Diabetes

What is Diabetes?

- Diabetes is a chronic disease that occurs either when beta cells in the pancreas do not produce enough insulin or when the body cannot effectively use the insulin it produces
- Insulin is a hormone that regulates blood sugar
- Insufficient insulin or inability to use insulin effectively leads to elevated blood sugar levels or hyperglycemia
- Over time, persistently elevated blood sugar levels cause serious damage to many of the body's systems, especially the nerves and blood vessels

Diabetes Globally

- Diabetes is a global health problem
- The number of adults living with diabetes worldwide has quadrupled since 1980
- An estimated 422 million adults globally have diabetes

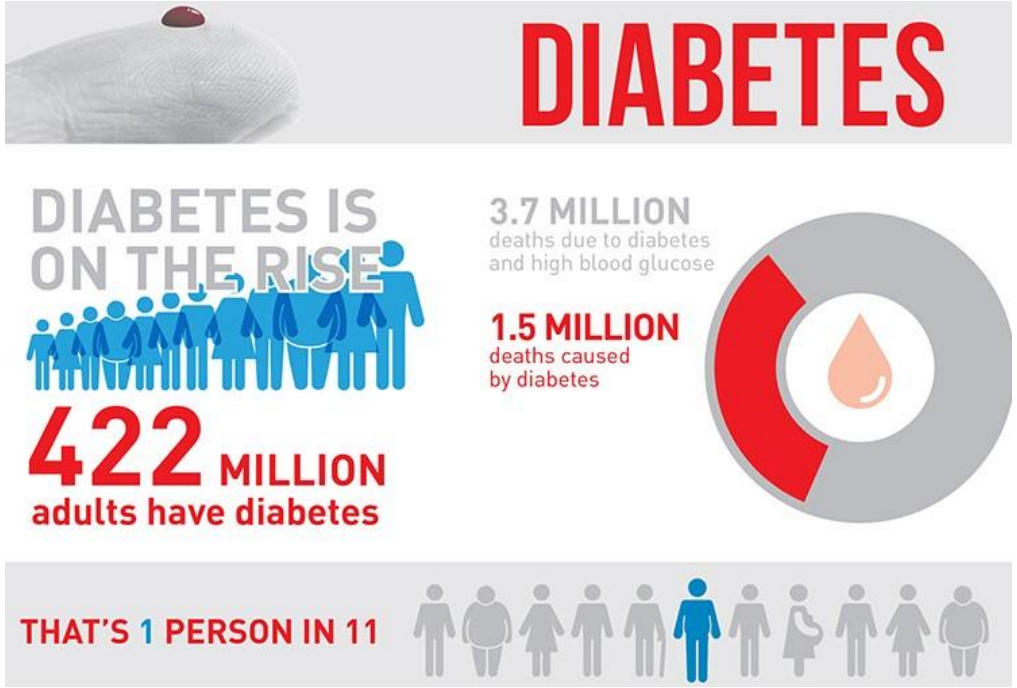


Image source: World Health Organization (www.who.int)

Diabetes in the U.S.

- Approximately 30 million people in the U.S. are living with diabetes
- Another 84 million people have prediabetes

