11 Traffic Stop

ROLE PLAY

You have heard the statement "Don't Drink and Drive," but what are the dangers of drinking and driving? What effect does alcohol have on a person—physically and mentally? In this activity you will act out a role-play that explores how human body systems are affected by alcohol.

CHALLENGE **What human body systems are affected by alcohol?**

MATERIALS

For each student

1 **Student Sheet 11.1,"Three Level Reading Guide: Traffic Stop"**

PROCEDURE

1. Assign a role to each person in your group. Assuming there are four people in your group, each of you will read one role.

Roles

Sarah, a middle school student

Jordan, Sarah's friend

Sarah's mother, a police officer

Hector, Sarah's brother, an emergency room technician

2. Read the following role-play aloud as a group.
3. Complete Student Sheet 11.1, "Three Level Reading Guide: Traffic Stop."

TRAFFIC STOP

Jordan and Sarah are talking to Sarah's older brother, Hector, who is an emergency medical technician (EMT), when their mother, who is a police officer, enters the room.

Mom: Whew! I am tired! We stopped over 100 cars last night.

Jordan: What were you stopping them for?

Mom: We set up a checkpoint to find any drivers who may be driving while impaired, or under the influence of a substance. Mostly we were looking for drivers who were under the influence of alcohol.

Sarah: What does impaired mean?

Hector: In this situation, **impaired** means that a person has been affected either physically or mentally by any substance that they have taken into their body. To become an EMT I studied the effects of alcohol and other substances on body systems.

Jordan: Everyone knows you should not drive after you have been drinking. Why would anyone do that?

Mom: Often people do not realize how much alcohol they have in their system. Impaired drivers cause about 40% of the accidents in our country because their reaction time is slowed down and they make poor judgments.

Sarah: It sounds to me like driving after you have been drinking is a poor judgment. How do you check people for alcohol? Do you just ask them if they have been drinking?

Mom: Yes, we do that, and we also look for evidence. There are two types of evidence that we collect: qualitative evidence and quantitative evidence.

Sarah: What's the difference?

Mom: Qualitative evidence is based on observations that do not involve measurements. In this case, it includes how people look and how they behave. At first, we see if they can follow a moving pen with their eyes. People who are impaired often cannot follow objects smoothly with their eyes. Another test we ask them to do involves having them listen and follow directions while performing a simple task. In a third kind of test, we have people walk in a straight line and turn on our command and stand on one leg.

Jordan: That sounds easy!

Mom: It is not easy for people who have been drinking.

Hector: Other physical signs of drinking include blurred vision and slurred speech. They may have trouble controlling their balance, so they sometimes stagger or even fall down.

Sarah: That's why testing them by having them walk in a straight line and stand on one leg works, right?

Hector: Exactly! But these tests do not prove a person has been drinking. There are other health issues that can cause this kind of behavior.

Mom: You're right, but anyone who cannot do those things is considered to be impaired. Then we test them with quantitative tests that measure alcohol. It's easier to prove in a court of law that they have been driving under the influence of alcohol when we have quantitative evidence.

Jordan: I know quantitative evidence involves numbers or some kind of measurement, but what kind of quantitative testing do you do?

Mom: We have three different tests, and we give people a choice. One of these is a breathalyzer test. In this test they blow into a machine, and it measures the percentage of alcohol in their breath. Another test is a blood test, which measures the percentage of alcohol in their blood. The third test is a urine test, which measures the percentage of alcohol that is in their urine.

Sarah: How is it possible that a breath test, a blood test, and a urine test can all tell you if a person has been drinking?

Hector: Alcohol, like many other substances, affects all parts of the body. When a person drinks alcohol, the stomach and small intestine absorb it right away. As soon as it is absorbed, it goes into the blood stream and the heart pumps the alcohol to all parts of the body. The blood circulates to the lungs where the alcohol becomes part of a person's exhaled breath; and the blood goes to the kidneys where the alcohol becomes part of a person's urine.

Sarah: Wow! It sounds like alcohol affects the brain, the skin, the heart, the stomach, the small intestines, and the lungs. That is a lot of body systems!

A traffic checkpoint

Jordan: I remember learning about alcohol in school. Alcohol is a depressant so it depresses, or slows down, parts of the brain. The brain controls how you move, and so that's what makes people stagger and slur their words. It can also make people sleepy.

Sarah: And I have heard that when people drink, they become more outgoing and even wild!

