



NICOTINE AND YOUR HEALTH



HOW NICOTINE IMPACTS ON HEALTH

A SESSION FOR MIDDLE SCHOOL STUDENTS



Background:

This activity is intended to introduce participants to the health effects of tobacco and nicotine use on the body. First, youth will participate in a “Fact or Crap” activity to start the session where they will identify if a statement about tobacco and nicotine is true or false. For the main activity of the session, young people will participate in a Candyland themed game. Youth will move their way across a “game board”, receiving candy for correct answers, until they have made their way to the finish line. They will be asked different questions about the ways that tobacco and nicotine impact different systems in the body in the immediate-term, short-term, and long-term. The goal of this session is to provide young people with information about the health impacts of tobacco and nicotine usage so that they can make informed decisions in their own life.



Learning Objective:

Young people will be able to

- Identify truths and lies about the health impacts of tobacco use.
- Describe the ways that tobacco and nicotine usage impact different systems in the body in the immediate term, short-term, and long-term.

MATERIALS:

- A stack of construction paper with 3 different colors (to represent candyland board spaces)
 - You will print the facts, one per page, on the associated colors.
 - If you cannot print, you can write the facts on pieces of paper, one fact per page, keeping facts on colors by immediate, short, and long term impacts
- One piece of paper that says “start”
- One piece of paper that says “finish”
- Stop watch
- Bag of candy
- Giant dice

Prep:

1. Print facts on colored paper
2. Write “Start” on one piece of paper
3. Write “Finish” on one piece of paper
4. Arrange the colored paper, fact side down, alternating colors around the room with a giant game board.

Overview of the day:

Explain: Today we will be learning about the health impacts of tobacco and nicotine products on different parts of the human body. Many times, we just talk about how “vaping and smoking is bad for you”, without really digging into WHY. Today, we are going to understand what really happens to different parts of the human body, digging into the science and getting really specific. You get to make your own health decisions about your bodies, so having accurate information is a really important way to make informed decisions. We will start with an activity called “Fact or Crap”, where you get to decide if a statement is true or false, by moving around the room. Then, we will play human-sized Candyland, and learn more about these health facts. Remember—today’s session is meant to provide accurate information. We are not trying to be shameful about anyone’s choices, rather, we want to provide a supportive place for you to learn more about tobacco use and how it could impact your health.

Activity 1: Fact or Crap

- Explain:** Our first activity will ask you to identify whether a statement is true or false (or “fact or crap”). I will be reading statements out loud. If you think the statement is true, move to the right side of the room; if you think it’s false, move to the left side of the room. If you don’t know, you can stay in the center (but you are encouraged to make an educated guess). I will ask you to explain the reason why you chose to stand in a particular place.
- Read the following statements and give youth time to move around the room. Allow time for comments/dialogue, as it emerges:
 - Nicotine and stress are each harmful to the brain. **(FACT)**
 - But when you combine nicotine use AND stress experiences, these combine to have greater long-term negative impacts on the way the brain functions.
 - Vapes only contain a harmless vapor and flavors. **(CRAP)**
 - Vapes, or “e-cigarettes” use an “e-juice” which usually contains nicotine, propylene glycol (which is a common additive in food and also used in products like antifreeze, paint solvent, and fog machines), flavors, and other chemicals. Researchers have found heavy metals, such as nickel, tin, and lead in e-cigarettes, along with carcinogens. A lot is still unknown because of a lack of research.)
 - Nicotine is an addictive substance that is found in cigarettes and vapes; **(FACT)**
 - When nicotine is inhaled it goes into the brain and releases “dopamine”, which is a chemical that signals pleasure, keeping people addicted to nicotine.
- Ask the debrief question: Did anything surprise you?