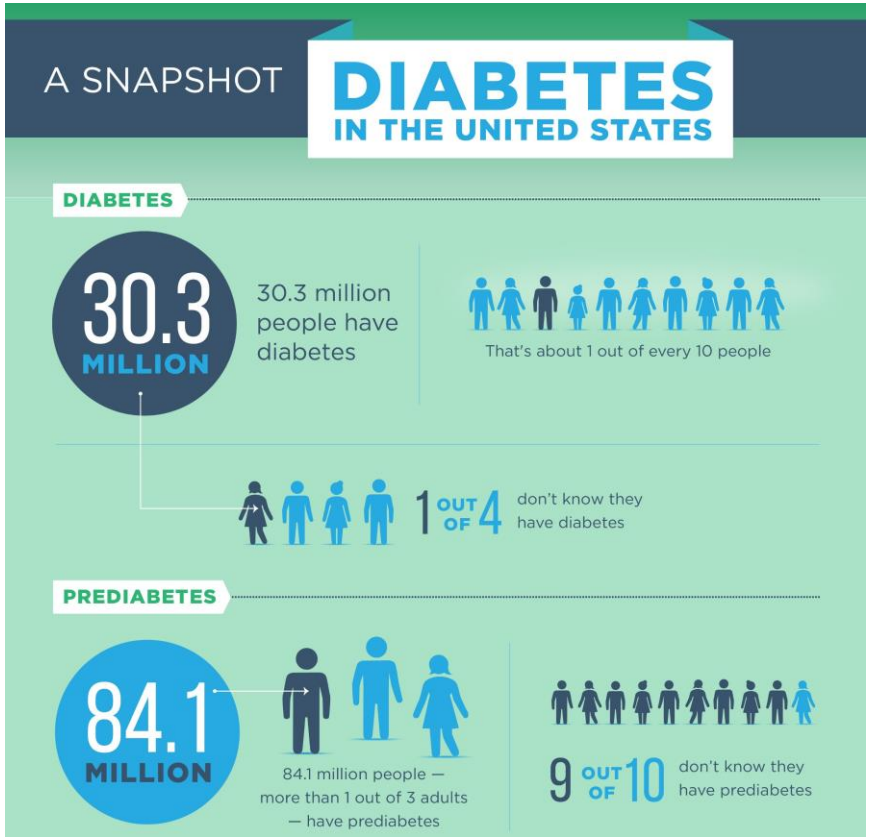
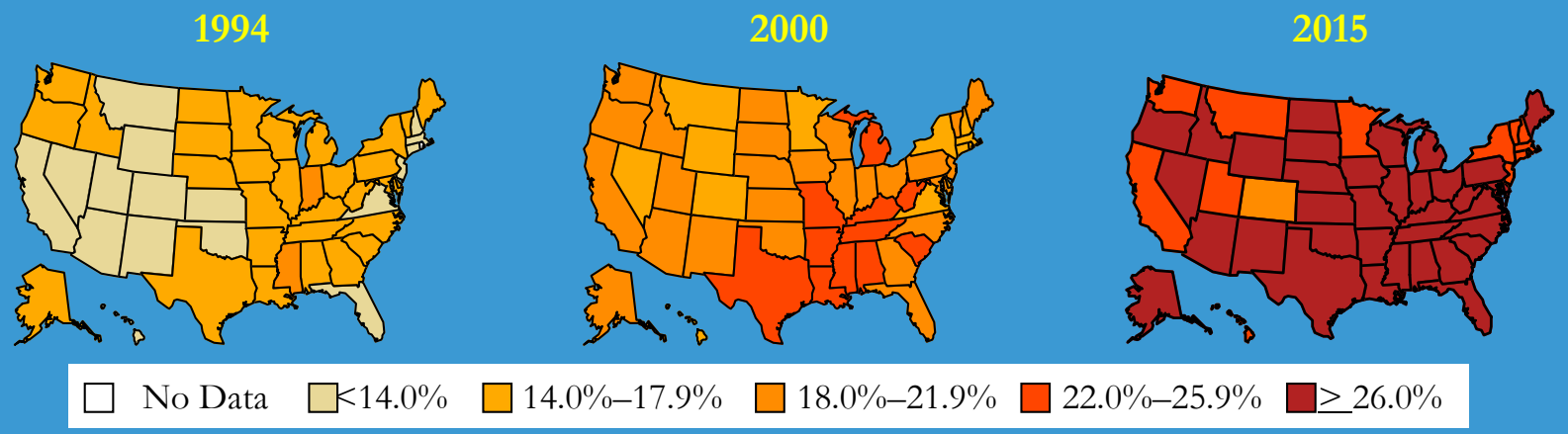


