

UNDERSTANDING



Excess Weight and Type 2 Diabetes: A Brochure for Individuals Diagnosed with Type 2 Diabetes

OAC
Obesity Action Coalition

This educational brochure is designed to help individuals diagnosed with excess weight and type 2 diabetes address the challenges they face when trying to lose weight while managing the disease. It addresses the following:

- Defining excess weight
- Defining type 2 diabetes and how it relates to excess weight
- Managing diabetes through diet, exercise and medications
- Consequences of type 2 diabetes if not properly managed

What is excess weight and how does it impact the body?

Excess weight and obesity can affect a person's health in many ways. In order to evaluate how much excess weight a person has, many methods of measurement can be used, including calculating body mass index (BMI). BMI is a number calculated by dividing weight in kilograms by height in meters squared. There are four weight status categories (underweight, normal weight, overweight and obesity). To calculate your own BMI and determine your weight status category, please turn to page 16.

Obesity increases a person's risk of developing hypertension, type 2 diabetes, certain types of cancer, osteoarthritis, stroke and dyslipidemia, which consists of

high blood cholesterol and triglycerides (a type of fat). Setting realistic goals about nutrition, physical activity and weight loss to support lifestyle changes can delay or prevent the onset of type 2 diabetes.

What is type 2 diabetes and how does it impact excess weight?

Type 2 diabetes is a chronic, potentially debilitating and often fatal disease. The disease occurs when the body either does not properly produce or use insulin. Insulin is a hormone made by the pancreas that helps sugar (glucose) leave the blood and enter the cells of the body to be used as fuel. Hyperglycemia, or elevated blood sugar, is a common effect of uncontrolled diabetes. Hyperglycemia can lead to serious damage to many of the body's systems and organs, especially the nerves and blood vessels. Throughout time, diabetes can damage the heart, kidneys and eyes.

Approximately 25.8 million Americans and an estimated 220 million people worldwide have type 1 and type 2 diabetes. Type 2 diabetes is the most common type, accounting for an estimated 90 to 95 percent of all diabetes cases.

People who are overweight (approximately 12 percent) are three times more likely to have type 2 diabetes compared to people who have a normal weight (approximately 4 percent). The percentage of people with at least two co-morbidities, such as high blood cholesterol levels, high blood pressure or coronary heart disease, increases as their weight increases. The prevalence rates increased even with the mildest degree of overweight which is a significant finding since this affects 42 percent of men and 28 percent of women in the U.S. Weight-loss is one important way to improve one's quality of health.

Insulin resistance is also associated with excess weight and obesity. Insulin resistance is when the insulin concentration is higher than the blood sugar level because the body's insulin is not effectively reducing its sugar levels. With type 2 diabetes, people can still secrete insulin into the blood, but the insulin does not seem to be as effective as it is in people without the disease.

How Does the Body Manage Excess Glucose?

During a fast, or between meals, the body may rely on stored glucose in the liver – glycogen – for energy. Glycogen is composed of several thousand glucose molecules held together with water molecules. If the fast is very long, however, the body may instead use amino acids or fatty acids to help with its metabolic processes.

After we eat a meal, the processes of chewing and chemical digestion produce

glucose (sugar), which is the most readily available fuel for our organs – especially muscle and brain tissue. In a normal state, the glucose produced from these digestive processes enters our cells to help with other metabolic processes.

Insulin acts a key that unlocks the door to let glucose in to feed our cells. When insulin is present, it also turns off the process of using glycogen from the liver to ensure that the glucose level does not rise further after a meal. In fact, insulin reduces blood glucose by collecting any excess glucose that is present in the blood stream so that it can be stored as glycogen for future use.

However, if the adequate amount of insulin is not available, as is the situation in diabetes, then this glucose is unable to enter cells. Instead, the glucose remains in the blood stream in a higher than usual concentration. This condition is referred to as elevated blood glucose or hyperglycemia.

What can I do to manage type 2 diabetes?

