

Drug, Alcohol & Vaping Prevention

Evidence-Based Lessons for Grades 7–12

Physical Education & Health Curriculum Resource
6 Lessons • Infographics • Assessments • Parent Guide

Includes:

- ◆ The Science of Addiction
- ◆ Vaping & E-Cigarette Risks
- ◆ Peer Pressure Refusal Skills
- ◆ Decision-Making Under Pressure
- ◆ Parent Workshop Guide
- ◆ Unit Assessment & Rubrics

UM Printables

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About This Resource: This evidence-based unit is designed for grades 7–12 Physical Education and Health classes. Each lesson includes clear objectives, direct instruction, guided and independent practice, differentiation strategies, and assessment opportunities. Lessons are aligned with National Health Education Standards (NHES) and can be taught sequentially or independently.

LESSON 1

The Science of Addiction

Understanding the Brain's Reward System

Grade Level	7–12	Duration	60 minutes
Subject	Physical Education & Health	NHES Alignment	1, 2, 5, 7

Learning Objectives

By the end of this lesson, students will be able to:

1. Explain how the brain's reward system functions normally to reinforce survival behaviors.
2. Describe the role of dopamine as a neurotransmitter in motivation, pleasure, and learning.
3. Analyze how addictive substances alter normal brain chemistry and circuitry.
4. Differentiate between substance use, misuse, tolerance, dependence, and addiction.
5. Explain why the adolescent brain is particularly vulnerable to substance addiction.

Key Vocabulary

Reward Pathway (Mesolimbic Pathway): A neural circuit in the brain that releases dopamine in response to rewarding stimuli, reinforcing behaviors essential for survival such as eating, social bonding, and achieving goals.

Dopamine: A neurotransmitter that signals pleasure and motivation in the brain's reward system, reinforcing behaviors that lead to rewarding outcomes and helping with learning and memory.

Neurotransmitter: A chemical messenger that transmits signals across a synapse from one neuron to another in the brain and throughout the nervous system.

Tolerance: A condition in which a person needs increasing amounts of a substance to achieve the same effect, caused by the brain's adaptation to the substance's continued presence.

Dependence: A state in which the body has adapted to a substance and requires it to function normally. Withdrawal symptoms appear when the substance is discontinued.

Addiction: A chronic, relapsing brain disorder characterized by compulsive substance seeking and use despite harmful consequences, involving lasting changes to brain structure and function.

Prefrontal Cortex: The brain region responsible for executive functions including decision-making, impulse control, and weighing consequences. Not fully developed until approximately age 25.

Downregulation: The process by which the brain reduces dopamine receptors in response to prolonged overstimulation by substances, leading to reduced sensitivity to everyday rewards.

Materials Needed

- Student handout: Brain Anatomy Diagram (labeled)
- Student worksheet: Dopamine Levels Comparison Chart
- Whiteboard or chart paper and markers
- Exit ticket slips (one per student)
- Optional: Teacher-selected educational video on the reward pathway

Lesson Sequence

1. Introduction & Hook (10 minutes)

Begin by asking students: *“Think of a time when you did something that felt really rewarding—like eating your favorite food after being hungry, or receiving a compliment. What did that feel like? Why do you think your brain makes you feel good when you do certain things?”*

Facilitate a brief class discussion. Guide students toward the concept that the brain has a built-in reward system designed to reinforce survival behaviors. Explain that today’s lesson will explore how that system works—and how substances can hijack it.

Discussion Prompt

Project or write on the board: *“Why is it hard to resist something that feels good, even when you know it might be harmful?”* Give students 1 minute to think-pair-share, then invite 2–3 pairs to share with the class. Record key ideas on the board.

