people assigned male at birth; 35 inches or more for people assigned female at birth
- **Triglyceride level** of 150 milligrams per deciliter (mg/dL) or higher
- **High-density lipoprotein (HDL) levels (good cholesterol)** lower than 40 mg/dL for assigned male at birth; lower than 50 mg/dL for assigned female at birth
- **Blood pressure** of 130/85 mmHg or higher
- **Fasting glucose** of 100 mg/dL or higher

Note that even if you have only one or two of these criteria, you may be at risk of metabolic syndrome and its complications. Getting treatment before you meet the criteria for metabolic syndrome can help prevent health issues from developing.

## Treatment

Often, metabolic syndrome is reversible. If you have the condition, it's important that you

start treatment. Metabolic syndrome worsens when it is left untreated, and the complications can cause a serious decline in your health.

Weight loss is often recommended, but not if you aren't overweight. For most people, losing 5% to 10% of total body weight can improve insulin sensitivity and decrease the effects of metabolic syndrome.

Sometimes diet and exercise are sufficient to attain a target weight, but bariatric surgery (weight loss surgery) can be an option for people with a BMI of 40 or higher, or a BMI of 35 to 39 with weight-related health conditions.

The most commonly used measure to correlate weight and height is the body mass index (BMI). It uses weight and height to try and estimate body fat. The resulting number is then used to categorize people as underweight, normal weight, overweight, "obese", or "morbidly obese". BMI is not perfect, however, and does not account for other factors that determine body composition like age, muscle mass, or sex assigned at birth. BMI calculations may, for example, overestimate body fat in athletes or in older people.

## Diet

Modifying your diet can go a long way in reversing metabolic syndrome, especially at an early stage.

Dietary strategies include:

- Getting plenty of vegetables, lean proteins, and plant-based fats (for example, olive oil and avocado)
- Limiting sugar intake
- Making sure you have adequate fiber in your daily diet
- Watching calories and portion sizes
- Opting for high-quality carbohydrates that are high in fiber and lower in sugar and refined flour

Diet has an impact on metabolic syndrome that is independent of weight loss. So everyone should incorporate these habits.

## Exercise

Exercise can help you lose weight, and it also protects against metabolic syndrome's effects independent of weight. Regular exercise lowers triglyceride levels, raises HDL, and may lower blood pressure for some people.

Getting regular exercise several times per week is an effective approach for managing

Getting regular exercise several times per week is an effective approach for managing metabolic syndrome—the key is it needs to be *consistent*.

Physical activity guidelines typically call for 150 minutes per week of moderate-intensity activity, or 75 minutes of vigorous-intensity activity. More is better, of course, but any amount can be beneficial.

Some research suggests that high-intensity interval training could be especially helpful for metabolic syndrome and have an effect in less time.

Consider getting a professionally directed exercise regimen to ensure that you are getting the exercise you need while avoiding exercise-induced injuries.

## Lifestyle Factors

Diet and exercise have a major impact on metabolic syndrome. But other lifestyle factors also play an important role.

Lifestyle modifications that can help reduce the effects of metabolic syndrome include:

- Getting quality sleep (six hours per night at the very least)
- Quitting smoking
- Managing stress through practices such as yoga, meditation, and deep breathing

Managing metabolic syndrome requires sustained lifestyle habits. It is not based on a one-time event or temporary effort that you can stop once you reach a certain milestone.

## Medication

In many cases, lifestyle changes alone can counter metabolic syndrome, but sometimes prescription medications are needed. You and a healthcare provider can determine whether your lifestyle modifications are enough or if you need to take medication to manage your metabolic syndrome.

A healthcare provider may prescribe:

- **Cholesterol-lowering medication:** Statins help reduce triglyceride levels.
- **Antihypertensives:** Prescription medications that reduce elevated blood pressure include angiotensin-converting enzyme (ACE) inhibitors, beta-blockers, or diuretics.
- **Diabetes medication:** Oral diabetes medications such as (metformin), GLP-1s or DPP-4s can lower blood sugar if dietary management is not effective.
- **Fiber supplements:** The use of fiber might have an impact on metabolic syndrome,

but it is not clear whether this approach is as effective as getting fiber in your diet. Check with a healthcare provider before you take dietary fiber supplements.

## Children

It is important to know that children can have features of metabolic syndrome and can develop health complications of the condition.

According to the American Academy of Pediatrics (AAP), children should be screened for the individual components of metabolic syndrome—obesity, hypertension, high blood glucose, and fat and cholesterol levels in the blood.

Children should be treated for any of these issues even if they don't meet the criteria for metabolic syndrome.

## Prognosis

Metabolic syndrome can lead to serious health consequences. Each of the factors on its own increases the risk of life-threatening disease, like heart attack and stroke. And each one of these factors is interrelated to the others.

Complications of metabolic syndrome include:

- **Diabetes:** A disease in which the body does not adequately metabolize blood glucose. The resulting high levels of blood sugar can lead to damage of the eyes, blood vessels, kidneys, and nerves.
- **Atherosclerosis:** Stiffness of the blood vessels and a buildup of cholesterol plaques increases the risk of blockages in the heart (heart attack) or the brain (stroke).
- **Kidney disease:** Chronic hypertension, elevated blood glucose, and vascular disease can damage the kidneys, eventually leading to kidney failure and a possible need for dialysis.
- **Peripheral vascular disease:** Blood flow in the legs can become impaired, resulting in pain, fatigue, and problems with wound healing.

Left untreated, metabolic syndrome doubles the risk of heart disease and increases diabetes risk by five times within 10 years of diagnosis. But since the components of metabolic syndrome can be measured, a healthcare provider can follow your improvement over time and adjust your treatment as needed.

## A Word From Verwell

Metabolic syndrome can have serious repercussions if left untreated, but at the same time, it's very possible to reverse it without the need for medication or other medical therapies.

Many people can effectively deal with metabolic syndrome by losing weight, exercising, improving their diet, and quitting smoking. It can be challenging to make such alterations in your lifestyle, but lowering your risk of serious chronic diseases makes the effort worth it.

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