

Tobacco Use ©

<Narrative Notes>

H.E.L.P. for Kids 2008-2009

Teaching Messages:

1. Breathing is essential for life. We breathe in oxygen from the air. All cells need oxygen to survive and function because oxygen is used to generate energy.
2. Our respiratory system, which helps us breathe in oxygen and breathe out carbon dioxide, includes the mouth, nose, pharynx, larynx, trachea, bronchi, bronchioles, alveoli and lungs.
3. Tobacco contains many toxic chemicals and particles including nicotine, carbon monoxide, and tar.
4. Tobacco use is hazardous to our health. It may cause short-term and long-term damages. Long-term use can cause serious damages to our respiratory and cardiovascular systems.
5. Tobacco use is addictive.
6. It is our personal responsibility to understand the facts about tobacco use and to make decisions wisely.

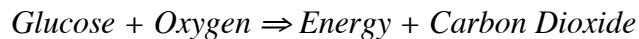
Teaching Message 1 – Breathing is essential for life. We breathe in oxygen from the air. All cells need oxygen to survive and function because oxygen is used to generate energy.

Breathing is essential for life.

Why do we need to breathe? What is it in the air that is so important to us?

It is the **oxygen** from the air that we need.

Cells throughout the body work together to create a living human being. Individually, they need energy to survive and function, and this energy is made from oxygen that we breathe in. Cells combine the food we eat, the water we drink, and the oxygen we breathe in to generate energy.



Teaching Message 2 – Our respiratory system, which helps us breathe in oxygen and breathe out carbon dioxide, includes the mouth, nose, pharynx, larynx, trachea, bronchi, alveoli, and lungs.

The body system that helps us breathe is called the **respiratory system**.

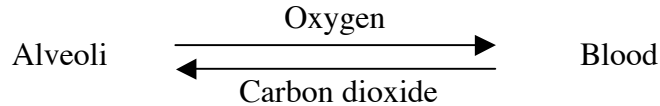
Mouth and Nose: We breathe in air through our **mouth** and **nose**. As air passes through our nose, it is heated, filtered, and moistened.

Pharynx, Larynx and Trachea: The air flows through the **pharynx** and **larynx** near the back of our throat and then flows through a long tube called the **trachea**, or windpipe.

Bronchi: At the bottom of the trachea, the tube branches off into two tubes called **bronchi**. One bronchus directs air to the left lung and the other directs air to the right lung.

Lungs: After oxygen passes into the **lungs**, the bronchi divide into even smaller tubes and then even smaller branches called **bronchioles**. There are many of these tubes and branches, almost like a tree with a trunk and many branches.

Alveoli: The smallest branches then lead to small air sacs where oxygen is transported into the blood. These extremely small air sacs are called **alveoli**, and there are about 300 million of these sacs in our lungs. The sacs are important because they are the surface on which the oxygen moves from the airspace to the blood and carbon dioxide from the blood to the air space. There are tiny blood vessels around the alveoli, and the gases in the air can pass between the air space and the blood. This is the process of air exchange.



Once oxygen enters our blood, it is carried by the red blood cells to all cells throughout the body via our *circulatory system*. In this way, the respiratory system and the circulatory system work together to help the body function. Whatever we inhale will travel the same route as air travels and can reach every part of our body.

Teaching Message 3 – Tobacco contains many toxic chemicals and particles including nicotine, tar, and carbon monoxide.

Nicotine, tar, and carbon monoxide are harmful chemicals found in tobacco products, such as cigarettes, cigars, chewing tobacco and snuff. Tobacco users get these toxic materials into their body regardless whether they smoke them or chew them.

Does anyone know what second-hand smoke is?

Tobacco users are not the only ones affected by the harmful chemicals of tobacco. Everyone physically around the smokers may be affected by the smoke by breathing in the air that is contaminated with the toxic particles. This second hand smoke has many of the same chemicals as the inhaled smoke, in addition to some others because it is not filtered.

Teaching Message 4 – Tobacco use is hazardous to our health. It may cause short-term and long-term damages. Long-term use can cause serious damages to our respiratory and cardiovascular systems.

Can you give some examples of the harmful effects tobacco has on our health?

Smoking causes damage to every part of the body that it comes in contact with. Here are some of the consequences and illnesses related to smoking.

