Type 2 diabetes

Diabetes is a chronic condition that causes elevated blood glucose (blood sugar) levels. The condition affects about one in ten North Americans. Type 2 diabetes is the most common form of diabetes, accounting for more than 90% of individuals with diabetes.

Carbohydrates, including simple sugars, starches, and fiber, are broken down into glucose in the digestive tract, which is then absorbed into the bloodstream. When blood sugar increases, the hormone insulin is released, which helps move glucose into the body's cells where it can be used for energy or stored. In people with diabetes, cells experience insulin resistance, a condition in which cells don't properly respond to insulin, causing glucose to remain in the bloodstream. Chronic high blood sugar weakens the immune system and can cause damage to blood vessels; this damage can lead to various health complications, including eye disease and kidney disease.

Fortunately, type 2 diabetes is preventable and manageable with healthy lifestyle habits, including eating a balanced diet and engaging in regular physical activity.

Type 1 vs. type 2 diabetes

Type 1 diabetes	Type 2 diabetes
• Autoimmune condition in which the pancreas produces little to no insulin • Typically diagnosed at a young age • Cannot be prevented • Requires daily insulin	• Influenced by diet and lifestyle habits • Typically diagnosed in adulthood • Can be prevented • May be managed with or without insulin

Causes and risk factors

- Certain health conditions, including depression, heart disease, high blood pressure, polycystic ovary syndrome (PCOS), and stroke
- Diagnosis of prediabetes, or gestational diabetes during pregnancy
- Genetics and family history
- Overweight or obesity
- Sedentary lifestyle

Signs, symptoms, and complications

Symptoms of type 2 diabetes develop slowly over several years. Some individuals with type 2 diabetes experience no symptoms or mild symptoms that can go unnoticed. Symptoms can include:

- Blurred vision
- Increased hunger and/or thirst
- Increased urination
- Numbness or tingling in feet or hands
- Slow wound healing
- Tiredness or fatigue
- Unexplained weight loss

Without proper management, chronic high blood sugar can cause diabetic neuropathy (nerve damage). Diabetic neuropathy can lead to several complications of type 2 diabetes, including:

- Bladder issues (e.g., bladder infection, frequent urination)
- Eye disease
- Gum and dental disease
- Heart disease and stroke
- Kidney disease
- Numbness and pain in extremities (hands and feet)

Preventing and addressing type 2 diabetes

More than one-third of adults in North America have prediabetes, a condition characterized by higher than normal blood sugar levels not yet considered type 2 diabetes. Following healthy habits that promote stable blood glucose, blood pressure, and cholesterol levels can reverse prediabetes as well as prevent and manage the complications of type 2 diabetes. It's important to check with your integrative practitioner before making any major changes to your diet, lifestyle, or wellness plan.

Diet

Consuming a balanced diet is one of the key ways to manage blood glucose levels. Try to consume various foods from all food groups, incorporate healthy fats, minimize added sugars and refined grains, and choose whole, minimally-processed foods.

Foods to limit	Foods to include
Starchy vegetables	**Non-starchy vegetables**
Corn	Cruciferous vegetables (e.g., broccoli, cabbage)
Lima beans	Leafy greens (e.g., spinach, kale)
Peas	Mushrooms
Plantains	Peppers
Potatoes	Tomatoes
Winter squash (e.g., acorn, butternut)	Zucchini
Beverages with added sugar	**Low-calorie beverages**
Energy drinks	Low-fat milk
Fruit-flavored juices	Unsweetened tea
Lemonade	Vegetable juice
Regular soda	Water
Sweet tea	
High-fat protein foods	**Lean protein foods**
Bacon	Beans and legumes
Fried meats	Eggs
Full-fat dairy products	Fish and shellfish
Hot dogs and sausages	Lean beef (e.g., flank, sirloin)
Meats with untrimmed fat	Lean pork (e.g., Canadian bacon, tenderloin)
	Low-fat dairy products
	Poultry
	Soy