After being diagnosed with type 2 diabetes, expect to see a healthcare professional to devise a treatment plan. It may be necessary to take on daily action steps, such as self-care behaviors, in order to manage diabetes and to help healthcare professionals know when the treatment plan needs to be revised. Self-care behaviors include, but are not limited to:

- Healthy eating
- Being active
- Taking medication
- Smoking cessation
- Monitoring blood sugar, weight, blood pressure and urine ketones

Blood sugar testing is an important part of managing type 2 diabetes. While this can be difficult with a busy lifestyle, always try to put health first and make time to test blood sugar as directed by a healthcare professional. The frequency of testing may vary from daily to before and after every meal, and may change after the addition of a medication.



Once you have determined your blood sugar level, it is important to record the reading in a log. Toward the end of this brochure, you'll find a "Notes" section where blood sugar can be tracked.

NDEP Standard Goals for Blood Sugar

70-130 mg/dL before a meal

Less than 180 mg/dL 1 -2 hours after a meal

Your healthcare professional will tailor specific goals to meet your needs.

In addition to daily blood sugar testing, periodic testing of blood pressure, blood levels of lipids, as well as measurement of hemoglobin A1C (HbA1C or A1C) levels – a test that estimates average blood sugar level during a period of three months – may be needed. In general, the preferred ranges for an individual with diabetes are:

- A1C: less than 7.0 percent
- Blood Pressure: less than 130/80 mmHg
- LDL “bad” cholesterol: less than 100 mg/dL (less than 70 mg/dL if cardiovascular disease is present)
- HDL “good” cholesterol: greater than 40 mg/dL for men and greater than 50 mg/dL for women
- Triglycerides: less than 150 mg/dL

As with blood sugar goals, these ranges may vary based on your healthcare professional's diagnosis.

Do I need medicine to help manage type 2 diabetes?

Healthcare professionals utilize a combination of medications and lifestyle modifications to treat type 2 diabetes. While there are various kinds of medications available, some of them can have an impact on weight – either

making one susceptible to more weight gain or even weight loss. Please talk to your healthcare professional about the appropriate treatment plan for you and the impact a specific class of drug may have on weight.

Healthy Eating and Exercise

Adopting a healthy lifestyle that emphasizes a calorie-controlled diet and moderate intensity physical activity are two ways people with type 2 diabetes and excess weight can shed pounds.

Healthy Meal Plan

Weight-loss occurs when people burn more calories than they consume.

A calorie deficit of 500 calories a day can result in weight-loss of approximately one pound per

week. Writing down the food, portion size and calorie amount in a food diary can help people become aware of what they consume and can provide evidence of calorie intake (please turn to page 14 to view the "Food Diary" section of this brochure).



Someone with excess weight and diabetes may benefit from limiting carbohydrates in their diet.

Foods that are high in carbohydrates include:

- Snacks like cake and cookies
- Rice
- Fruit juice
- Ice cream

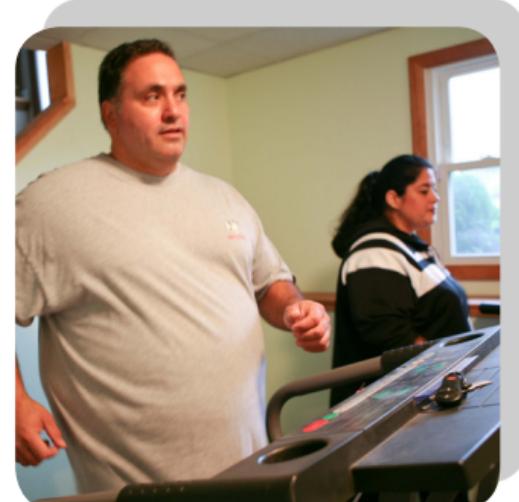
Carbohydrates raise blood sugar more than other foods and will cause the body to produce more insulin. With insulin resistance, these increased amounts of insulin can cause weight gain.



Exercise Program

Regular exercise helps maintain weight-loss and prevent regain. It also improves glycemic control (measurement of the effects of carbohydrates on sugar level) and reduces the risk of cardiovascular disease.