2. Direct Instruction (20 minutes)

A. The Brain’s Reward System

Explain that the brain has a specialized neural circuit called the **mesolimbic pathway**, often referred to as the reward pathway. When we engage in activities that promote survival—such as eating, socializing, or exercising—neurons in this pathway release a neurotransmitter called **dopamine**. Dopamine creates feelings of pleasure and satisfaction, and it tells the brain: *“This feels good. Remember what you did, and do it again.”* This reinforcement mechanism is essential for learning and motivation.

B. Dopamine: Normal vs. Substance-Induced Release

Under normal conditions, rewarding activities cause dopamine levels to rise modestly—typically to about 100–150% of baseline. Addictive substances, however, can cause dopamine to surge far beyond natural levels:

Stimulus	Approx. Dopamine Increase	Effect on the Brain
Eating a favorite meal	100–150% of baseline	Natural satisfaction and contentment
Social interaction	100–150% of baseline	Bonding, happiness, sense of belonging
Exercise	110–180% of baseline	Euphoria, stress relief (“runner’s high”)
Nicotine (smoking/vaping)	200–250% of baseline	Intense pleasure, rapid reinforcement cycle
Cocaine	300–400% of baseline	Extreme euphoria, strong craving cycle
Methamphetamine	Up to 1,000%+ of baseline	Massive dopamine flood, severe brain alteration

This massive overstimulation is why substances create such powerful reinforcing effects. The brain did not evolve to handle dopamine levels this high, and it responds by trying to restore balance.

C. How Substances Hijack the Reward System

When a substance repeatedly floods the brain with dopamine, the brain responds through **downregulation**—it reduces the number of dopamine receptors and decreases its own natural dopamine production. This produces several consequences:

1. **Tolerance:** With fewer receptors, the same amount of substance produces less effect. The person needs more to achieve the same high.
2. **Diminished pleasure from normal activities:** Everyday rewards (food, friendship, hobbies) no longer produce enough dopamine to feel satisfying. This is called **anhedonia**.
3. **Dependence:** The brain now needs the substance just to feel “normal.” Without it, the person experiences withdrawal symptoms such as irritability, anxiety, depression, and intense cravings.
4. **Addiction:** The cycle of craving, use, tolerance, and withdrawal becomes compulsive. The person continues using despite knowing it causes harm, because the brain’s altered circuitry drives compulsive seeking behavior.

D. Why the Adolescent Brain Is More Vulnerable

The adolescent brain is uniquely susceptible to addiction for two major reasons:

1. **The prefrontal cortex is still developing.** This region, responsible for impulse control, risk assessment, and decision-making, does not fully mature until approximately age 25. Adolescents rely more heavily on the amygdala (emotional processing) than the prefrontal cortex when making decisions, making them more likely to act on impulse and seek immediate rewards.
2. **Greater neuroplasticity.** The adolescent brain forms new neural connections rapidly. While this supports learning, it also means substances can alter brain structure and function more quickly and more permanently than in an adult brain. Research shows that adolescents who use substances are significantly more likely to develop substance use disorders than those who begin use in adulthood.

IMPORTANT: Research consistently shows that the earlier substance use begins, the greater the risk of addiction. According to the National Institute on Drug Abuse (NIDA), approximately 90% of adults with substance use disorders began using before age 18. This underscores the critical importance of prevention during adolescence.

3. Guided Practice (15 minutes)

Activity: Dopamine Levels Comparison Chart

Distribute the student worksheet. Students complete a chart comparing dopamine release levels for natural rewards versus substance use. For each entry, they record: (1) the activity or substance, (2) the approximate dopamine increase, and (3) whether the effect is natural or artificial. After completing the chart, students answer these reflection questions:

1. Why do you think substances produce so much more dopamine than natural activities?
2. How might downregulation affect someone's ability to enjoy everyday life?
3. If a friend told you "I can quit anytime," how would the science of tolerance and dependence challenge that claim?

Small Group Discussion

In groups of 3–4, students discuss: *"Based on what you've learned about the adolescent brain, why might a teenager be more vulnerable to addiction than an adult? What does this mean for the decisions you make?"* Each group shares one key takeaway with the class.