Unhealthy fats and oils	Healthy fats and oils
Lard	Avocado oil
Palm oil	Extra-virgin olive oil
Partially-hydrogenated vegetable oils	Grass-fed butter and ghee
Shortening	Virgin coconut oil

High-sugar fruit	Low-sugar fruit
Dates	Apples
Pineapple	Banana
Raisins	Berries
Sweetened dried cranberries	Cherries
	Kiwi
	Citrus fruit (e.g., oranges, grapefruit)
	Pears

Carbohydrates and glycemic index

Dietary sources of carbohydrates include grains, beans and legumes, fruit, vegetables, and dairy products. Certain carbohydrates trigger a quick spike in blood sugar, whereas others break down slowly, helping maintain better blood sugar control. The glycemic index (GI) is a scale from 0 to 100 that specifies how quickly a carbohydrate-containing food increases blood glucose when consumed in isolation. Consuming more low-to-moderate GI foods can help control diabetes and promote weight loss. When choosing foods, consider the following:

- Be mindful of portion sizes.
- Combine high-GI foods with low-GI foods to help control glucose levels.
- Consume high-fiber foods, which tend to have a lower GI.
- Avoid ultra-processed foods, which often have a higher GI.
- Try to eat at least one low-GI food with each meal or snack.

Glycemic index of common foods

The following table includes examples of the glycemic index of some common foods. This resource is not intended to be a comprehensive list.

Low GI: 0–55 | **Moderate GI: 56–69** | **High GI: 70–100**

Food	Glycemic index
Peanuts	7
Non-starchy vegetables (e.g., broccoli, mushrooms, peppers)	<20
Chickpeas	28
Black beans	30
Cow's milk or soy milk	35
Apples	36
Yogurt (flavored, low-fat)	41
Spaghetti pasta (white or whole wheat)	49
Bread (multi-grain)	53
Corn	54
Oatmeal (steel-cut or rolled)	61
Sweet potato	63
Brown rice	68
White rice	73
Bread (white or whole wheat)	75
Russet potato	78

Meal planning, carbohydrate counting, and the plate method are some additional strategies for managing blood glucose levels.

Physical activity

Paired with healthy dietary habits, regular physical activity can reduce the risk of diabetes by up to 60%, increase insulin sensitivity, and help control blood sugar levels. Physical activity also supports:

- Better sleep
- Improved memory
- Improved mood
- Regulated blood pressure
- Weight loss and weight management

Adults should get at least 150 minutes of moderate exercise each week, or about 30 minutes five times per week. It's never too late to start exercising. If you're not already physically active, you should begin slowly and gradually increase the duration and intensity of your exercise. Simple ways to incorporate more physical activity into your routine include:

- Bicycling
- Doing household chores or yard work
- Going for walks
- Parking further away from the door
- Playing outside with friends, family, or pets
- Playing sports
- Swimming
- Taking the stairs rather than the elevator

Weight management

Being overweight or obese increases your risk of developing type 2 diabetes and its complications. Having excess adipose (fat) tissue can impair glucose metabolism and promote insulin resistance. Losing as little as 5 to 10% of body weight can decrease the risk of type 2 diabetes and improve blood sugar control in overweight individuals. When trying to lose weight, it's important to set realistic goals that you can maintain long-term. Overweight and obese individuals with type 2 diabetes may experience greater difficulty losing weight compared to people without diabetes, so it's important to work closely with your integrative practitioner for guidance on your weight loss journey. Habits that can support a healthy weight include:

- Choosing high-fiber carbohydrates
- Cooking at home rather than eating out
- Drinking more water and avoiding sweetened beverages
- Eating higher-protein, lower-carb meals
- Engaging in regular physical activity
- Getting adequate sleep

References

1. American Diabetes Association. (n.d.). Eating well - fruit. https://www.diabetes.org/healthy-living/recipes-nutrition/eating-well/fruit

2. American Diabetes Association. (2020). What is the diabetes plate method? Diabetes Food Hub. https://www.diabetesfoodhub.org/articles/what-is-the-diabetes-plate-method.html

3. American Heart Association. (2018). Healthy cooking oils. https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/fats/healthy-cooking-oils

4. Atkinson, F. S., Foster-Powell, K., & Brand-Miller, J. C. (2008). International tables of glycemic index and glycemic load values: 2008. Diabetes Care, 31(12), 2281–2283.