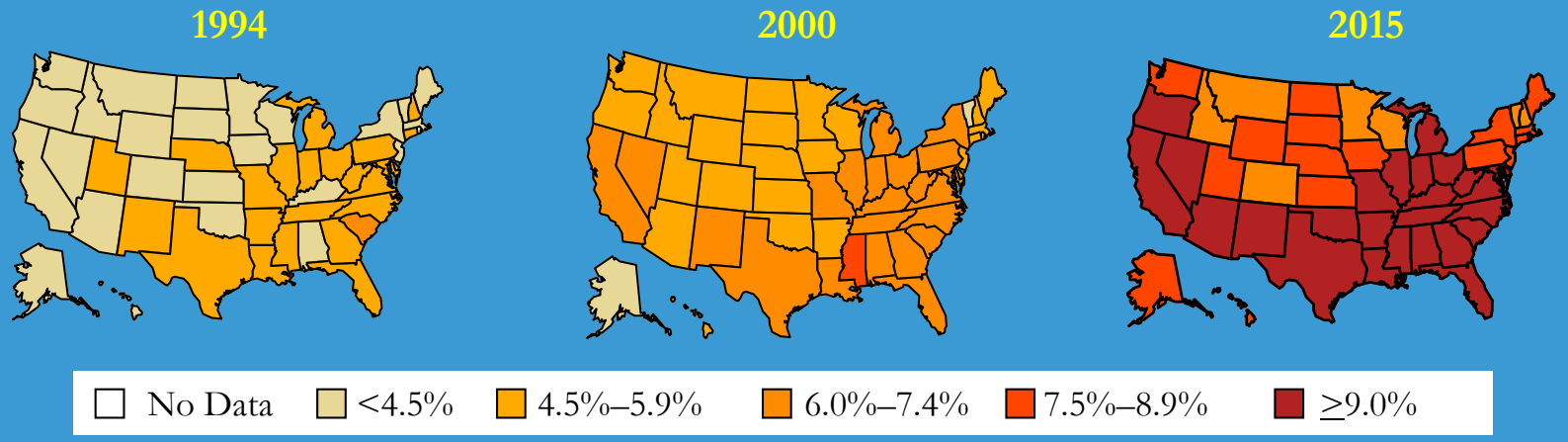
Image source: Centers for Disease Control and Prevention (www.cdc.gov)

Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among US Adults

Obesity (BMI ≥30 kg/m²)



Diabetes



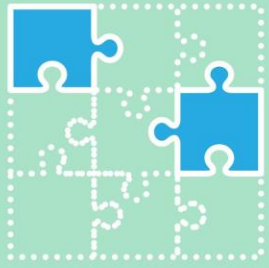
CDC's Division of Diabetes Translation. United States Surveillance System available at http://www.cdc.gov/diabetes/data

Diabetes Terminology

- **Diabetes Mellitus** – The technical medical term for diabetes characterized by high blood sugar resulting from body's inability to use blood sugar for energy.
- **Type 1 Diabetes** – An autoimmune disorder where the body's immune system attacks insulin-producing cells and the body does not produce enough insulin (sometimes referred to *as juvenile diabetes* or *insulin-dependent diabetes*).
- **Type 2 Diabetes** – A disorder where the body either does not respond to insulin appropriately, does not make enough insulin, or both (sometimes referred to as *non-insulin-dependent diabetes*).
- **Prediabetes** – A term to describe when the blood sugar (glucose) level is higher than normal, but not yet high enough to be called type 2 diabetes (may also be referred to as *impaired fasting glucose*).
- **Gestational Diabetes** – A type of diabetes that only develops during pregnancy and usually disappears after delivery. It increases the mother's risk of developing diabetes later in life.

TYPES OF DIABETES

TYPE 1



BODY DOESN'T MAKE ENOUGH INSULIN

- Can develop at any age
- No known way to prevent it

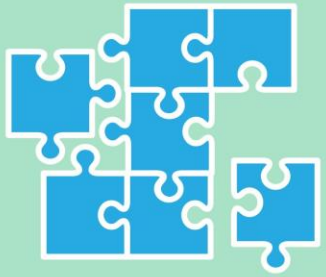
Nearly 18,000 youth diagnosed each year in 2011 and 2012

