To introduce participants to the various systems in their bodies and

To introduce participants to diabetes and teach them what happens in the body that causes

diabetes, are preventable.

To explain the difference between contagious and non-contagious diseases, and that some noncontagious diseases, like type 2

Lesson Objectives

their purpose.

type 2 diabetes.

1.

2.

3.





## **Review the Last Chapter**

### • What was life like in your community in past eras?

- What things do you remember that the Elders said last time?
- What are some differences in community life between today and the past?

[Note: Conduct this review while also doing some type of stretch activity such as the animal stretches examples that can be found on www.NAClubs.org). This will remind youth that stretching is part of maintaining a healthy body. It will also show them how easy it is to do a little exercise anywhere, even while doing something else at the same time.]



## **Helpful Hints**

Note regarding confidentiality: During this session's discussion about diseases and diabetes, participants might share behavioral or health information about their family members or other people they know. For young people, the concept of "privacy" can still be relatively unformed. They might be completely unaware that they are disclosing confidential information. However, it's essential that you respect the confidentiality of those people, and not discuss anything you inadvertently learned during the T.R.A.I.L. sessions. If participants identify someone by name – when they talk about diseases or behavior – be sure to omit any reference to those names or family connections if you use that information in further discussions. Also, review with participants the Code of Respect they developed. Remind them that the Code means that conversations that happen in T.R.A.I.L. sessions should stay in T.R.A.I.L.sessions.





## Helpful Hints (Continued)

- Whenever you think it might be helpful during this session, use supplementary resources that are (1) community-specific and diabetes-related, and (2) involve traditional tribal foods.
- Consider asking a doctor, nurse, or other community health representative to assist you with today's T.R.A.I.L. session. This chapter is the heart of the curriculum. A health professional can be a very helpful resource for explaining human body systems and the science of diabetes. You can use expertise in the community, and you don't have to be an expert yourself to teach participants about the human body and diabetes.
- There are different ways to describe diabetes. Consider incorporating both a *holistic* and *medical perspective* in today's lesson. Sample explanations are provided below.



## Holistic Perspective

"Diabetes results from an imbalance in the body. There is too much sugar in the blood. Being overweight can contribute to sugar levels being high in the blood. To keep the sugar levels at a healthy level, it is important to live a balanced life. Living a balanced life can help prevent type 2 diabetes. Eating a balanced diet, staying physically active, talking about feelings with people you can trust, and being involved with spiritual, religious, or cultural traditions are ways to keep yourself healthy as a person. Balance between your mind, body, and spirit are important for keeping yourself healthy."



## **Medical Perspective**

These may be useful resources for you to use in explaining what causes diabetes. These explanations focus on type 2 diabetes, since that is more common in American Indian/ Alaska Native communities.

### Sample Explanation #1:

"Diabetes begins in the pancreas, an organ in your body like your heart. The pancreas is a large organ near the stomach. Special cells in the pancreas, beta cells, make a substance called insulin ("in-SUH-lin"). Insulin helps feed your cells. Your body is made up of millions of tiny cells. To keep you healthy, these cells need to be fed. The food the cells eat is called glucose ("GLOO-kose"), or sugar. When you eat an apple, for example, your body turns the apple into glucose and sends that glucose into your blood. Your body uses glucose for energy, so it can do everything it needs to do like, breathing, walking, running, or moving your fingers to play an instrument. But, glucose can't be used by the body on its own. It also has to have a hormone called insulin. Insulin carries the glucose into the body's cells.



The glucose travels through your blood to your cells. The cells can't eat the glucose all by themselves. They need help. Insulin helps the cells eat the sugar. People with diabetes have a problem with insulin, so the cells don't get the glucose they need.

In type 2 diabetes, the pancreas usually makes some insulin, but either there's not enough of it, or the cells can't use it very well. Without enough insulin, or without the ability to use the insulin, the cells can't eat or don't get enough to eat. So, you take medicine to help the cells eat, and you make the cells' job easier by planning nutritious meals and being physically active.