Sources:

- <https://www.nami.org/learn-more/mental-health-public-policy/tobacco-and-smoking>
- <https://truthinitiative.org/research-resources/harmful-effects-tobacco/nicotine-and-young-brain>
- <https://www.lung.org/quit-smoking/e-cigarettes-vaping/whats-in-an-e-cigarette>

Main activity: "Candy Land" (25 min)

1. **Facilitator:** Divide youth into 2-3 teams. Have them come up with a team name.
2. **Facilitator:** While they are brainstorming team names, distribute the construction paper (3 colors) in a clear path winding throughout the room. Feel free to place some of the colored pieces of paper taped onto the wall, on top of a chair, or underneath a table, after assessing for accessibility. The more silly/winding, the better. Make one end clearly the start, and another clearly the finish.
3. **Explain:** *We are going to play a candy land game. The point of the game is to understand the impacts of tobacco/nicotine use on health. The more information we hold, the more we can make informed decisions about our own lives. In this game, you will be presented with questions about the short term, longterm, and immediate impacts of using tobacco and nicotine, to help understand the way this substance can impact your body in a variety of ways. Look at the pieces of paper: there are three different colors, which represent the three different timeframes (immediate impact, short term, and long term). Does anyone have any questions?*
4. *How do you play? You will all start on the start line, and the goal is to get to the finish line. You'll roll the dice to start, and move the number of places that correspond with the dice. At each spot on the board, you can flip over the paper which will reveal a question. You can read it or I can. You have 30 seconds to answer the question as a team to maintain your place on the board. If you get the answer right, you will also get a piece of candy. [Facilitator note: time this either with your phone or a stopwatch.]*
 1. *The goal is to be the first team to get to the end, and get there as fast as possible. If you land on a square where the question is already flipped over, you are penalized by moving back 1 square from where you're currently standing.*
5. *Any questions?*
6. When a young person lands on a square, ask them to read the statement, or read the statement for them, and ask them to answer the question to the best of their ability. Once they provide an answer, use the Facilitator Answer Key to reveal the correct answer and further explain the fact. For a red piece of paper read from the immediate effects list, for a yellow piece of paper read from the short-term effects list, and for a green piece of paper read from the long-term effects list.
7. Before they begin, practice by reading this example statement aloud:
 1. True or False: Using tobacco products does not help reduce stress.
 - i. Answer: True
 - ii. Explanation: While using a product containing nicotine (cigarette, chew, vape), nicotine is absorbed in the bloodstream in 10-20 seconds, and then enters the brain which releases happy chemicals known as dopamine and that results in feeling a sense of euphoria or stress relief, this is not a long-term impact. Over time, usage can reduce the brain's response to natural sources of happy chemicals and increase baseline stress levels. The brain also gets addicted to this release, and the feeling of euphoria fades over time resulting in your having to have more nicotine to experience the same feeling.



Immediate Effects: (seconds to hours after using tobacco/nicotine product) (RED)

1. True or false: Does vaping increase your heart rate?
 - a. Answer: True
 - b. Explanation: A research study found that vaping for 20 minutes significantly increases heart rate. This is because of how nicotine is absorbed in the blood, and then releases norepinephrine which interacts with the receptors in the brain to increase demand of oxygen in the heart. [McClelland et al., 2021](#)
2. Does vaping increase or decrease the levels of oxygen in your blood? (increase/decrease)
 - a. Answer: Increase
 - b. Explanation: A research study found that vaping for 20 minutes decreases the level of oxygen in your blood because of changes to breathing patterns, need for oxygen in your heart increasing your heart rate, and blood flow. [McClelland et al., 2021](#)
3. True or false: Nicotine can create a sense of euphoria immediately after consuming it.
 - a. Answer: True
 - b. Explanation: Nicotine creates a sense of euphoria immediately after consuming it because it signals a release of chemicals called dopamine and serotonin (often called "happy" chemicals) in the brain. This immediate sense of euphoria is part of why nicotine is so addictive. However, as use becomes habitual, users need to intake more nicotine to produce the same levels of euphoria over time [Kutlu & Gould, 2015](#)
4. True or false: Vaping does not have an impact on your athletic ability immediately, or the same day as you use a vape product.
 - a. Answer: False
 - b. While there are certainly long-term impacts to athletic ability from long-term usage, there are immediate impacts to athletic ability as well. This is because vaping reduces the amount of oxygen available in your blood, which causes an increase of production of a substance called lactic acid that makes your muscles feel sore faster, makes you breath heavier, and makes you get fatigued more quickly. Sources: 1. [McClelland et al., 2021](#) 2. [Cleveland Clinic](#)
5. Does smoking increase or decrease the amount of mucus in your nose and throat? (Increase/decrease)
 - a. Answer: Increase
 - b. Explanation: Smoking increases the amount of mucus in your nose and throat because the nicotine paralyzes the cells that help to move mucus out of your lungs. This causes a build up that leads to more mucus in your nose and throat. [American Lung Association](#)
6. Do smokeless tobacco products such as chewing tobacco and snus cause immediate impacts to oral health? (yes/no)
 - a. Answer: Yes
 - b. Explanation: Smokeless tobacco causes immediate impacts to oral health because as these products sit in your mouth, they cause irritation and small cuts in your gums so that the nicotine they contain can be more easily absorbed into your blood. Overtime, these cuts can cause serious negative impacts to your oral health and increase the risk of developing certain cancers. [Healthline](#)
7. True or false: Pets such as cats and dogs are susceptible to health impacts from being in the same room as someone smoking.
 - a. Answer: True
 - b. Explanation: Cats and dogs are very susceptible to secondhand smoke from being in the same room as someone who is smoking. Inhaling smoke can cause irritation of their nose and throat, and coughing or sneezing. Over a long period of time they are also at risk of more serious respiratory illnesses and cancers. [VCA Hospitals](#)