In adults, type 1 diabetes accounts for approximately

5%

of all diagnosed cases of diabetes

TYPE 2



BODY CAN'T USE INSULIN PROPERLY

- Can develop at any age
- Most cases can be prevented

In adults, type 2 diabetes accounts for approximately

95%

of all diagnosed cases of diabetes

More than 5,000 youth diagnosed each year in 2011 and 2012

1.5 MILLION

People 18 years and older diagnosed in 2015

Image source: Centers for Disease Control and Prevention (www.cdc.gov)

Comparing Type 1 and Type 2 Diabetes

Type 1 Diabetes

- ~5% of diabetics
- Caused by immune system reaction and cannot be prevented
- Often starts quickly and has severe symptoms
- Occurs most often in children, teens, and young adults, though may occur at any age
- Must use insulin every day to survive

Type 2 Diabetes

- 90-95% of diabetics
- Can be prevented or delayed through lifestyle changes
- Gradual disease that develops over many years
- Occurs most often in older individuals, though increasing in younger age groups

Note: Prediabetes can develop into type 2 diabetes, but not type 1

Prediabetes

- Blood sugar (glucose) level is higher than normal, but not high enough yet to be called type 2 diabetes
- Approximately 33% of U.S. adults have prediabetes, but only 10% know
- Prediabetes can often be reversed through lifestyle changes such as increasing physical activity and losing weight

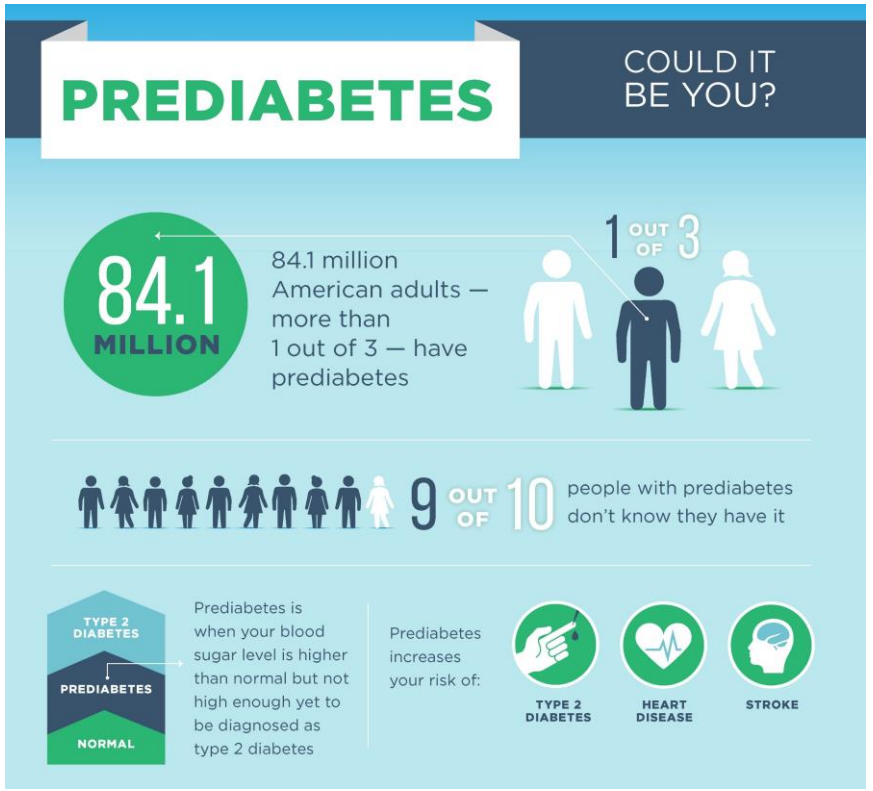


Image source: Centers for Disease Control and Prevention (www.cdc.gov)

Risk Factors for Developing Diabetes (Type 2)

- Being overweight or obese, particularly if extra weight is in the belly
- Being physically inactive
- Age 45 or older
- Smoking
- Family history of diabetes in a first-degree relative (i.e., mother, father, siblings)
- For women, having diabetes during pregnancy (gestational diabetes)
- Some ethnic groups have increased risk – African American, Hispanic Latino, American Indian, and Asian Pacific Islander