Sometimes, type 2 diabetes can be controlled or prevented by (1) eating healthier food, (2) exercising regularly, (3) losing weight and (4) taking medicine to help the pancreas make more insulin or make the insulin work better. It used to be that only older people got type 2 diabetes. Now, more and more youth are getting it, especially if they are overweight." (Adapted from *American Diabetes Association: What is Diabetes?*, retrieved from **https://www.diabetes. org/diabetes**).

### Sample Explanation #2:

"Diabetes means there is too much sugar (glucose) in the blood. Sugar comes from the foods we eat, like bread, cereals, pasta, rice, fruit, starchy vegetables, and dairy items. Sugar is used by the body for energy—to run, skip, play, and swim. Insulin is a hormone that is made in the pancreas and works like a key to a door–insulin opens the door of the cells of our body, allowing the sugar to go from the bloodstream into the cells, where it is then used for energy. If there is not enough insulin or if the insulin can't open the door to the cell, the sugar levels rise in the blood and diabetes occurs. And guess what? Even animals can get diabetes!

### Type 2 Diabetes:

Type 2 diabetes usually occurs in adults; however, recently, more youth are being diagnosed with type 2 diabetes. In type 2 diabetes, the pancreas still makes insulin, but the insulin doesn't work very well–like having the wrong key for the door. While our genes and our family history can play an important role, it is also linked to being overweight and not getting enough exercise."

#### **Treatment and Prevention:**

The good news about type 2 diabetes is that it can be treated and sometimes prevented. Appropriate treatment is important in order to avoid problems with the eyes, brain, heart, kidneys, feet, and nerves. Having a healthy eating plan and doing regular exercise are keys to staying well with diabetes. In type 2 diabetes, taking pills and/or insulin injections may be required. Daily blood sugar checks help diabetes patients to know whether their treatment plan needs adjusting. Sometimes type 2 diabetes can be prevented through staying a healthy weight, staying physically active, and eating a healthy diet." (Adapted from *Diabetes Research Institute: Diabetes & Kids*, retrieved from *http://www.diabetesresearch.org/document.doc?id=274*).



# Activity 1: Systems in My Body

## **Purpose of the Activity**

• To introduce and reinforce information about the various systems in the human body and their purpose.

## Instructions:

1. Before starting any of this session's specific activities, display the T.R.A.I.L. circle diagram. Remind participants that the diagram shows the whole health program they are learning about in this T.R.A.I.L. program. Point to the "physical" quadrant, and tell them that's what they'll be

## **Materials** needed

- Computer with internet access
- Printed copies of the human organs diagram, which can be found on **www.NAClubs.org**
- Large index cards or a piece of paper with the name of each organ system listed on page 25
- Large index cards or a piece of paper with the brief explanation of each organ system listed on page 25

focusing on today. Also remind them that balance between all of the quadrants is an important way to understand what health means.

- **2.** Before the activity, print out copies of the human organs diagram for each of the participants.
- **3.** Before the activity, make large index cards with the name of each organ system (listed below). Make a separate set of cards with the explanation of each organ system. These two sets of cards will be used in a matching game.

Brain	Helps us think and feel. Receives information from our senses.
Heart	Moves blood around our body.
Lungs	Helps us breathe in and out.
Stomach	Feels "full" when we have eaten enough food.
Intestines	Digests our food. Breaks food down into parts our cells can use.
Pancreas	Releases insulin to help our cells use glucose.
Kidneys and Bladder	Cleans our blood. Makes waste products into urine.
<b>Muscles and Bones</b>	Helps us move, walk, and run.