4. Independent Practice (10 minutes)

Students write a brief reflective paragraph (5–7 sentences) answering the following prompt:

Reflection Prompt: In your own words, explain how addiction changes the brain. Include at least three of the following terms in your response: dopamine, tolerance, dependence, downregulation, prefrontal cortex. Be sure to explain why the adolescent brain is at greater risk.

5. Closure (5 minutes)

Distribute exit ticket slips. Students respond to the following prompt before leaving:

Exit Ticket: Name one reason the adolescent brain is more vulnerable to addiction than the adult brain, and explain how tolerance and dependence develop in the brain's reward system.

LESSON 4

Peer Pressure & Refusal Skills

Strategies for Resisting Negative Influences

Grade Level	7–12	Duration	60 minutes
Subject	Physical Education & Health	NHES Alignment	4, 5, 7, 8

Learning Objectives

By the end of this lesson, students will be able to:

1. Differentiate between direct, indirect, and unspoken peer pressure.
2. Identify and demonstrate at least five specific refusal strategies.
3. Analyze why certain refusal strategies are more effective in specific situations.
4. Practice assertive communication through role-play scenarios involving substance use.
5. Evaluate the role of body language and tone in effectively communicating a refusal.

Key Vocabulary

Peer Pressure: Influence from a peer group to change one's attitudes, values, or behaviors to conform to group norms. Can be positive (encouraging good choices) or negative (encouraging harmful choices).

Direct Peer Pressure: Explicit verbal or nonverbal pressure to engage in a behavior (e.g., "Just try it, everyone is doing it" or handing someone a vape).

Indirect Peer Pressure: Subtle, unspoken influence resulting from observing peers' behaviors or perceiving social expectations (e.g., noticing everyone at a party is drinking and feeling out of place if you don't).

Refusal Skills: Communication strategies and techniques used to say no effectively when pressured to engage in unwanted or risky behavior.

Assertive Communication: A communication style that expresses one's needs, feelings, and boundaries clearly, directly, and respectfully, without being aggressive or passive.

Broken Record Technique: A refusal strategy that involves calmly and firmly repeating the same refusal statement (e.g., "No thanks") regardless of the pressure or arguments applied.

Materials Needed

- Refusal Skills Role-Play Cards (included later in this resource)

- Student handout: Refusal Strategy Reference Sheet
- Whiteboard or chart paper and markers
- Exit ticket slips (one per student)

Lesson Sequence

1. Introduction & Hook (10 minutes)

Begin with a quick think-pair-share: *“Think of a time when you felt pressured to do something you didn’t want to do. It doesn’t have to be about substances—it could be anything. How did it feel? What did you do?”* Give students 1 minute to think, 1 minute to share with a partner, then invite 2–3 volunteers to share with the class.

Explain that peer pressure is a universal experience, but it becomes dangerous when it pushes us toward choices that threaten our health and safety. Today’s lesson focuses on building a toolkit of specific, actionable strategies to resist negative peer pressure confidently and effectively.

2. Direct Instruction (20 minutes)

A. Types of Peer Pressure

Understanding the type of pressure you are experiencing is the first step to resisting it.

Type	Description	Example
Direct Pressure	Explicit, verbal or physical pressure to participate	“Come on, just take one hit. It’s no big deal.”
Indirect Pressure	Subtle, unspoken influence based on social norms	Everyone at the table is drinking; you feel like you stand out if you don’t.
Unspoken Pressure	Internal pressure from observing what others are doing	Seeing popular students vape in the bathroom and wondering if you should too.

B. The Refusal Skills Toolkit

There is no single “best” way to say no. Different situations call for different strategies. Teach and discuss these six strategies:

- **1. Just Say No (Assertive Refusal):** A clear, firm, direct statement. *“No, I don’t want to.”* Best for: Direct pressure when you want to be unambiguous.
- **2. The Broken Record:** Calmly repeat the same refusal without changing your reason or getting pulled into an argument. *“No thanks.” “No thanks.” “I said no thanks.”* Best for: Persistent pressure or nagging.