Mouth: Smokers inhale smoke from cigarettes, pipes, and cigars with their mouths.

What damages can this cause to the mouth?

- Bad breath
- Yellow and brown teeth

This is caused by **tar** and other chemicals in tobacco. Tar is a black, sticky substance we use to pave roads. Tar is a *carcinogen*, a chemical that causes cancer. Therefore tobacco users can develop mouth cancer, especially those who smoke cigars or chew tobacco. Tar can also cause lung cancer in smokers.

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Nose: Smokers often exhale cigarette smoke through their nose. Second-hand smoke enters the body through the nose.

What damages can this cause to the nose?

- Damage to sense of smell
- Damage to sense of taste

Smoke can cause damage to the lining of our nose that then affects our sense of smell. Because flavors and tastes are largely influenced by our sense of smell, our sense of taste will become less acute. For example, when you have a cold and your nose is stuffed, food doesn't taste as good because you cannot smell it. Next time, try holding your nose when you eat and sense the difference.

Trachea/Windpipe: Cigarette or cigar smoke eventually travels down the windpipe to the lungs and alveoli.

What damages can this cause to the windpipe?

- Damage to cilia and windpipe

Cilia are small, delicate hair-like cells that line the windpipe. They help keep our lungs clean by sweeping out dust and dirt particles. When the smoke inhaled by a smoker passes through the windpipe, it is at a high temperature and therefore burns the cilia, allowing dirt gunk (i.e. from smoke) to enter the lungs. This leads to irritation and damage of the windpipe. To try to clear the windpipe of the gunky and sticky materials, smokers *cough*. The more gunk that is accumulated, the more irritation there is, and the more smokers cough. This eventually leads to a condition of chronic cough, which also becomes less effective with time.

Lungs: Smoke with its particles and toxic chemicals ends up in the lungs, after it passes through the mouth, nose, and trachea.

What damages can this cause the lungs?

- Reduced space in the air sacs for air because of the buildup of gunk in the air sacs
- Decreased stamina / lower energy levels
- Lung cancer

The gunk from smoke, including tar, occupies the air sacs, which are normally occupied with air. The air capacity in the lungs is reduced. Therefore, smokers inhale less air, thus less oxygen, with each breath than non-smokers. The longer and more smokers smoke, the less lung capacity they have until they have no space for air at all. Lungs in smokers can appear "black" because of the accumulation of tar.

What happens when one gets less air?

One gets less oxygen. Oxygen works together with glucose to produce energy. With less oxygen, the cells have less energy to carry out the body's processes.

Smoke also contains **carbon monoxide**, a poisonous gas that competes with oxygen to be picked up by the red blood cells. This gas is the same as that from car exhaust, and a large component in cigarette smoke. It cannot be removed by cigarette filters. Cigars emit at least four times as much

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CO than a cigarette. This is one reason why many cigar and heavy cigarette smokers feel *light-headed* because they do not get enough oxygen.

Red blood cells have a higher affinity for CO than for oxygen, so they would rather pick up CO than oxygen when both are present in the lungs.

What does this mean about the amount of oxygen smokers' body gets when they breathe in which contains CO?

They get *less oxygen*! Less oxygen leads to lower energy levels and decreased stamina. Less stamina means that they have less endurance; they don't last as long when they do physical activity. That is why serious athletes do not smoke!

In addition, to get the oxygen they need, smokers need to breathe harder and the heart needs to pump more. With time, the respiratory and the cardiovascular systems can get over-worked to result in respiratory and cardiovascular illnesses.

Teaching Message 5 – Tobacco use is addictive.

Many smokers know the health problems tobacco use could cause, but they continue to use it and find it difficult to quit.

Do you know anybody who has tried to quit? How easy was it for them?

Smokers who begin to use tobacco frequently find it difficult to stop. It is very difficult to quit smoking after someone has started because it is **addictive**.

Addiction to tobacco is *physiological* as well as *psychological*. **Nicotine** causes physical addiction by affecting our brain cells. It is found in all tobacco products – cigarettes, cigars, pipes, chewing tobacco, and snuff – because it occurs naturally in the tobacco plant.

Young people are particularly susceptible to addiction. Studies show that smokers who are addicted most likely started using tobacco at a young age. This is one of the reasons that the tobacco industry spends a lot of money in targeting young people with their advertisements.