Diabetes Symptoms

- Common symptoms of diabetes include:
  - Excessive thirst
  - Frequent urination
  - Fatigue
  - Weight loss
  - Blurred vision
- Important to note that many individuals with diabetes or prediabetes do not experience symptoms of disease

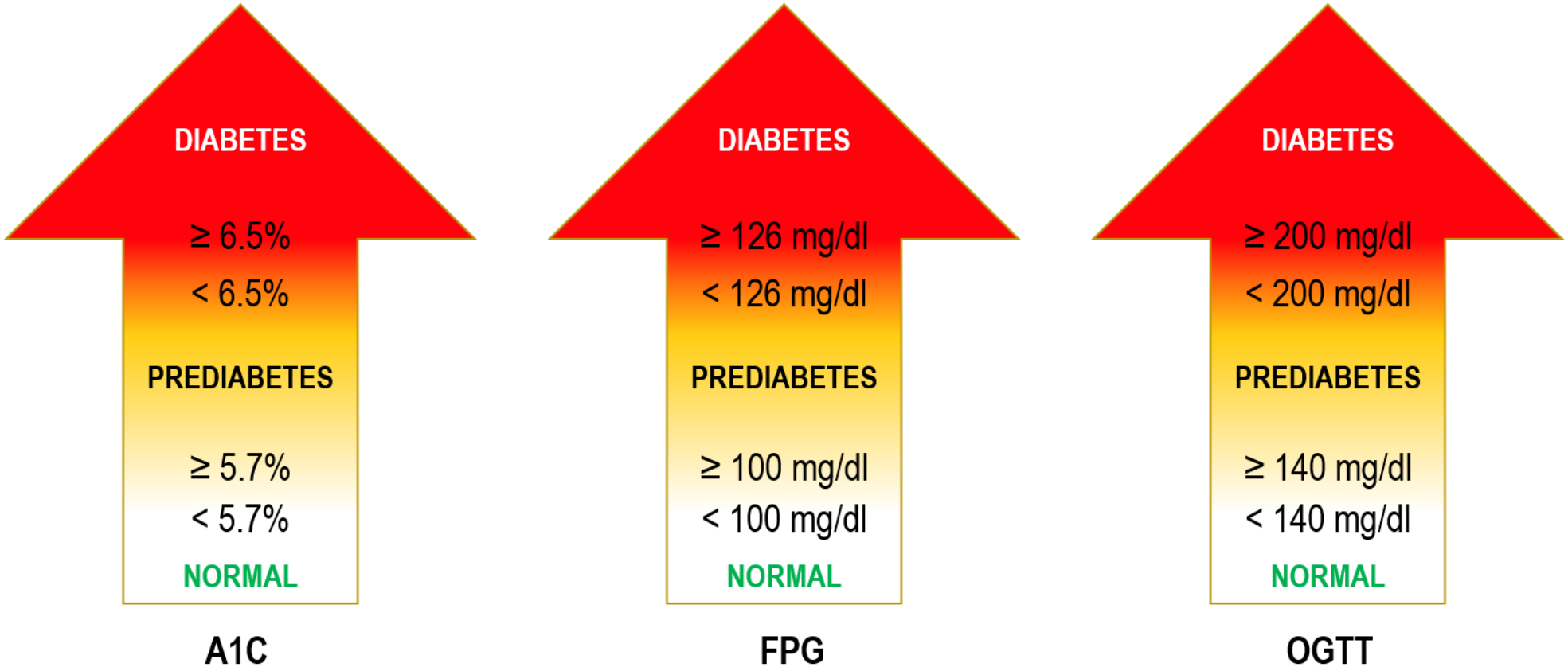
Diagnosing Diabetes

- Diabetes may be suspected based on clinical history and report of classic symptoms
- Diagnosis is confirmed through one or more blood tests
- Diagnostic tests include:
  - Fasting plasma glucose
  - Oral glucose tolerance test
  - Hemoglobin A1C