LESSON 5

Decision-Making Under Pressure

Using the DECIDE Model in Real Situations

Grade Level	7–12	Duration	60 minutes
Subject	Physical Education & Health	NHES Alignment	1, 4, 5, 6

Learning Objectives

By the end of this lesson, students will be able to:

1. Explain each step of the DECIDE decision-making model.
2. Apply the DECIDE model to scenarios involving substance use and peer pressure.
3. Distinguish between impulsive and deliberate decision-making processes.
4. Evaluate the short-term and long-term consequences of decisions related to drug and alcohol use.
5. Develop a personal decision-making plan for high-pressure situations.

Key Vocabulary

Impulsive Decision: A choice made quickly without thoughtful consideration of the consequences, often driven by emotion, peer pressure, or the desire for immediate gratification.

Deliberate Decision: A choice made thoughtfully after considering options, consequences, and personal values, typically leading to more positive outcomes.

Consequences: The results or effects of an action or decision. Can be positive or negative, and short-term (immediate) or long-term (delayed).

Values: Core beliefs and principles that guide a person's behavior and decisions. Knowing your values helps you make choices that align with the person you want to be.

DECIDE Model: A structured decision-making framework: Define the problem, Examine options, Consider consequences, Identify values, Decide and act, Evaluate the outcome.

Harm Reduction: Strategies and policies designed to lessen the negative consequences of risky behaviors, prioritizing safety and well-being even when complete abstinence is not achieved.

Materials Needed

- Student handout: DECIDE Model Graphic Organizer
- Decision-Making Scenarios (included later in this resource)

- Whiteboard or chart paper and markers
- Exit ticket slips (one per student)

Lesson Sequence

1. Introduction & Hook (10 minutes)

Conduct a rapid-fire “Split-Second Choice” activity. Present the following scenarios one at a time and ask students to immediately stand if they would say YES or stay seated if they would say NO:

1. A friend offers you their last slice of pizza. (Low stakes, easy YES)
2. A classmate asks to copy your homework. (Medium stakes, moral dilemma)
3. Someone offers you a vape at a party and says no one will find out. (High stakes, health/safety)

Debrief: Ask how the decision-making process felt different for each scenario. The pizza decision was easy and impulsive. The homework decision required a moment of thought. The vaping scenario involves significant risk and requires deliberate, structured thinking. Explain that today’s lesson provides a step-by-step tool for making good decisions when the stakes are high.

2. Direct Instruction (20 minutes)

A. Impulsive vs. Deliberate Decisions

Impulsive decisions are made in the moment, often driven by emotion, social pressure, or the desire for immediate reward. They frequently ignore long-term consequences. In the context of substance use, impulsive decisions can lead to addiction, injury, or legal trouble. **Deliberate decisions** involve pausing, considering options, weighing consequences, and aligning choices with your values. They are more likely to lead to positive outcomes. The key difference is **pausing to think** before acting.

B. The DECIDE Model

Introduce the DECIDE model as a structured tool for making deliberate, health-enhancing decisions. Walk through each step using a consistent example: *“You are at a friend’s house and someone pulls out a vape pen and offers it to you.”*

Step	Action	Vaping Scenario Example
D – Define the Problem	Clearly state the decision you need to make.	I need to decide whether to try the vape or refuse.
E – Examine Options	List all possible choices, even ones you might not normally consider.	1. Try the vape. 2. Say no and stay. 3. Leave the room. 4. Change the subject.

Component	Definition	Example (Health Goal)
A – Achievable	Ensure the goal is realistic given your current abilities.	I will follow a Couch-to-5K training plan.
R – Relevant	Explain why this goal matters to you.	This will help me make the soccer team and stay substance-free.
T – Time-bound	Set a deadline for achieving the goal.	I will achieve this in 8 weeks.