5. CDC. (2019). Get Active! https://www.cdc.gov/diabetes/managing/active.html

6. CDC. (2020). Carbohydrate choices. https://www.cdc.gov/diabetes/managing/eat-well/diabetes-and-carbs/carbohydrate-choice-lists.html

7. CDC. (2020). How much physical activity do adults need? https://www.cdc.gov/physicalactivity/basics/adults/index.htm

8. CDC. (2020). Prevent type 2 diabetes. https://www.cdc.gov/diabetes/prevent-type-2/index.html

9. CDC. (2020). What is diabetes? https://www.cdc.gov/diabetes/basics/diabetes.html

10. CDC. (2021). Healthy weight. https://www.cdc.gov/diabetes/managing/healthy-weight.html

11. De Feo, P., Di Loreto, C., Ranchelli, A., Fatone, C., Gambelunghe, G., Lucidi, P., & Santeusanio, F. (2006). Exercise and diabetes. Acta Bio-Medica: Atenei Parmensis, 77 Suppl 1, 14–17.

12. Gastaldelli, A., Gaggini, M., & DeFronzo, R. A. (2017). Role of adipose tissue insulin resistance in the natural history of type 2 diabetes: Results from the San Antonio metabolism study. Diabetes, 66(4), 815–822.

13. Gillman, M. W., Cupples, L. A., Gagnon, D., Millen, B. E., Ellison, R. C., & Castelli, W. P. (1997). Margarine intake and subsequent coronary heart disease in men. Epidemiology , 8(2), 144–149.

14. Lau, D. C. W., & Teoh, H. (2013). Benefits of modest weight loss on the management of type 2 diabetes mellitus. Canadian Journal of Diabetes, 37(2), 128–134.

15. MedlinePlus. (2018). Carbohydrates. National Library of Medicine. https://medlineplus.gov/carbohydrates.html

16. MedlinePlus. (2020). Diabetes type 2. National Library of Medicine. https://medlineplus.gov/diabetestype2.html

17. MedlinePlus. (2020). Diabetes type 2 - meal planning. https://medlineplus.gov/ency/article/007429.htm

18. MedlinePlus. (2020). Glycemic index and diabetes. https://medlineplus.gov/ency/patientinstructions/000941.htm

19. NIH. (n.d.). Diabetic neuropathy. https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/nerve-damage-diabetic-neuropathies

20. NIH. (2016). Diabetes diet, eating, & physical activity. https://www.niddk.nih.gov/health-information/diabetes/overview/diet-eating-physical-activity

21. NIH. (2016b). Managing diabetes. https://www.niddk.nih.gov/health-information/diabetes/overview/managing-diabetes

22. NIH. (2017). Type 2 Diabetes. https://www.niddk.nih.gov/health-information/diabetes/overview/what-is-diabetes/type-2-diabetes

23. NIH. (2018). Insulin Resistance & Prediabetes. https://www.niddk.nih.gov/health-information/diabetes/overview/what-is-diabetes/prediabetes-insulin-resistance

24. Nocella, C., Cammisotto, V., Fianchini, L., D'Amico, A., Novo, M., Castellani, V., Stefanini, L., ... & Carnevale, R. (2018). Extra virgin olive oil and cardiovascular diseases: Benefits for human health. Endocrine, Metabolic & Immune Disorders Drug Targets, 18(1), 4–13.

25. Victoria Government. (2021). Diabetes - long-term effects. https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/diabetes-long-term-effects

26. Wilding, J. P. H. (2014). The importance of weight management in type 2 diabetes mellitus. International Journal of Clinical Practice, 68(6), 682–691.

♡ Fullscript

For more educational content and resources: **www.fullscript.com/learn**