Exercise can also be a meaningful tool to reduce blood glucose levels. When we use our muscles, they need more fuel to stay active. In patients without diabetes, glucose is taken in from the blood stream while a simultaneous rise in the liver's glucose



production keep the muscles supplied with fuel. However, when type 2 diabetes is present, the liver may not match the muscle's need for glucose, which can result in a lowering of the glucose level with moderate exercise. Thus, exercise is widely prescribed to treat patients with diabetes.

A goal of 30 minutes of moderate exercise most days per week should be set. Exercise does not need to occur in a single session to be beneficial.

Dividing the activity into multiple, short episodes produces similar benefits and is often more achievable.

Achieving the recommended weight-loss is a feat that brings great joy to people with diabetes who have, as a result, decreased their insulin requirement and noticed a reduction in waist circumference. This, however, is only the beginning. Maintaining the new, lower weight is a different battle. Several studies suggest that 60 to 75 minutes of moderate activity, such as walking, or 35 minutes of vigorous activity, such as jogging, daily is needed to maintain a desirable weight-loss.

Technology Can Help

In addition to incorporating a healthy meal plan and exercise program, today's world of technology and social networking may enhance a person's ability to monitor their health. There are many online and app-driven resources, such as food journals, calorie trackers,

exercise tools and more available online, for your smartphone and more!

What are the consequences of type 2 diabetes?

If not properly managed through diet, exercise and medications, type 2 diabetes can cause a number of health-related complications including:

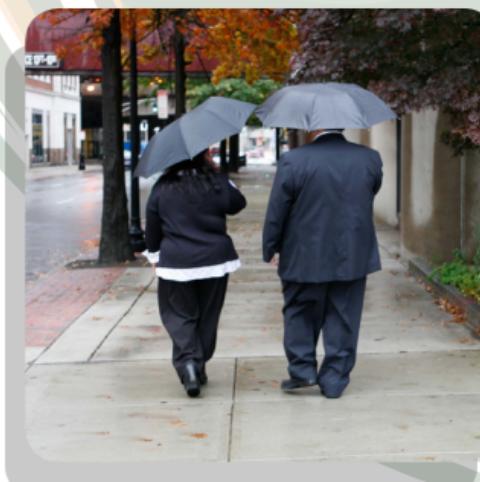
- Neuropathy (nerve damage, especially in extremities)
- Amputation
- Nephropathy (kidney disease)
- Retinopathy (vision problems, blindness)
- Cardiovascular disease (heart disease and increased risk of strokes)
- Erectile dysfunction in men and decreased sexual desire in both men and women
- Depression

Monitoring of blood sugar and the other parameters can be tedious and time consuming; however, taking these daily steps is necessary to minimize potentially devastating effects of diabetes. On a routine basis, healthcare professionals should check kidney function and conduct cardiac tests, as diabetes affects your heart and its blood vessels. Yearly visits should also be made to your ophthalmologist (eye doctor) and podiatrist (foot doctor) to evaluate for progression of the disease and treatments.

What can you do to learn more about type 2 diabetes and excess weight?

The Obesity Action Coalition (OAC) is a nearly 50,000 member-strong 501(c)(3) National non-profit organization dedicated to giving a voice to the individual affected by the disease of obesity and helping individuals along their journey toward better health through education, advocacy and support. Our core focuses are to raise awareness and improve access to the prevention and treatment of obesity, provide evidence-based education on obesity and its treatments, fight to eliminate weight bias and discrimination, elevate the conversation of weight and its impact on health and offer a community of support for the individual affected.

To see if you are at risk for type 2 diabetes, please visit a healthcare professional for more information. To help you prepare for your visit, we've provided you with some great sample questions that you may be asked by a healthcare professional and sample questions for you to ask a healthcare professional. To view the questions, please see the opposite page.



Sample Questions

Questions a Healthcare Professional May Ask You

- When was the last time you saw a healthcare provider?
- When did you last have blood work completed?
- Are you currently taking any medications? If so, what medications are you taking and what are the dosages?
- Have you been previously diagnosed with any medical conditions?
- How physically active are you on a weekly basis?
- Can you describe your eating habits?
- Does anyone in your family have type 2 diabetes?
- Do you feel fatigued or tired more than usual?
- Do you find yourself urinating often?
- Do you have blurred vision or experience headaches?
- Have you recently gained weight?