Diabetes Testing

- **Fasting glucose test (FPG)**
  - Blood sugar is measured after fasting (nothing to eat or drink, except water) for 8 hours
  - FPG value ≥126 mg/dl is diagnostic of diabetes
- **Oral glucose tolerance test (OGTT)**
  - Blood sugar is first measured after fasting for 8 to 12 hours
  - Then, as part of the test, you consume a sugary drink and wait 2 hours to see how your body responds; blood sugar is checked once during and at the end of the 2-hour period
  - Result of ≥200 mg/dl is diagnostic of diabetes
- **Hemoglobin A1C test (HbA1C or A1C)**
  - Blood test indicates your average blood sugar level over the past 2 to 3 months
  - No fasting required
  - A1C ≥6.5 is diagnostic of diabetes

Interpreting Diabetes Test Results



Health Problems Caused by Diabetes

- Heart attacks
- Strokes
- Eye diseases that lead to vision loss or blindness
- Kidney disease
- Nerve damage that can cause numbness or pain in the hands and feet (neuropathy)
- The need for amputation of toes, fingers, or other body parts

Note: These problems are more likely in persons who either do not treat their diabetes or inadequately treat their diabetes.

Diabetes Treatment

- Diabetes education regarding healthy eating, physical activity, and preventing complications
- Weight reduction
- Proper diet
- Physical activity – aerobic exercise
- Blood sugar monitoring
- Medication

Note: Goals of treatment are to control blood sugar and avoid complications such as heart attacks, kidney disease, and strokes.

Diabetes Management

- Let friends and loved ones know you are diabetic so appropriate response can be taken in case of low blood sugar
- Schedule a yearly exam with your primary care provider
- Monitor blood sugar and keep HbA1c under control
- Keep blood pressure and cholesterol under control
- Schedule regular eye exams
- Pay attention to your feet and check daily for cuts, blisters, and sores; seek medical care for sores or swelling that do not heal promptly
- Keep immunizations up to date
- Consume alcohol in moderation; alcohol can have a large impact on blood sugar

Which path will you choose to manage your type 2 diabetes?

Both Anna and Mary are recently diagnosed with type 2 diabetes. Everyone's diabetes journey is different. Here are their stories.

ANNA

Anna has difficulties accepting her diagnosis. She has too much going on in her life.

- Sense of loss
- Fear
- Shock
- Anger
- Stress
- Sense of control

MARY

Mary talks to her family and close friends about her diagnosis and next steps.

TIME PASSES

Anna takes her medicine when she can and sometimes misses her health care provider's appointments. She did not make any healthy changes.

Mary joins a type 2 diabetes program, works with her health care provider, and starts to make small, healthy changes.

TIME PASSES

Anna starts having trouble seeing because her blood glucose is high. She starts to worry.

Mary knows that change is tough, sometimes she makes unhealthy choices but works hard to stay on track. She's feeling healthier.

TIME PASSES

Anna runs the risk of developing complications:

- Heart disease and stroke
- High blood pressure
- Kidney disease
- Amputation
- Blindness

Mary continues to learn how to live well with diabetes. She and her family are making healthier choices together.

Learn more about living with type 2 diabetes.

diabetes.org/type2program

1-800-DIABETES (342-2383)

American Diabetes Association.

The ABCs of Diabetes

- **“A” stands for A1C**
  - A1C is a blood test that indicates your average blood sugar level over the past few months
  - Goal: A1C < 7
- **“B” stands for blood pressure**
  - If you have diabetes, controlling your blood pressure is just as important as controlling your blood sugar
  - High blood pressure puts you at risk for heart attack, stroke, and kidney disease
  - Goal: Blood pressure < 140/90, or lower in some cases
- **“C” stands for cholesterol**
  - High cholesterol also increases your risk of heart attacks, strokes, and other serious problems
  - Goal: LDL cholesterol < 100, or lower in some cases
- **“S” stands for smoking**
  - Stop smoking—or don’t start

Diabetes Prevention

- Diabetes and prediabetes can be prevented
- In some cases, condition may even be reversible
- Foundation for prevention is lifestyle modification
  - Research has shown people who lost weight and exercised regularly reduced their risk of developing diabetes by 58%

