

DIABETES BASICS

This webinar is designed to provide the participant with a basic understanding of diabetes, how to manage blood sugar levels to prevent diabetes complications including vision loss, and the availability of accessible resources for people with diabetes and low/no vision.

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Diabetes Mellitus Definition

The name diabetes mellitus refers to these symptoms: diabetes, from the Greek diabainein, meaning “to pass through,” describes the copious urination, and mellitus, from the Latin meaning “sweetened with honey,” refers to sugar in the urine.

Diabetes Mellitus Definition

A chronic disorder of carbohydrate metabolism resulting from inadequate production or utilization of insulin.

With diabetes, your pancreas either doesn't make enough insulin or your body can't use its own insulin effectively.

Types of Diabetes:

Type 1: an autoimmune disease that attacks the pancreas resulting in the inability of the pancreas to make insulin; must take insulin every day.

Type 2: the body does not make or use insulin well; controlled by diet, exercise, pills and/or insulin.

Gestational diabetes: develops in the 24th- 26th week of pregnancy.

Other: latent autoimmune diabetes in adults (LADA), neonatal diabetes and maturity onset diabetes of the young (MODY)

Prediabetes

A term used for individuals whose glucose levels do not meet the criteria for diabetes, but whose levels are too high to be considered normal.

Should be viewed as a warning sign that you are at an increased risk for diabetes and cardiovascular disease.

How is Diabetes Diagnosed?

Symptom assessment by doctor + Lab tests:

Fasting Glucose Test:

Normal: Less than 100 mg/dcl

Pre-diabetes: 100-125 mg/dcl

Diabetes: 126 mg/dcl or higher

Random Glucose Test:

Normal: Less than 140 mg/dcl

Pre-diabetes: 140-199 mg/dcl

Diabetes: 200 mg/dcl or higher

How is Diabetes Diagnosed?

A1c Test:

Normal: Less than 5.7%

Pre-diabetes: 5.7 - 6.4%

Diabetes: 6.5% or higher

Prediabetes Lab Values

HgbA1c of 5.7%- 6.4%

Fasting blood sugar levels of 100-125 mg/dcl

Diabetes Prevalence In the U.S.

2020 CDC Statistics:

34.2 million Americans—just over 1 in 10—have diabetes

88 million American adults—approximately 1 in 3—have prediabetes

Symptoms of Diabetes

Frequent urination

Excessive thirst

Unexplained weight loss

Extreme hunger

Tingling or numbness in hands or feet

Sudden vision changes

Feeling very tired much of the time

Very dry skin

Sores that are slow to heal

More infections than usual

Why is Maintaining Blood Sugar Levels So Important?

To Prevent Complications

The cornerstone of diabetes management is to maintain blood sugar levels to prevent complications.

It is the complications of diabetes that cause morbidity and mortality.

How Does Diabetes Cause Complications?

Sugar is an irritant in the bloodstream. When it stays in the bloodstream because you do not have enough insulin to move it into your cells, it causes damage to blood vessels and nerves which leads to organ, muscle, and cell damage.

Controlling Your Diabetes = Preventing Complications

Diabetes Complications

cardiovascular disease
diabetic eye disease
slow-healing wounds
infections of the kidneys,
skin, bladder
bladder dysfunction
gum disease & gum
infections

sexual problems
kidney failure
gastroparesis
neuropathy
neuropathic pain
foot ulcers
lower-extremity
amputations

Diabetes and the Eyes

Diabetic eye disease is a group of eye problems that can affect people with diabetes.

These conditions include diabetic retinopathy, diabetic macular edema, cataracts, and glaucoma.

Over time, diabetes can cause damage to your eyes that can lead to poor vision or even blindness.

Diabetes and the Eyes

Retinopathy (damage to the blood vessels in the retina in the back of the eye) is the most common eye complication and the most likely to lead to blindness. As the eyes attempt to circulate more blood to compensate for the damaged blood vessels, it forms abnormal and fragile blood vessels that eventually break and leak blood and cloudy fluid. If untreated, this process blurs vision and can eventually lead to blindness.

Diabetes and the Eyes

Cataracts (clouding of an eye's lens)

Glaucoma (an increase in fluid pressure inside the eye that leads to optic nerve damage and loss of vision)

Diabetes Also Increases Your Risk Of

- cancer of the liver, pancreas, bladder, endometrium, colon, rectum, and breast
- foot ulcers
- dementia
- hearing impairments
- fatty liver disease
- pancreatitis

Diabetes Also Increases Your Risk Of:

- psychosocial/emotional disorders (anxiety, depression, eating disorders, schizophrenia)
- type 1 increases risk of other autoimmune diseases (celiac, thyroid, adrenal insufficiency, myasthenia gravis, gastritis, autoimmune hepatitis)

How Do You Know

If Your Diabetes Is Controlled?

HgbA1C Levels and Goals

Blood test performed at a doctor's office or a lab

Measures average blood glucose level over the previous three months

A1C goal for most people with diabetes is below 7% to prevent complications

$\geq 6.5\%$ diabetes

5.7% - 6.4% prediabetes

$< 5.7\%$ normal

Blood Sugar Levels and Goals

Testing blood sugar levels at home with a glucometer provides a snapshot of diabetes management and provides data for understanding what and how food, activity, medicine, and lifestyle affect blood sugar levels.