Teaching Message 6 – It is our personal responsibility to understand the facts about tobacco use and to make decisions wisely.

Now knowing what smoking can do to your health, it is *your* own responsibility to decide whether you want to start smoking or not. It is *your* life and not somebody else's. As with any decision making process, you should weigh the pros and cons and then make an informed decision for yourself. You have the power and the responsibility to decide what you want to do with your life.

Appendix

What is addiction?

What does addictive mean? (Ask kids and list responses on board.)

Compulsive and/or uncontrollable use. Crave specific substance.

Person cannot stop using the substance, even if it is harmful.

Person depends on the substance to continue functioning, either/and physiologically and/or psychologically.

How does nicotine cause addiction? Nicotine is a chemical that affects the brain and other parts of the nervous system. Review: How does blood get to your brain? When smokers puff on cigarettes, they draw nicotine into their lungs. In the lungs, nicotine enters the blood, which then goes to the heart. From the heart, blood is quickly pumped to the brain, causing the smoker to feel a “high.”

When someone is addicted, what happens if s/he goes for a period of time without smoking or tries to quit? (Ask students how smokers they know act when they have not smoked a cigarette for a few hours or are trying to quit.)

What is tolerance?

What does it mean if smokers feel anxious, uptight, nervous, irritable, etc. because they have not recently smoked? Smokers are addicted. When smokers are addicted, they develop a tolerance to nicotine. Do any of you know what tolerance means? People who develop tolerance to nicotine need to smoke more and more to get the “high” they want and think they crave.

How addictive is nicotine? Extremely addictive. Consider how many smokers you know who can go through an entire day without lighting up. Probably not too many, suggesting that nicotine really has a hold on people who are addicted.

Beyond biological addiction--smoking as a habit and social activity

There are also other aspects to addiction. When do you see people smoke? Many smokers may smoke when they take a break from work, drink a cup of coffee, or after they finish dinner. These people have come to associate certain activities with smoking, which makes it more difficult to quit when they still do the same activities. Smoking has become a habit. Those of you who know people who smoke--have you noticed this trend?

Recognizing Tobacco Companies' Propaganda Techniques and Motives

Tobacco companies know that cigarette smoking is harmful to your health. They are mandated by law to place warning labels on their packages and ads. If this law did not exist, tobacco companies would not warn you about the health risks of tobacco abuse.

How profitable is the tobacco business?

Tobacco companies are businesses and cigarettes are their products. Their goal is to sell as many cigarettes as possible to make as much money as possible. Who's good at math? (Or, "who knows their times tables?") (Pick a few students raising their hands.) Can you multiply: \$3.25 to \$3.50 (the price of a pack of cigarettes) by 7 (days per week) by 52 (weeks per year). (Repeat to figure out how much it would cost to smoke two or three packs per day.) This is how much it costs to support a (1, 2, or 3) pack(s)-a-day habit. Now think about the millions of smokers who spend this much. Do you see how the tobacco industry makes so much money?

Tobacco companies are probably worried that many of their best customers, the people who smoke a lot, die due to smoking-related conditions or stop smoking. Therefore, tobacco companies are constantly looking for new customers, and who might that be? Kids! In general, the younger people start smoking, the longer they will continue smoking and spending money before quitting or dying.

How do tobacco companies try to attract young people to smoke? They spend billions of dollars promoting their products through advertisements and promotional gimmicks.

Why do tobacco companies spend so much on advertisements?

Want their products to be well known.

Advertise in many ways--ads, billboards, promotional products like clothing and accessories, sponsor events, pay movies to feature a certain brand, pay retailers for shelf space.

How many of you are familiar with the logos or image representations of Camel and Marlboro brand cigarettes? Joe Camel and Marlboro Man. (Feel free to use additional examples.)

If cigarettes are supposed to be for adults, how come all of you know about these name brands and logos/images too? (This is exactly what the US. government wondered too. This is why these images and tobacco advertising will be curtailed and/or banned very soon.)

Tobacco companies actually want to hook kids as new smokers, not only adults.

Based on what you see in tobacco ads, does smoking look bad? What are some of the images that you see?

Tobacco ads featuring different brands. Hold up and pass around mounted tobacco ads during the discussion about tobacco manufacturers and their strategies. Ask kids if they recognize them. Point out the Surgeon General's warnings and what they mean.

