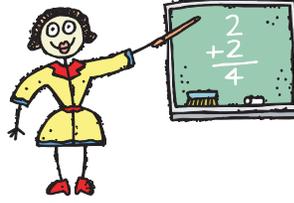


# TEACHER BACKGROUND

According to the American Diabetes Association, diabetes is actually a group of diseases characterized by high blood glucose levels due to defects in the body's ability to produce or use insulin. Insulin, produced in the pancreas by beta cells, is a hormone that transports glucose into the body's cells. Once in the cells, glucose provides energy necessary for the body to function.



The glucose in the bloodstream starts out as carbohydrates, also known as starches, in the food we eat. As the carbohydrates are physically digested through chewing and chemically digested in the stomach, the relatively large starch molecules are broken down into smaller molecules of glucose. Without sufficient insulin, the glucose remains in the bloodstream, creating different issues as it travels throughout the body systems. The effects of this defect can affect multiple body systems and create a variety of health issues for individuals who are diabetic. For example, the American Diabetes Association states “heart disease and stroke account for about 65 percent of deaths in people with diabetes.” Additional effects include, but are not limited to:

- High Blood Pressure
- Blindness
- Kidney failure
- Amputations
- Nerve damage known as *neuropathy*
- Stroke
- Peripheral Arterial Disease (PAD)

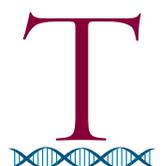
Diabetes is a dangerous and life-threatening disease if left uncontrolled. However, working with your doctor and health care team to reduce blood glucose levels can also reduce the risk of developing complications.

People can get diabetes at any age. The two kinds of diabetes are known as Type 1 and Type 2 diabetes. Type 1 diabetes, formerly called juvenile diabetes or insulin-dependent diabetes, is usually first diagnosed in children, teenagers, or young adults. With this form of diabetes, the beta cells of the pancreas no longer make insulin because the body's immune system has attacked and destroyed them. Treatment for Type 1 diabetes includes taking insulin and can possibly involve additional medications.

Type 2 diabetes, formally called adult-onset or noninsulin-dependent diabetes, is the most common form of diabetes. People can develop Type 2 diabetes at any age – even during childhood. This form of diabetes usually begins with insulin resistance, a condition in which fat, muscle, and liver cells do not use insulin properly. At first, the pancreas keeps up with the added demand by producing more insulin. In time, however, it loses the ability to secrete enough insulin in response to meals. Being overweight and inactive increases the chances of

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developing Type 2 diabetes.

Being physically active is very important in preventing or controlling diabetes. Also, according to the American Diabetes Association “Physical activity can improve so many aspects of one’s physical, mental and emotional well-being. It’s no secret that the U.S. is experiencing an overweight and obesity epidemic”. Teaching students about the benefits of physical activity regarding overall health is extremely important.

### **Type 1 Diabetes:**

According to McDowell and Gordon (1996) “Insulin dependent diabetes is a dependence on exogenously injected insulin to prevent ketosis and maintain life. Without injected insulin, patients with Type 1 diabetes die.” Ketosis or ketoacidosis occurs when cells do not have sufficient glucose. If insulin levels are too low, glucose cannot enter cells to provide needed energy. The cells begin to burn fat as an alternative energy source. When fat is burned for energy (metabolized), ketones are released as the fat breaks down. High levels of ketones are toxic to the body and can lead to a diabetic coma.

### **Type 2 Diabetes:**

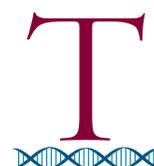
McDowell and Gordon (1996) “This type of diabetes is the commonest form world-wide and there is no requirement for insulin to prevent ketosis and preserve life. The majority of patients can be managed by dietary means alone.” Unlike Type 1 diabetics, Type 2 diabetics rarely develop ketosis. Instead, Type 2 diabetics can develop *hyperosmolar nonketotic* coma. This condition is caused as the body attempts to get rid of excess blood glucose by excreting it in urine. McDowell and Gordon also contend that obesity is a common condition found in Type 2 diabetics over the age of 40. They state “in such people the body tissues are relatively resistant to the effects of insulin, thus causing elevation of blood glucose.” Patients with Type 2 diabetes can better manage their condition by reducing their body weight.

- **Diabetes:** A person’s blood sugar (glucose) is too high. Although some glucose is necessary for energy in your body, too much glucose isn’t good for a person’s health.
- **Glucose** – blood sugar
- **Pancreas** – is a long, flat gland that lies in the abdomen behind the stomach. It produces enzymes that are released into the small intestines to help with digestion. It also contains clusters of cells called islets. The cells in these islets produce hormones such as insulin and glucagon, which help control the level of glucose in the blood.
- **Beta Cells** – a type of cell in the pancreas that makes insulin.
- **Type 1 Diabetes:** a person’s pancreas no longer makes insulin; first diagnosis is in children, teenagers or young adults
- **Type 2 Diabetes:** fat, muscle and liver cells do not use insulin properly; can be developed at any age



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- **Role Play** - To assume or represent in a drama; act out.
- **Melodrama:** a drama characterized by exaggerated emotions
  - ▲ student audience will follow melodrama cue cards to interact with the play
- The **islets of Langerhans** are the regions of the pancreas that contain its endocrine (i.e., hormone-producing) cells. Discovered in 1869 by German pathological anatomist Paul Langerhans at the age of 22.