Short Term Effects (months- 5 years after using tobacco/ nicotine product) (YELLOW)

1. True or false: Can nicotine use impact cognitive function?
 - a. Answer: True
 - b. Explanation: Research studies have found that nicotine use can enhance cognitive functions such as attention, memory, and fine motor skills. This is due to how receptors in the brain react to nicotine. These cognitive effects may contribute to the development of addiction to nicotine. [Valentine & Sofulogu, 2018](#)
2. Can vaping/smoking weaken one's ability to taste? (Yes/No)
 - a. Answer: Yes
 - b. Explanation: Vaping and smoking can decrease the amount of blood flow that taste buds receive which can weaken one's sense of taste overtime. [Truth Initiative](#)
3. Does smoking increase or decrease your risk of stomach and digestive issues such as an increase of stomach acid in the throat known as gastroesophageal reflux disease (GERD) and heartburn? (Increase/Decrease)
 - a. Answer: Increase
 - b. Explanation: Smoking can weaken the muscle that closes the throat to the stomach, known as the esophageal sphincter, and when this happens stomach acid can come up the throat causing conditions such as heartburn and GERD. [NIH](#)
4. True or false: Nicotine usage can lead to increased anxiety over time.
 - a. Answer: True
 - b. Explanation: While short-term nicotine use can feel like an immediate relief to certain anxiety symptoms, long-term nicotine usage can actually decrease your brain's ability to naturally release serotonin and oxytocin—the hormones associated with feelings of happiness. This can increase baseline anxiety levels and worsen symptoms of anxiety disorders overtime. [Kutlu & Gould, 2015](#)
5. Can smoking reduce the body's ability to fight infections, called your immune response? (Yes/ No)
 - a. Yes—there are cells in the body called T cells, whose jobs are to destroy infected cells. Smoking can greatly impact T cells ability to release signals and destroy infected cells, decreasing the body's ability to fight off infection. Source: [Qiu et al., 2017](#)
6. Does smoking make it easier or harder to heal wounds? (easier/harder)
 - a. Answer: Harder
 - b. Explanation: Smoking hurts the function of several cell types important in healing, makes blood thicker, and also reduces oxygen moving to parts of the body that need to heal, causing tissue "hypoxia" or tissues starving for oxygen. Both of these things make it harder for the body to heal wounds. [McDaniel & Browning, 2014](#)
7. True or false: Smoking and vaping doesn't impact your athletic ability and endurance over time.
 - a. Answer: False
 - b. Explanation: Smoking and vaping have both immediate impacts to athletic ability and endurance due to less oxygen being delivered to your blood, and these impacts can worsen over time. Research studies have found that individuals who smoke become exhausted much faster than their non-smoking peers. They are also three times more likely to experience shortness of breath while exercising. [Cleveland Clinic](#)

Long-term Effects: (5+ years after using tobacco/nicotine product) (GREEN)