- **4.** Hand out copies of the human organ systems diagram to each participant. Ask them to circle each body system as you or the guest speaker (health professional) explains it.
- 5. Start by explaining what "cells" are and that the human body has a number of organ systems. You can say, "All of our body organs are made up of tiny little building blocks called cells. Our cells need energy to work right. The energy they use comes from glucose ("gloo-kohs"), which is a sugar. We are going to talk about some of our main organ systems today."
- **6.** Remind the participants to circle each body organ system as it is explained. Use the detailed explanations in the table below to briefly describe each organ system:

Brain	Helps us think and feel. Receives information from our senses to help us interact with the world. Our senses include taste, touch, smell, hearing, and seeing.
Heart	Moves blood around our body. "Arteries" are like pipes that go from the heart to all over the body. The heart pumps blood through these pipes. The blood carries energy, in the form of sugar, or glucose, for our cells to use.
Lungs	Helps us breathe in and out. Brings oxygen into our body, which helps other organs function.
Stomach	Food goes from our mouth down a pipe called the "esophagus" into the stomach. The stomach feels "full" when we have eaten enough food. It digests our food and then pushes it into the intestine.
Intestines	Digests our food more. In our intestines, food is broken down into products that can be used by cells. These products include proteins, fats, and sugars, like glucose. The glucose goes into the blood, where it travels all over the body. Then, the intestines make the leftover waste into feces (poop). We then push the feces out of the rectum when we use the bathroom.
Pancreas	Releases insulin to help our cells to use glucose. Insulin is like a key that opens the door to cells so that glucose can come in.
Kidneys and Bladder	The kidneys clean our blood and take out waste products. The waste products are made into urine. Urine is collected in the bladder. When we go to the bathroom, we empty the bladder.
Muscles and Bones	Helps us to move, walk, and run!



- 7. Explain to participants that they will now be playing a matching game to reinforce what they have learned about the organ systems. Depending on how many participants are in the group, you can play this game differently.
- 8. If you have eight participants or fewer, hand out a card with an organ system name to each person. Place the cards with explanations around the room in different places. Tell the participants to move around the room to find the card with the correct explanation for their organ system. Encourage them to work as a team and to help one another figure out the right card matches. You and/or the guest speaker can also help them if they have questions.
- 9. If you have 8 to 16 participants, then hand out one card to each person some will get organ system names, and others will get explanation cards. Tell them to move around the room and talk to each other to make the right matches. Have them line up in pairs as they find their matching card.
- **10.** If you have more than 16 participants, some of them can work together and share a card either an organ system name or explanation card. The game can then be played the same way as for 8 to 16 participants.
- **11.** Once the participants have made their matches, ask them to read out what is on their cards. Have them read out the name of the organ and what it does.
- **12.** Ask the participants if they have any questions about the organ systems and explanation cards. This is a great time to have the guest speaker answer any questions. Questions about the pancreas, insulin, glucose, or diabetes can also be a way to transition to the next activity.

# Activity 2: How Does Diabetes Affect the Body?

## **Purpose of the Activity**

- To expand participants' understanding of diseases.
- To learn what diabetes is, how it affects the body, and how it can be prevented.
- To help participants distinguish between contagious and non-contagious diseases.

Materials needed

- White board or butcher block paper
- Markers
- Computer with internet access
- Hand lotion
- Glitter