The appeal of tobacco ads--be sophisticated and independent like an adult!

What makes tobacco ads so appealing, making the people who see them want to try the product--cigarettes, smokeless tobacco, and cigars.

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Ads associate smoking with independence and activities that actually have no relation to smoking. (Analyze ads and provide examples of these themes--fun and adventure, being “cool”, sophistication, relaxing social situations.) Based on what you know now, are any of these activities more fun if you can’t breathe as well, cough all of the time, or feel the craving to have a cigarette?

Tobacco ads especially emphasize individualism and independence. Why? They want you to think that smoking is your choice. In reality, once you’re hooked, tobacco companies have you under their control. Exercise your personal power and be aware that cigarettes can come to “control” you once you’re addicted to nicotine.

Tobacco companies also specifically target girls/women with cigarettes brands, such as Capri, Virginia Slims, More. These cigarettes are long and slender. All of the women pictured are very glamorous and thin, but do all of the women that you see smoke in real life look like this? (To everyone, girls and boys:) What are true and better ways to look and feel healthy? Who are healthy people that you know? How do these people stay healthy?

Note: most of the models pictured are usually attractive. Most do not actually smoke the cigarettes.

In the recent tobacco deals, it seems like tobacco companies are cooperating with the U.S. government. (Tobacco companies may agree to allow cigarettes to be regulated by the FDA and to reduce teen smoking.) However, more and more people (ex-smokers and even state governments) were taking tobacco manufacturers to court for selling a product that harms its users’ health. If the tobacco companies “work” with the government or at least reach some type of agreement, they will protect themselves from further lawsuits and having to pay lots of money.

(Possible activity for lower grades: design your own “tobacco” ads promoting being smoke-free.)

Personal Power--how to maintain control and your personal freedom

Many people argue that smoking is a choice and that they like to have the freedom “to choose” what they do, including to smoke. However, we also know that smoking is extremely addictive. Being addictive means you are hooked and feel that you cannot function normally without lighting up. Is this being free? Do you have control over yourself when you’re addicted to nicotine and have to smoke everyday?

Some people say they like to smoke, but do they have control over their smoking once they are addicted? No, particularly because smokers who don't like smoking still do it because they can't stop that easily. How many smokers do you know can completely quit smoking if they want to?

What is personal responsibility, especially if you smoke?

Having personal power also means you take responsibility for your actions.

What types of responsibilities do smokers have to the people around them?

Be aware of the consequences of smoking, for themselves and others, especially family and friends.

Why should they have these responsibilities? Smokers harm others' health with second-hand smoke.

How can smokers take responsibility for their actions? (There will be a broad range of answers. Have students discuss the responses and their implications.)

Parents could smoke outside the house and not around their children.

People should not smoke in public or crowded places. Already, in many parts of California, it is illegal to smoke inside public areas like restaurants, shopping malls, office buildings, and businesses. For all airplane flights within the U.S., smoking is prohibited, or not allowed. Even some international flights are now completely non-smoking.

Currently, a group of 60,000 former and current flight attendants is suing tobacco companies for being harmed by second-hand smoke when smoking was still legal on airline flights. Many of the flight attendants have had lung cancer or other respiratory ailments that are linked to smoking and second-hand smoke exposure.

How do you develop your personal power? Make informed decisions.

Videos

- **Show video clip “Smoking Causes COPD, Emphysema, Lung Cancer”**
 - <http://www.youtube.com/watch?v=SaeJUCVEp2s&feature=channel>
 - Video detailing some diseases that are caused by tobacco and smoking.

Activities

Breathing Through a Straw:

Materials: normal straws, bubble tea straws

1. Give every student a small straw and a bubble tea straw.
2. Ask each student to first breathe five deep, normal breaths without a straw.
3. Ask each student to breathe five deep breaths out of the bubble tea straw, and ask whether breathing is harder this way.
4. Ask each student to breathe five breaths out of the narrow straw and compare it to the previous two situations.
5. Ask each student to do 10 to 15 jumping jacks breathing normally and repeat the exercise with the bubble tea straw.

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Lung Slices:

Show slices of smoker's lung vs. nonsmoker's lung

- Contact Bill Alley, balley@stanford.edu, (650)-725-3722, Medical school Room L-232.
- Courtesy of Dr. Regula, Pathology Department, Stanford Medical School