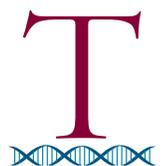
## Activity Materials

- **Vocabulary cards** (one per student)
  - ▲ Some students will have the same vocabulary word
  - ▲ Copy vocabulary cards onto card stock
  - ▲ Laminate vocabulary cards
- One act set per group of 4-5 students provided in Day One
- Teacher Choice Book provided in Day One
- Glue
- Scissors
- Crayons or colored pencils or markers
- Teacher Cue Card (keep handy throughout lesson for reference)
- Teacher Master copy of play
- tissue box or shoe box or similar container for “student mailbox”

## Management Considerations

- Teacher cuts out **vocabulary cards** – (one per student)
- Organize class into groups of four (4) to five (5) students.
- Grouping Suggestions
  - Numbered heads: number students 1, 2, 3, 4, 5 and collate all ones, twos, threes, fours and fives
  - Fish bowl: gather student names in a container; pull out four names for the first group, next four names for the second group and so on.
  - Ability grouping: List student names in descending reading ability, group the top two with the bottom two for first group of 4, and continue until all students are grouped.
- Copy one act set per group will include student checklist
- Post test (one copy per student)

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## Day One



Explain to the students that in this lesson they will be learning about two types of diabetes. They will also be learning how the body works as a system and sometimes the things we eat may make us not feel well.

Explain to them that they will be learning new and exciting vocabulary, and that they will be playing a fun game and get to perform a special type of character play called a melodrama.

### Opening Question suggestions:

**\*Sensitivity Caution** - Be aware that some students may be personally connected, concerned, or curious about diabetes perform a special type of character play called a melodrama not feel comfortable discussing diabetes in a group setting. Provide a student mailbox, made from a tissue box, shoe box or similar container in which students may place private questions or comments for your review. Be sure to address each comment following the lesson.

Due to the sensitive nature of the lesson, you may wish to open the lesson with the following:

“We have something VERY exciting to learn about today. But even exciting things can sometimes make you feel uncomfortable, or sad, or concerned. And that is ok. If something we discuss today makes you feel uncomfortable, or sad, or concerned, you can use this mailbox to share those thoughts with me.”

Use the following to start a discussion about diabetes:

- Does anyone in your family have diabetes? If so, who?
- If someone answers “yes”, ask them if they would be willing to share what they know about diabetes.
- Why do doctors check for diabetes?
- How does diabetes make you sick?
- Did you know there are different types of diabetes?

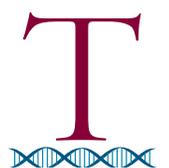
### Let students know that they will play a vocabulary game:

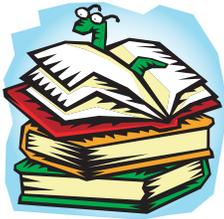
- Have cards cut out and ready to play.
- Each student will get one card; some cards will have the same vocabulary word on them.
- Tell the students this game requires they sit and stand which is physical activity and physical activity is very good for them. Explain to students you will be reading the definition to a new vocabulary word and if they think they have the correct vocabulary word to stand up.
- The first student to stand with the correct vocabulary word will earn a reward. Keep rewards simple such as stickers or other appropriate reward. It can also be something as simple as picking an affirmation for the class or being line leader for lunch, or a simple “Wow, you are super smart!”
- After playing the game once, have students switch cards and play again.
- You may also choose your high readers to read the definition to the class.



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## Call students to circle time reading area

(Suggested reading list – If these books are not available, please ask your school librarian for other suggested read alouds)



### ***“Even Superhero’s Get Diabetes”***

*by Sue Ganz-Schmitt*

Kelvin loves all things “Superhero”. His days are spent battling imaginary villains and disasters. One day his fantasy world is shattered by the reality of getting diabetes. A mysterious doctor discovers that Kelvin has superpowers. The boy becomes ‘Super K’, and the story reveals a new superhero that uses his superpowers to help children with diabetes.

### ***“Even Little Kids Get Diabetes”***

*by Connie Pirner*

Even little kids get diabetes. When she was two years old, the girl in this book got really sick and skinny and had to go to the hospital. That’s when she found out she had diabetes. Now she knows all about getting insulin shots everyday and testing to see if she has too much sugar or too much insulin. She knows just what to eat and when. But most of all, she knows that in spite of everything; she’s just a regular kid.

### ***“Taking Diabetes to School”***

*by Kim Gosselin*

This beautifully illustrated and fun-to-read storybook simplifies and normalizes a complicated childhood condition. When read aloud, other children can identify why a peer may be treated differently and begin to empathize with them. In addition, children whose conditions set them apart as being different begin to feel accepted and safe.