## Instructions

- 1. Show an age and culturally appropriate educational video that teaches what type 2 diabetes is and how it affects the body. The video link to How Insulin is Made and Works can be found on **www.NAClubs.org**. Additional teaching tools about diabetes and body systems can also be found on **www.NAClubs.org**.
- **2.** Ask participants what they think diabetes means. Remind everyone of the value of respect in the Talking Circle.
- **3.** Provide an explanation of diabetes. The health representative can help with this. Explain that diabetes is a disease, it is not contagious, what causes it, and how it can be prevented.
- **4.** Diabetes can be explained from a holistic perspective related to balance or from a medical perspective (see Helpful Hints section). Discuss both of these perspectives.
- **5.** Ask participants to help act out how type 2 diabetes affects the human body.
  - **a.** Put a long sheet of butcher block paper on the floor. Ask participants to work together to draw the pancreas, blood vessels in the pancreas, cells near the blood vessels, insulin, and glucose.
  - **b.** Divide participants into two groups. Give the groups 10 minutes to practice putting on a skit about how diabetes works. Group members should take on roles as blood vessels, cells, insulin, and glucose. Groups can use the butcher block paper in their skits if they want. Blood vessels and cells should arrange themselves in the pancreas. Insulin and glucose should interact with the cells.
- **6.** Suggested group discussion:
  - a. What does glucose do in our bodies?
  - **b.** What does insulin do in our bodies?
  - c. How are glucose and insulin affected by diabetes?
  - d. How does diabetes affect our insulin levels?
  - e. How do you get diabetes? Can you catch it from someone else?
- **7.** Conduct the hand lotion experiment.
  - a. Write the words "disease,"" virus," and "bacteria" on the white board or butcher block paper. Ask if anyone can define them. Help with definitions as needed. [Examples of responses may include: Disease = sickness; an illness that stops the body from working right. Virus and bacteria = two kinds of germs that can make people sick.]



- **b.** Ask participants to name different kinds of sicknesses. Write their ideas on the white board or butcher block paper. Try to list at least nine or ten examples. Add any that you think participants probably know but might have overlooked. Be sure the list includes both contagious and non-contagious examples. *[Examples of responses may include: colds, flu, chicken pox, measles, asthma, diabetes, HIV/AIDS, cancer, ear infections, strep throat, allergies, appendicitis, swollen tonsils, Lyme disease, pink eye, pneumonia, arthritis, etc.]*
- c. Write the word "contagious" on the white board or butcher block paper. Ask if anyone can define it. [Example of a response: a sickness that can be passed from one person to another.] Look at the list of diseases and see if participants can identify which sicknesses are contagious and which are not. Clarify as needed. Put a big "C" next to the ones identified as contagious. Then, have a group discussion asking questions like:
  - i. When you've gotten something contagious in the past, how did it usually happen? [Examples of responses may include: being around someone who is sick, being coughed on, etc.]
  - **ii.** What are some ways to prevent getting contagious diseases? [Examples of responses may include: washing hands, eating right, and getting rest so the body is strong and can fight diseases, etc.]
- **d.** Take a large glob of hand lotion. Mix quite a bit of glitter into it. Tell participants that the glitter represents germs (either bacteria or a virus). Put the glob on your hand and shake hands with one of the participants. Have that person shake someone else's hand, and so on until either the glitter is gone or everyone has had their hand shaken. Have a few people with glitter on their hands rub their faces as if they were scratching an itch. Make sure participants understand that passing contagious diseases is just as easy as passing the lotion around. Stress how, unlike the glitter and lotion, bacteria and viruses are invisible. So a person has absolutely no idea that they are being exposed to (or passing along) germs.
- e. Go back to the white board or butcher block paper and point out the non-contagious diseases listed. Review those diseases and talk a little about each, asking participants if they have ever had any of them or if they know people who have had them. Put a large "N" next to the non-contagious diseases listed.





## **Talking Circle**

- What are some of the different systems in our bodies? What do those organs do? [Examples of responses may include: the heart pumps blood, the lungs bring air in and out, the stomach and intestines digest food, the pancreas makes insulin to help the body use sugar.]
- What is diabetes? [An example of a response may include: a disease where there is too much sugar in the blood.]
- What does "contagious" mean? [Example of a response: a disease you can get from someone else.]
- What are some examples of contagious diseases? [Examples of responses may include: cold, flu, and HIV.]
- What are some examples of non-contagious diseases? [Examples of responses may include: diabetes, cancer.]



## **Optional Activities**

Found on www.NAClubs.org.

- Musical Chairs
- Guest Speaker (a local community health partner or someone with diabetes)
- Eagle Books
- Detectives
- Vegetable Word Search



- Connecting Resiliency to the Future Lesson
- Connecting Resiliency to the Future Activity(ies)