Questions You Should Ask a Healthcare Professional

- Do you have special training in treating type 2 diabetes?
- Do you have special training in obesity?
- Does your office have a registered dietitian on staff with type 2 diabetes and obesity training?
- Do you have diabetes educators available?
- How do you prefer to treat someone with type 2 diabetes?
- Am I at risk for any complications associated with type 2 diabetes?
- What can I do to reduce weight gain due to my type 2 diabetes medications?

Food Diary

Please use this section to write down the food, portion size and calorie amount for each day. Logging the food one consumes has been found to increase awareness and provide objective evidence of a person's daily caloric intake.

Morning	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Food							
Portion							
Calories							
Afternoon							

Food	Portion	Calories	Evening	Food	Portion	Calories
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BMI CHART

OBESITY

	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400
5'0"	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65	67	69	71	72	74	76	78
5'1"	24	26	28	30	32	34	36	37	39	42	44	45	47	49	51	53	55	57	59	61	63	64	66	68	70	72	74	76
5'2"	23	25	27	29	31	33	34	36	38	40	42	44	46	48	50	51	53	55	57	59	61	62	64	66	68	70	72	73
5'3"	23	24	26	28	30	32	33	35	37	39	41	43	44	46	48	50	52	53	55	57	59	60	62	64	66	67	69	71
5'4"	22	24	25	27	29	31	32	34	36	38	40	41	43	45	46	48	50	52	53	55	57	59	60	62	64	65	67	69
5'5"	21	23	25	26	28	30	31	33	35	37	38	40	42	43	45	47	48	50	52	53	55	57	58	60	62	63	65	67
5'6"	21	22	24	25	27	29	30	32	34	36	37	39	40	42	44	45	47	49	50	52	53	55	57	58	60	62	63	65
5'7"	20	22	23	25	26	28	29	31	33	35	36	38	39	41	42	44	46	47	49	50	52	53	55	57	58	60	61	63
5'8"	19	21	22	24	25	27	28	30	32	34	35	37	38	40	41	43	44	46	47	49	50	52	53	55	56	58	59	61
5'9"	19	20	22	23	25	26	28	29	31	33	34	36	37	39	40	41	43	44	46	47	49	50	52	53	55	56	58	59
5'10"	18	20	21	23	24	25	27	28	30	32	33	35	36	37	39	40	42	43	45	46	47	49	50	52	53	55	56	58
5'11"	18	19	21	22	23	25	26	28	29	31	32	34	35	36	38	39	41	42	43	45	46	48	49	50	52	53	55	56
6'0"	17	19	20	21	23	24	25	27	28	30	31	33	34	35	37	38	39	41	42	44	45	46	48	49	50	52	53	54
6'1"	17	18	19	21	22	23	25	26	27	29	30	32	33	34	36	37	38	39	41	42	44	45	46	48	49	50	52	53
6'2"	16	18	19	20	21	23	24	25	27	28	30	31	32	33	35	36	37	39	40	41	42	44	45	46	48	49	50	51
6'3"	16	17	18	19	21	22	23	24	26	28	29	30	31	33	34	35	36	38	39	40	41	43	44	45	46	48	49	50
6'4"	15	17	18	19	20	21	23	24	26	27	28	29	31	32	33	34	35	37	38	39	40	41	43	44	45	46	48	49
6'5"	15	16	17	19	20	21	22	24	25	26	27	29	30	31	32	33	34	36	37	38	39	40	42	43	44	45	46	48

UNDERWEIGHT = LESS THAN 18.4 | NORMAL WEIGHT = 18.5-24.9 | OVERWEIGHT = 25 - 29.9 | OBESITY = 30 - 39.9 | SEVERE OBESITY = GREATER THAN 40

Notes

Please use this section to write down important notes about your health. You can use this section to capture information such as your lab results, your favorite exercise, thoughts, goals and much more!



A large, empty rectangular area with a thin gray border, designed for writing notes. The area is divided into 12 horizontal lines for organized note-taking.

OAC Membership Application

Why Join the OAC?