C. Building Your Support System

No one succeeds alone. A strong support system includes different types of people and resources:

- **Trusted Adults:** Parents, guardians, coaches, teachers, school counselors, faith leaders.
- **Peers:** Friends who share your values and respect your decisions.
- **Professionals:** Therapists, doctors, helplines (e.g., SAMHSA National Helpline: 1-800-662-4357).
- **Community:** Clubs, sports teams, youth groups, volunteer organizations.

D. Healthy Coping Strategies vs. Substance Use

Substance use is often a maladaptive coping mechanism—a way to escape stress, anxiety, or boredom. Healthy alternatives address the root cause and build resilience:

Trigger / Feeling	Unhealthy Coping (Substances)	Healthy Coping Strategy
Stress from school	Vaping to “relax”	Exercise, deep breathing, time management, talking to a counselor
Social anxiety	Drinking to feel “more social”	Practicing social skills, attending small gatherings, bringing a supportive friend
Boredom	Using substances for excitement	Learning a new hobby, joining a club, physical activity, creative arts
Sadness / depression	Using substances to numb feelings	Journaling, talking to a trusted adult, professional counseling, mindfulness

E. Advocacy: Using Your Voice

Advocacy means standing up for what you believe and helping others make informed choices. Effective health advocacy is factual, respectful, and clear. It does not shame or judge; it informs and empowers. Students can advocate by sharing facts, creating awareness campaigns, supporting school policies, and modeling healthy behaviors.

3. Guided Practice (15 minutes)

Activity: My Support System Map

Distribute the Support System Map handout. Students create a web with themselves at the center and draw lines outward to trusted adults, peers, professionals, and community resources. For each connection, they write the person/resource's name and how they could help in a substance-related crisis (e.g., "Mom — I could call her to pick me up if I feel unsafe").

After 7 minutes, ask for volunteers to share one part of their map. Normalize that some students may have smaller networks—emphasize that even one trusted adult and one helpline can be a lifesaving resource.

4. Independent Practice (10 minutes)

Activity: Advocacy Poster

Students design a mini advocacy poster on paper. It must include: (1) a clear health message about the risks of vaping, alcohol, or drugs; (2) at least one evidence-based fact from the unit; and (3) a call to action (e.g., "Protect your brain—choose health" or "Know the facts before you vape").

5. Closure (5 minutes)

Distribute exit ticket slips. Students respond to the following prompt before leaving:

Exit Ticket: Write one SMART goal related to your health. Then, name one person in your support system and explain how they could help you achieve that goal or resist peer pressure.

Assessment

Formative:

- Support System Map completeness and thoughtfulness
- Advocacy poster: clarity, accuracy of facts, and call to action
- Exit ticket: SMART goal format and support system identification

Summative: Unit assessment administered at the end of the unit.

Differentiation

Support:

- Provide a SMART goal template with sentence starters
- Offer a pre-drawn support map web for students to fill in
- Allow students to work with a partner on the advocacy poster

Extension:

Vaping Science Infographic

The following visual guide breaks down the science of vaping, what is in the aerosol, how it affects the body, and the real statistics behind youth e-cigarette use. Distribute as a handout or display as a classroom poster.

VAPING: THE SCIENCE & THE FACTS

IT'S NOT WATER VAPOR. IT'S AN AEROSOL.

NICOTINE	CHEMICALS	HEAVY METALS
Highly addictive chemical derived from tobacco. Nicotine salts allow massive doses to be inhaled smoothly. Harms adolescent brain development.	Formaldehyde (carcinogen), acrolein (herbicide), diacetyl (causes "popcorn lung"), and volatile organic compounds.	Lead, nickel, tin, and chromium shed from the device's heating coil. Toxic to organs and the nervous system.