Hector: Both of those can be true. As Jordan said, alcohol is a depressant, so when people drink, the part of their brain that normally controls their behavior shuts down. People often do things they regret later.

Mom: Alcohol also increases the blood flow to the skin and increases a person's heart rate and blood pressure. This makes people feel warm and looked flushed even when it is cold outside.

Sarah: I don't understand how people could still have alcohol in their system several hours after they have been drinking.

Jordan: I learned that the liver breaks down alcohol, and that it takes a lot of time.

Hector: That's right. It also depends on a lot of other factors, such as the amount of food in a person's stomach and how much the person weighs.

Sarah: How can a person's weight affect how much alcohol is in their system?

Hector: Do you remember when Mom was talking about how all three of those tests measured the percentage of alcohol in a person's body?

Sarah: Yeah, but . . .

Hector: One ounce of alcohol in a 100-pound person will be a higher percentage of alcohol in that person's body than one ounce of alcohol in a 200-pound person.

Sarah: That makes sense, when you think about alcohol in the body as a percentage of a person's total blood volume.

Jordan: I have an uncle who has liver problems because he used to be an alcoholic. Now he never drinks.

Hector: When a person drinks a lot over many years, the liver can be damaged. The condition is called cirrhosis of the liver.

Mom: Evidence suggests that the younger a person starts drinking, the more damage occurs.

Sarah: Why is that?

Mom: I don't think the experts know for sure, but they think it is because young peoples' minds and bodies are still growing. Alcohol can interfere with normal growth and development.

Hector: Alcohol also causes the kidneys to produce more urine, so when people drink, they have to use the bathroom a lot and may even get dehydrated.

Jordan: That seems funny, the more a person drinks, the more dehydrated they can become!

Hector: It's true. Heavy drinkers are also more likely to develop heart disease and even cancer. When a person drinks, the heart speeds up and blood pressure increases. This puts more strain on the heart.

Sarah: I thought heart disease and cancer were caused by heredity and your diet.

Hector: Yes, but they can also be caused by environmental effects, such as how often a person drinks alcohol. People who drink heavily over a long period of time have more of these diseases. Did you know that people who are heavy drinkers also have memory loss? There have been studies that show teenagers who drink have smaller areas of the brain for memory than teenagers who do not drink!

Sarah: Jordan, you're brain is small enough already, you better NEVER start drinking!

Jordan: Look who's talking!

Mom: That's enough. Last week we had a call on our police radio from a university dormitory where a young man almost died from drinking too much.

Jordan: I know that a person can die from liver damage because of drinking over a long period of time, but can a person die from just one night of drinking?

Hector: Yep, I've had calls like that too. Sometimes it is called alcohol poisoning. As you mentioned, alcohol is a depressant. When a person drinks a lot of alcohol very quickly, the alcohol slows down the respiratory center in the brain—that's the part you need for breathing. Although alcohol causes the heart to speed up at first, a lot of alcohol all at once causes the heart to slow down. If a person drinks too much alcohol too fast, that person can pass out and even die.

Sarah: What happened to the young man from the university?

Mom: We called an ambulance, and they took him to the hospital. They pumped his stomach and he was OK, but it was a close call.

Jordan: We learned in health class that alcohol can harm an unborn baby. I forget what that's called.

Hector: You're talking about fetal alcohol syndrome. If a mother drinks while she is pregnant, the alcohol can pass through the placenta to the developing fetus. This can affect its development. The baby may not grow normally and may have learning and behavior problems.

Sarah: So, alcohol affects the brain, both now and later, the lungs and respiratory system, the skin, the heart . . .

Jordan: Don't forget the stomach, small intestine, liver, kidneys, and even a developing fetus.

Sarah: It seems hard to believe that one substance, like alcohol, can affect the body in so many ways!

ANALYSIS

Complete Student Sheet 11.1,"Three Level Reading Guide: Traffic Stop," independently. When you are finished, discuss your responses with your small group of four students.

1. Explain how alcohol affects each of the following body organs:

   skin kidneys liver
   heart brain stomach

2. What are some of the signs that a person is impaired by alcohol?
3. What qualitative evidence is there that a person may have been drinking?
4. What quantitative evidence is there that a person has been drinking?
5. How can a police officer determine if a person is impaired by alcohol?

EXTENSION

To find out more about teens and drinking, go to the *Issues and Life Science* page of the SEPUP website.