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## Facts about Diabetes

- Affects 25.8 million people in the United States
  - 7 million have not been diagnosed
- 6th leading cause of death by disease in United States
- There is no cure
  - If managed properly, complications from diabetes can be delayed or even prevented
  - Must be managed 24 hours a day, 7 days a week!

<http://www.diabetes.org/diabetes-basics/diabetes-statistics/>

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## What is Diabetes?

- Serious, chronic disease in which blood glucose (sugar) levels are abnormally high
  - Due to defects in insulin production, insulin action, or both
- Occurs when the pancreas stops making enough insulin or body cannot use insulin properly
  - Insulin is necessary for metabolism of digested foods

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## Long Term Complications

- Heart disease
- Stroke
- Eye disease (blindness)
- Kidney disease
- Neuropathy (nerve damage)
- Periodontal disease (gum disease)
- Peripheral Vascular disease (poor circulation to the legs)

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## Types of Diabetes

- Insulin Dependent
  - Type I Diabetes
- Non-insulin Dependent
  - Type II Diabetes
- Gestational Diabetes
  - Occurs during pregnancy

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## Type I Diabetes

- Auto-immune disease
  - Immune system attacks and destroys beta cells
    - Beta cells are insulin-producing cells in the pancreas
- Pancreas can no longer produce insulin
  - Require daily insulin injections to survive

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## Symptoms of Type I Diabetes

- Usually develop over a short period of time
- Frequent urination
- Unusual thirst
- Extreme hunger
- Unusual weight loss
- Extreme fatigue and Irritability
  
- If not treated, can lead to a life-threatening condition
  - Diabetic Ketoacidosis or DKA

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## Type II Diabetes

- Problem with the body's response to insulin
  - Body does not use insulin well
  - Insulin resistance
    - Pancreas produces insulin
    - Body cells cannot use this insulin efficiently, because cells are resistant to the insulin produced
- Most common in those overweight, inactive, or with high blood pressure.
  - By losing weight, exercising, or taking oral medications most people can manage insulin resistance
- In some cases daily insulin injections may be required

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## Symptoms of Type II Diabetes

- Some symptoms similar to Type I Diabetes
  - Frequent infections
  - Blurred vision
  - Cuts/bruises that are slow to heal
  - Tingling/numbness in the hands/feet
  - Recurring skin, gum, or bladder infections

\*Often people with type 2 diabetes have no symptoms

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## Symptoms of Type II Diabetes

- Other symptoms may include
  - Frequent infections
    - Yeast infections
  - Slow healing sores
- Physical signs of insulin resistance include acanthosis nigricans
  - Skin appears dark, thick, and velvety
  - Most common areas include neck, armpits, groin

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## Acanthosis Nigricans



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## Risk Factors for Type II Diabetes

- Overweight
- Family history
- Ethnic background
  - African-Americans
  - Hispanic / Latino Americans
  - American Indians
  - Asian Americans
  - Pacific Islander Americans

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## Gestational Diabetes

- Diabetes during pregnancy
  - Usually ends after baby is born
  - More at risk for developing Type II diabetes later in life
- Insulin resistance
  - Caused by hormones produced by placenta
- Develops about midway through pregnancy
- Usually treated with diet
  - Some may require insulin
  - Cannot be treated with oral medication

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## Understanding Diabetes

- Our body breaks down foods we eat
  - It turns fats, protein, and carbohydrates into simple sugar (also known as glucose)
  - Our body uses glucose as fuel
  - Glucose circulates in the blood

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## Understanding Diabetes

- Pancreas
  - Large gland located behind the stomach
  - Produces the hormone insulin
  - Glucose uses insulin to enter our body's cells
  - Without insulin:
    - Glucose will build up in the blood, overflow into the urine, and exit the body unused
      - "Blood sugar" levels high
    - Our body loses it's source of fuel

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## Understanding Diabetes

- Insulin is also used for storage
  - Stores glucose as fat
  - Stores proteins as muscle protein
  - Stores enzymes that control metabolism
- A severe insulin deficiency causes breakdown of stored fats and protein

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## Diabetes Management

- Goal is to keep blood glucose levels within a target range
  - In children, blood glucose control promotes normal growth and development
- Effective management helps prevent immediate danger
  - Helps prevent blood glucose levels from going too high or too low

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## Diabetes Management

- General Rule
  - Food makes blood glucose level increase
  - Exercise and insulin make blood glucose level decrease
  - Key to glucose control is to balance food, exercise, and medication (oral or insulin)
- Other factors affecting blood glucose level
  - Growth and puberty
  - Mental stress
  - Illness
  - Injury

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## Understanding Hypoglycemia

- “Hypo” = “Low” : low blood sugar
  - Greatest immediate danger to diabetics
  - Can lead to unconsciousness, convulsions, even death!
  - Can impair thinking
    - Sometimes mistaken for misbehavior
  - Not always preventable
  - Difficult for students (especially younger ones) to recognize their own symptoms

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## What Causes Low Blood Sugar?

- Too much insulin injected
  - Accidental
  - More than enough for amount of food eaten
- Missed or delayed meals or snacks
- Too much or too intense exercise
- Unscheduled exercise

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## Symptoms of Mild to Moderate Hypoglycemia (Low Blood Sugar) Have a **Sudden Onset**

- shaky
- sweaty
- hungry
- pale
- headache
- blurry vision
- sleepy
- dizzy
- confusion
- disoriented
- uncoordinated
- irritable or nervous
- changed personality
- inability to concentrate
- weak
- lethargic
- changed behavior

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## How to Handle a Mild to Moderate Reaction

- Student may or may not be able to treat self
- Check blood glucose
- If glucose level is below 70, provide one of the following
  - 3-4 glucose tablets
  - 4 ounces of juice
  - 6 ounces of regular soda
  - 3 teaspoons of glucose gel
- Wait 15-20 minutes and recheck blood glucose
  - Repeat above if symptoms persist or glucose <70

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## Symptoms of Severe Hypoglycemia (Low Blood Sugar)

- Inability to swallow
- Seizure or convulsions
- Unconsciousness

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## How to Handle a Severe Reaction

- Never attempt to give student food or drink
  - May cause choking
- Position student on side
- Call for nurse
  - Nurse will administer Glucagon injection
- Call 911 and child's parent

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## Causes of Hyperglycemia (High Blood Sugar)

- Not enough insulin to cover amount of food eaten
- Illness
- Infection
- Injury
- Stress
- Emotional upset
- Decrease in exercise or activity

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## Symptoms of Hyperglycemia (High Blood Sugar)

- Onset occurs over time
  - Several hours to several days
- Symptoms include
  - increased thirst
  - frequent urination
  - nausea
  - blurry vision
  - fatigue
- Usually not an urgent situation
- Leads to long term complications

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# Diabetes

The End.

Please proceed with completing the quiz for this training presentation