### ***“Jackie’s Got Game”***

*by Howard Steinburg*

An inspirational story is about a nine-year-old who comes to recognize how to put his diabetes in perspective so he can be who he wants to be. The story chronicles how Jackie faces the challenges of fitting in while enjoying and dealing with the same things as kids without diabetes — including trying out for the school basketball team. With the support of his family, friends, and coach, Jackie finally realizes that he is the same as everybody else, but a little bit different, too.

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### **Directions for Read Alouds:**

- Read chosen book with students and have a class discussion covering such areas as warning signs, preventions or treatments, family impact, new vocabulary terms that may be addressed in the book(s).
- Before letting students get into their groups, explain expectations and directions for preparing for class play.
- Group Students (teacher choice – see activity preparation)
- Explain that they will make characters provided in the act set for each group
- Pass out act set to specified groups
- Students will work according to student direction checklist included in act set

### **Student “To Do” Checklist:** (Allow ~12-15 minutes for this activity)

- Color characters in act set
- Cut out characters in act set
- Glue characters to popsicle-sticks (or straws, teacher choice)
- If time allows, groups may practice roles



### **Day Two**

### **Materials:**

- Teacher copy of “I’m not Feeling My Old Self” (one copy) will need to be cut before lesson
- Scissors
- Scotch Tape
- Completed act set per group of 4-5 students
- One Transparency of “How Sugar Works in the Body”

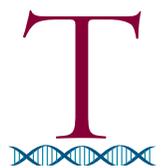
### **Opening Question Suggestions:**

- What are some words that you might use from yesterday’s lesson if you were telling a friend about diabetes?
- How many types of diabetes did we learn about yesterday?
- What would you do if you found out you had diabetes?
- How would you take care of yourself?
- Can you make a sentence using a one of these words? (see vocabulary list)



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**Optional suggestion:**

@ Organize web-map of diabetes vocabulary as guided practice with students to evaluate vocabulary retention.

- If book was read, this is a great time to reflect on story.
- As guided-practice read choral-read melo-cue cards with students before starting play.
- Explain to students who are not participating in current scene that they will be the “audience” that repeats the melo-cue cards when they are held up.

**Starting Play:**

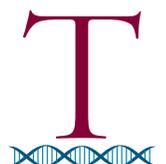
- Allow 10 – 12 minutes for each scene.
- Start scene one: “Warning Signs of Diabetes”
- Continue with scene two: “Diagnosing Diabetes”
- Intermission – students now play “I’m not Feeling like My Old Self”. Evaluate student understanding by answers given. (Allow 10 – 12 minutes for this activity)
- Draw T-Chart on white board, one side labeled Warning sign for Diabetes/Not a Warning sign for Diabetes.
- Explain to students that they will each receive a warning sign.
- Pass out warning signs, one per student.
- Students will use a small piece of tape to attach their warning sign. (keep tape dispenser near board so each student may get a small piece of tape when they come up to place their warning sign in the T-Chart)
- Introduce cause and effect of diabetes at this time with students, clarifying the direct relationship between behaviors and diabetes. (i.e. Eating junk food may cause elevated sugar levels in your body; a healthy diet will decrease your chances of developing diabetes)

With enthusiasm tell students “Now, I’m going to show you how sugar works in the body, this is so exciting!”

- Using over-head transparency of “How Sugar Works in the Body” guide students through process of sugar regulation in our body. (Allow 10 – 12 min for this activity)
- Start scene three: “Type 2 Diabetes” (remind audience to respond to melo-cue cards when held up)
- Continue with scene four: “Comparing Type1 and Type 2 Diabetes”



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### **Suggested Closing Questions:**

- How can healthy living practices help other health problems besides diabetes?
- In your own words, explain how diabetes affects your body.
- What type of physical activity can be done to keep your body healthy?
- What would happen if you were diagnosed with diabetes and did not take care of yourself?
- How will you make changes in your eating habits?
- What will you tell your family what you learned today about diabetes?

### **Suggested Modifications:**

- Timid students or students with exceptional needs may be responsible for the art and craft of roles, props and cue cards
- Using a hand held voice recorder, record students and playback while the teacher manipulates characters to minimize stage fright (will require extra time for recording done by teacher)
- Extended time to practice assigned acts prior to presentation
- Exceptional needs students could draw pictures to represent the action of the melodrama (create a story board)

### **Suggested Extensions:**

Discuss and research the outcomes of untreated diabetes and complete a cause and effect chart – ex: heart disease/attacks, stroke, blindness, amputations, or high blood pressure (blank cause and effect chart included in student materials)



**Make a healthy menu that reflects diabetic meals**  
(blackline master included)



**Write/Draw an alternative outcome to your play**  
(blackline master included)



**Consider rehearsing the play for a performance**



Invite the school nurse to your class when the play is being presented to provide the opportunity to address additional commentary about the prevalence of diabetes.



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