1. True or false: The use of smokeless tobacco products such as chewing tobacco decreases one's lifetime risk of developing cancers of the mouth, throat, and pancreas.
 - a. Answer: False
 - b. Explanation: Smokeless tobacco products increase the lifetime risk of certain cancers because there are cancer-causing chemicals in these products. These chemicals are created during the process of growing, curing, fermenting, and aging the tobacco to create this product. The amount of these cancer-causing chemicals varies by product, but the higher the amount of these chemicals the higher the risk of developing cancer. [CDC](#)
2. Does smoking increase or decrease the risk of developing sores in the stomach lining, known as peptic ulcers? (Increase/decrease)
 - a. Answer: Increase
 - b. Explanation: Smoking can increase one's risk of developing a painful sore in the stomach lining known as a peptic ulcer because it can increase the risk of developing an infection from a certain kind of bacteria that causes peptic ulcers to develop. Further, smoking can also slow down the flow of blood to the stomach lining which can make it harder for peptic ulcers to heal and make it more likely that they will develop again in the future. [NIH](#)
3. Can nicotine cause disruption to the adrenal system that can have lasting health impacts? The adrenal system produces hormones to regulate bodily functions, such as your metabolism, immune system, blood pressure, and response to stress. (Yes/No)
 - a. Answer: Yes
 - b. Explanation: Research demonstrates that nicotine can bind to receptors in the adrenal system that help to regulate bodily functions such as: heart rate, blood pressure, breathing rate, and the level of sugar in blood. When these important bodily functions are not regulated well over a long period of time, there can be lasting health impacts. Sources: 1. [Johns Hopkins Medicine](#), 2. [Khalaf et al., 2017](#)
4. True or false: Over time, smoking cannot impact your hearing ability.
 - a. Answer: False
 - b. Explanation: Over time, smoking can lead to decreased hearing ability. This is because it reduces the amount of oxygen an important part of the inner ear known as the cochlea receives, which reduces one's ability to hear. [Rogha et al., 2015](#)
5. Does tobacco use, including smokeless tobacco use, increase or decrease one's risk of developing a condition in which your eyes become cloudy and eyesight diminishes over time, known as cataracts? (Increase/Decrease)
 - a. Answer: Increase
 - b. Explanation: Many research studies have demonstrated that while the risk of developing cataracts increases with age for everyone, those who have used tobacco products in their lifetime have a much higher risk of developing cataracts as they age. Sources: 1. [FDA](#), 2. [Raju et al., 2006](#)
6. True or false, smoking does impact the appearance of aging, including development of wrinkles.
 - a. Answer: True
 - b. Explanation: Over time, smoking can increase the appearance of aging and wrinkles that someone develops as they get older. This is because smoking can hurt the production of a protein that supports skin structure known as collagen. Also, smoking increases the production of substances known as enzymes that further reduce the amount of collagen produced by the body. Together, these changes can increase the amount of wrinkles someone develops. Source: [Morita, 2007](#)
7. True or false: Smoking and vaping over a long period of time can cause damage to the bones and skeletal system and lead to a condition in which the bones become brittle and can break

more easily, known as osteoporosis.

- a. Answer: True
- b. Explanation: Smoking causes damage to the bones and skeletal system because it decreases blood flow to your bones which nourishes them and helps them heal. Smoking can also decrease the body's ability to absorb a mineral that is very important to bone health, calcium. Over time, this can increase someone's risk of developing osteoporosis. Rush.edu

DEBRIEF:

Consider circling up and ask the following questions after finishing the game:

1. Which facts surprised you the most?
2. How does knowing this information impact you?
3. What is one takeaway from today's session?

Closing Facilitator Note: Remind youth that there are resources available if they, or someone they know, is struggling to quit using tobacco/nicotine products, including vaping. Make sure to frame this conversation in a way that centers on your support as a trusted adult in young people's lives, and move away from any shame-based narratives. Let them know that if they want to talk to you about quitting, or have more questions about tobacco/nicotine use, you are always available as a trusted, non-judgmental adult in their lives. Thank them for playing and taking the opportunity to learn more about these health impacts.

Youth cessation resources:

My Life, My Quit: <https://www.mylifemyquit.com/>

- Free and confidential quit service for youth
- Text "Start My Quit" to 36072 to chat with a coach