Because it's the ONLY National non-profit organization whose sole focus is helping individuals affected by obesity. The OAC needs every individual who is concerned about the cause of obesity to join our Coalition. With your voice, we can make a difference in education and advocacy for the millions of individuals affected by obesity.

OAC Membership Categories (select one)

- | | |
|---|--------------|
| <input type="checkbox"/> Individual Membership: | \$20/year |
| <input type="checkbox"/> Institutional Membership: | \$500/year |
| <input type="checkbox"/> Chairman's Council Membership: | \$1000+/year |

Are you joining for the first time, or are you renewing your OAC Membership?

- I am joining for the first time (never been an OAC member).
 I am renewing my membership (have joined the OAC in the past).

OAC Membership Add-ons

(optional, but only accessible by OAC members)

Add-on 1: Educational Resources

To order bulk copies of OAC resources, members can purchase educational packages (not required for *Institutional* and *Chairman's Council* Members).

- | | |
|---|-------|
| <input type="checkbox"/> Standard Package | |
| 10-50 pieces/quarter | \$50 |
| <input type="checkbox"/> Deluxe Package | |
| 51-100 pieces/quarter | \$100 |
| <input type="checkbox"/> Premium Package | |
| 101-250 pieces/quarter | \$150 |

Add-on 2: Make a General Donation

Make a tax-deductible donation to the OAC. Your donation helps the OAC's educational and advocacy efforts.

\$5 \$10 \$25 \$50 \$100 Other _____

Membership/Add-on Totals:

Membership Category:	\$ _____
Add-on 1 (if applicable):	+\$ _____
Add-on 2 (if applicable):	+\$ _____
TOTAL MEMBERSHIP PAYMENT:	\$ _____

Contact Information

Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Email: _____

Payment Information

- Check (payable to the OAC) for \$ _____.
 Credit card for my TOTAL membership, fee including add-ons, of \$ _____.
 Discover® Visa® MasterCard® Amex®

Credit Card Number: _____

Expiration Date: _____ CCV: _____

Mail: OAC

4511 North Himes Ave. Ste. 250
Tampa, FL 33614

Fax: (813) 873-7838

OAC Resources

The OAC provides numerous beneficial resources. OAC resources are complimentary and members of the OAC can request materials in bulk. To request materials, please contact the OAC National Office at (800) 717-3117 or send an email to info@obesityaction.org.

Brochures/Guides

- *Understanding Obesity Series*
 - *Understanding Obesity Brochure*
 - *Understanding Obesity Poster*
 - *Understanding Severe Obesity Brochure*
 - *Understanding Obesity Stigma Brochure*
 - *Understanding Childhood Obesity Brochure*
 - *Understanding Childhood Obesity Poster*
- *Understanding Excess Weight and Type 2 Diabetes Series*
 - *Understanding Excess Weight and its Role in Type 2 Diabetes Brochure*
 - *Understanding Prediabetes and Excess Weight Brochure*
 - *Understanding Excess Weight and Type 2 Diabetes Brochure*
- *Understanding Your Weight-loss Options Brochure*
- *OAC Insurance Guide: Working with Your Insurance Provider*
- *State-Specific Advocacy Guides*
- *BMI Chart*

Magazine

- *Your Weight MattersSM Magazine* - OAC's quarterly education and advocacy magazine

Your Weight MattersSM Campaign

- A National health and weight awareness campaign offering educational information on weight and its impact on your health. Learn more at www.YourWeightMatters.org.

Multimedia

- *Excess Weight and Your Health - A Guide to Effective, Healthy Weight-loss* DVD & Guidebook

E-Newsletter

- *Obesity Action Alert* - the OAC's free monthly electronic newsletter

OAC Web Site

- The OAC Web site features an "Understanding Obesity" section which details obesity further and provides links to valuable articles concerning the topic.

Special thanks to Holly F. Lofton, MD, for assistance in creating this brochure.

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The information contained in the Understanding Excess Weight and Type 2 Diabetes Brochure is not a substitute for medical advice or treatment from a healthcare professional. The OAC recommends consultation with your doctor and/or healthcare professional.



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