- 80- 130 mg/dl fasting and between meals
- <180 mg/dl 2 hrs after meals
- >180 mg/dl is too high (hyperglycemia)
- <70 mg/dl is too low (hypoglycemia)

When Your Blood Sugar Levels Stay Close to Normal You:

- Have more energy
- Feel less tired
- Are less thirsty
- Urinate less often
- Heal better
- Have fewer skin or bladder infections
- Have fewer problems with your eyesight, feet, and gums

High and Low Blood Sugar Levels

Low Blood Sugar
(less than 70 mg/dcl)

and

High Blood Sugar
(higher than 180 mg/dcl)
Levels

Symptoms of Hypoglycemia

(low blood sugar)

Early signs and symptoms of diabetic hypoglycemia include:

Shakiness, Dizziness, Sweating, Hunger, Irritability or Moodiness, Anxiety or Nervousness, Headache

Symptoms of Hypoglycemia

If diabetic hypoglycemia goes untreated, signs and symptoms of severe hypoglycemia can occur.

These include:

Clumsiness or Jerky movements, Muscle Weakness, Difficulty Speaking or Slurred Speech, Blurry or Double vision, Drowsiness, Confusion, Convulsions or Seizures, Unconsciousness, Death

Causes of Hypoglycemia

- Taking too much insulin or diabetes medication
- Not eating enough
- Postponing or skipping a meal or snack
- Increasing exercise or physical activity without eating more or adjusting your medications
- Drinking alcohol

How To Treat Low Blood Sugar

1. Consume 15-20 grams of glucose or simple carbohydrates (ex. 3 glucose tablets, 4 oz of juice or regular soda, 1 tbsp of sugar or honey, 8 oz of milk, 2 tbsp of raisins, hard candy).
2. Recheck blood glucose level after 15 minutes.
3. If hypoglycemia continues, repeat steps 1 and 2 up to 3 times.
4. Once blood glucose returns to normal, eat a small snack if next planned meal or snack is more than an hour or two away.

Symptoms of Hyperglycemia

(high blood sugar)

Early signs and symptoms:

- Recognizing early signs and symptoms of hyperglycemia can help you treat the condition promptly. Watch for:
- Frequent Urination, Increased Thirst, Blurred Vision, Fatigue, Headache

Symptoms of Hyperglycemia

Later signs and symptoms:

If hyperglycemia goes untreated, it can cause toxic acids (ketones) to build up in your blood and urine (ketoacidosis).

Signs and symptoms include:

Fruity-smelling Breath, Nausea and Vomiting, Shortness of Breath, Dry Mouth, Weakness, Confusion, Coma, Abdominal Pain

Causes of Hyperglycemia

- Not using enough insulin or oral diabetes medication
- Not injecting insulin properly or using expired insulin
- Not following your diabetes eating plan
- Being inactive
- Having an illness or infection
- Using certain medications, such as steroids
- Being injured or having surgery
- Experiencing emotional stress, such as family conflict or workplace challenges

How To Treat High Blood Sugar

Insulin

Supportive Care

drink water

Call your doctor if unsure how and when to treat

Diabetes and the Flu

People with diabetes, should get an influenza (flu) vaccination every fall.

People with diabetes, even when well-managed, are at high risk of serious flu complications, including pneumonia and bronchitis.

Flu can also make it harder to manage your blood sugar levels. Flu may cause your blood sugar to rise, but it may drop if you lose your appetite and don't eat. It's important to check your blood sugar regularly when you're sick.

Diabetes and the Coronavirus

According to the CDC, older adults and people of any age who have serious underlying medical conditions might be at higher risk for severe illness from COVID-19, particularly if not well controlled, including:

chronic lung disease or moderate to severe asthma, serious heart conditions, immunocompromised state, being overweight or obese, chronic kidney disease undergoing dialysis, liver disease, diabetes

Diabetes and the Coronavirus

Diabetes does not make you more susceptible to catching coronavirus, BUT if you catch coronavirus, you will most likely suffer from more serious symptoms.

WHY?

Connection Between Diabetes and Viral Infections

People with diabetes are more susceptible to developing infections because high blood sugar levels weaken your immune system defenses. (Hyperglycemia is thought to cause dysfunction of the immune response, which results in failure to control the spread of invading pathogens.)

Any illness raises blood sugar levels and uncontrolled diabetes increases your susceptibility to severe illness.

Connection Between Diabetes and Viral Infections

Your body spends a lot of energy fighting diabetes so it is less equipped to fight off another threat.

Many people with diabetes have heart disease, heart failure, are overweight and/or have kidney failure. The more diabetes complications you have exponentially increases your chance of getting a severe illness.

Diabetes Management Tips

- **Make a commitment to manage your diabetes**
- Don't smoke (1-800-QUIT-NOW)
- Visit your doctor every 6 months for a diabetes check-up
- Take care of your teeth
- Keep your vaccinations up to date
- Pay attention to your feet

Diabetes Management Tips

- Establish a daily routine
- Practice stress management and get enough sleep
- Take medications as prescribed by doctor
- Test blood glucose levels at home as ordered by your doctor
- Exercise regularly (at least 150 minutes each week)
- Healthy eating (balance, moderation, and portion control)

Accessible RESOURCES

Sulli the Diabetes Guru

On Alexa and Google Assistant

Ready to answer your questions about diabetes, including condition, diet, exercise, medication, and monitoring

<https://www.accu-chek.com/resources/sulli-the-diabetes-guru>

Diabetes Apps (see list)