Lifestyle Changes

- Manage weight
  - Losing 5-7% of your body weight can slow or even reverse prediabetes
  - For a person who weights 200lbs, that's only 10-15lbs
- Eat right
  - Increase vegetable consumption
  - Cut down on sweets and sugar-sweetened drinks, such as soda and juice, as well as foods with saturated fat, trans fat, and/or hydrogenated fat
  - DASH or Mediterranean diets are good approaches
- Quit smoking

Lifestyle Changes

- Be physically active
  - Get at least 150 minutes of light aerobic activity every week
    - Could be a brisk 30-minute walk 5 days a week
  - Target being active at 10 minutes at a time
  - Reduce time spent watching TV
  - Build physical activity into your daily routine
    - Take the stairs instead of the elevator or escalator
    - Park farther away from the store or your work entrance

I'm not more active because…	Ways to make it work:
…it's just too hard.	If you think being active means more hours at the gym, it's just not true! You can start by walking for 10 minutes after dinner, gradually building up to 30 minutes most days.
…the results take too long.	Some benefits start right away, even if they don't seem obvious to you. Check your blood sugar before and after you take a walk. You'll likely see a lower number after the walk. If you stick with it, over time (weeks, months, years), you will see more obvious results.
…it's just not fun.	It can be lots of fun if you find an activity you enjoy. Don't force yourself to do something you don't like. You won't stick with it. Try doing a new activity a couple of times before deciding whether to continue with that activity. If one activity isn't a good fit, don't give up. Try something else.
…it costs too much.	The cost for gym memberships and fitness classes can add up. However, walking during lunch or after dinner, dancing to your favorite tunes at home, or working out to online videos are free and can be done at times that are most convenient for you.
…it's hard to find the time.	Find ways to squeeze physical activity into your day-to-day life. For example, take the stairs instead of the elevator, play outside with your children, get up and move during TV commercials. Try to fit in at least 20-25 minutes of activity every day, which will help it become a habit.
…I'm just too old.	It's never too late to start being more active! Low-impact activities, like pool-walking and swimming, are great options. Talk to your healthcare provider about activities you can do to get started.
…I'm too out of shape.	Start slowly, and work your way up to your desired physical activity level. Add simple activities to your daily life, like walking to your mailbox or parking farther from the door when running errands. Discuss other ideas with your healthcare provider.

Diabetes Myths

My doctor says I have "borderline" diabetes. Since I have just a "touch of sugar," I don't have to worry.

- There is no such thing as borderline diabetes. To many people, "borderline" means they don't really have the disease, so they don't have to make any changes to control it. This is wrong. If you have diabetes, you have diabetes. Diabetes must be treated and taken seriously.

Diabetes Myths

I'll know I have diabetes by my symptoms.

- A person with type 1 diabetes, usually seen in children and young adults, will have obvious symptoms, because they have little or no insulin, the hormone that controls the blood sugar level.
- However, people with type 2 diabetes, which usually occurs later in life, or women who have gestational diabetes, which only appears during pregnancy, may have few or no symptoms. Their symptoms are milder since they still produce some insulin. Unfortunately, they don't make enough insulin or it is not being used properly. Only a blood test can tell for sure if someone has diabetes.

Diabetes Myths

There is no diabetes in my family, so I don't have to worry.

- Diabetes does run in families, but many people diagnosed with the disease have no close family members who have it. Lifestyle, heredity, and possibly other factors, such as certain viruses, may increase risk for the disease.

Diabetes Myths

If I don't take diabetes medication, my diabetes must not be serious.

- Not everyone who has diabetes takes diabetes medication. If the body produces some insulin, weight loss, healthy eating habits, and regular physical activity can help insulin work more effectively. However, diabetes does change over time, and diabetes medication may be needed later.

Start Healthy Habits Now

- Schedule regular checkups with your healthcare provider
- Eat a healthy diet
- Get plenty of exercise
- Monitor your glucose levels
- Get your **FREE** Caterpillar Health Exam
  - Includes glucose testing
  - Benefit available to eligible full-time and part-time Caterpillar employees

Total health