IMPACT ON THE BODY

		
LUNGS	BRAIN	HEART
Chronic cough, bronchitis, asthma exacerbation, irreversible damage (popcorn lung), EVALI.	Impaired memory, reduced attention span, mood disorders, altered reward pathway, lasting addiction.	Increased heart rate, elevated blood pressure, arterial stiffness, increased risk of cardiovascular disease.

BY THE NUMBERS

1 in 4	50 mg/mL
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Unit Assessment — Answer Key

Part A: Multiple Choice

Question	Answer	Rationale
1	B. Dopamine	Dopamine is the primary neurotransmitter in the mesolimbic pathway that signals pleasure and reinforcement.
2	C. Downregulation	Downregulation is the brain's adaptation of reducing dopamine receptors due to overstimulation.
3	C. It is an aerosol...	E-cigarette vapor is an aerosol containing harmful chemicals, not harmless water vapor.
4	D. Diacetyl	Diacetyl is a flavoring chemical linked to irreversible lung disease (bronchiolitis obliterans).
5	B. Depressant	Alcohol slows down the central nervous system by enhancing GABA and inhibiting glutamate.
6	B. Hippocampus	The hippocampus is responsible for memory formation; alcohol disrupts it, causing blackouts.
7	C. Bandwagon	The bandwagon tactic pressures someone by claiming “everyone is doing it.”
8	B. Broken Record	The Broken Record technique involves calmly repeating your refusal without changing your reasoning.
9	C. Identify your values	In DECIDE, the “I” step requires reflecting on personal values to guide the decision.
10	D. 90%	Research shows approximately 90% of adults with substance use disorders began using before age 18.

Part B: Short Answer — Key Points

Note: Student answers may vary; assess for understanding of core concepts.

1. Adolescent vulnerability: (1) The prefrontal cortex, responsible for impulse control and decision-making, is still developing (until ~age 25), leading to more impulsive, reward-seeking behavior. (2) Greater neuroplasticity means the adolescent brain forms and alters neural connections more rapidly, making it easier for substances to “rewire” the brain’s reward pathway.

2. Tolerance vs. Dependence: Tolerance is when a person needs more of a substance to achieve the same effect because the brain has downregulated receptors. Dependence is when the body has adapted to the substance and requires it to function normally; without it, the person experiences withdrawal. Downregulation (fewer receptors) causes tolerance (less effect from same dose) and dependence (brain cannot function normally without the substance to stimulate the reduced receptors).

3. Refusal strategies: Examples will vary. E.g., *Walk Away* is effective when pressure is relentless or the situation feels unsafe, as it physically removes you from the trigger. *Suggest an Alternative* is effective when you want to maintain the social connection but avoid the risky behavior, e.g., “I don’t vape, but let’s go play basketball.”

4. Nicotine salts: Nicotine salts lower the pH of the nicotine, making the vapor much smoother and less harsh to inhale. This allows users to inhale very high concentrations of nicotine (e.g., 50 mg/mL) without coughing. This makes modern e-cigarettes highly addictive, especially for teens whose brains are more susceptible to nicotine addiction.

Part C: Application — Key Points

Note: Assess for logical application of the DECIDE steps, not specific answers.

- **Define:** I need to decide whether to take the non-prescribed study pill or refuse.
- **Examine:** Options should include: 1. Take the pill. 2. Refuse and keep studying. 3. Refuse and suggest a different study method (like quizzing each other).
- **Consider:** Taking it: Pro = might feel focused temporarily; Con = illegal, health risks, heart palpitations, cheating. Refusing: Pro = stays healthy, authentic learning; Con = might feel awkward, friend might judge.
- **Identify:** Values should include things like academic integrity, health, staying drug-free, honesty.
- **Decide:** Decision should align with identified values (e.g., refusing the pill because it’s illegal and violates personal integrity).
- **Evaluate:** Reflection should show pride in making a healthy choice and not relying on a dangerous shortcut.

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