The Troubling Truth of Youth and Vaping

By Julie Kirk, RDMS

The popularity and use of e-cigarettes have increased at an alarming rate. It is now the most common type of tobacco product used among young people.

The e-cigarette is a device that uses a battery to heat liquid into an aerosol. That liquid contains nicotine, flavoring and other additives. When the liquid is heated, a vapor is emitted and the user inhales the aerosol into his lungs.

E-cigarettes are also called; vape pens, vapes, e-hookahs and electronic nicotine delivery systems (ENDS). Larger devices used are called mods and tank systems. The act of 'smoking' an e-cigarette is called vaping.

Middle school and high school students have been drawn to e-cigarettes. The explanation for this was reported by the CDC and FDA from a 2016 National Youth Tobacco Survey. According to the survey, the most common reasons for e-cigarette use were; that a friend or family member used them, that appealing flavors were available and that they believed e-cigarettes were less harmful than other tobacco products. Other reasons also mentioned included that; e-cigarettes were easier to obtain, they cost less, they can be used where tobacco products aren't allowed, they are being used to help quit smoking and they are used by famous people.

The tobacco industry has been deliberately marketing e-cigarettes to young people. In stores, the product is strategically placed on counters or next to the candy displays which is a calculated move to target young customers. Even the package designs use cartoon characters and are bright, bold and colorful in appearance. But the most obvious and significant tactic in influencing young people to try e-cigarettes is the unmistakable, youth-appealing flavors that are offered.

The enticing flavors that the tobacco industry markets include a variety of fruit, candy, cocktail and dessert flavors. Cherry, chocolate, cotton candy, appletini, bubble gum, cinnamon roll, unicorn milk and rainbow custard are only a few of the many flavors available. These can easily attract and intrigue young people, can intentionally influence new users, can encourage tobacco experimentation and can ultimately lead to sustained tobacco use.

While federal law bans flavors in cigarettes except menthol, other tobacco products (e.g., cigars, smokeless tobacco, hookah and e-cigarettes) are not included in this ban. Therefore, the tobacco industry can continue to market these flavors to young adults because of the gap in product regulation. If there was a restriction on the marketing of these flavors, there would be substantial public health benefits because youths and young adults use flavored tobacco products more than any other age group.

Almost all e-cigarettes contain nicotine, even the ones that claim they're nicotine-free. Nicotine is highly addictive and especially harmful to adolescent brain development. The prefrontal cortex of the brain is particularly vulnerable to nicotine's effects. This part of the brain is responsible for emotions, decision making and impulse control and is not fully developed until approximately 25 years of age.

Nicotine reaches the brain within seven seconds of being inhaled. It acts like a key to unlock receptor molecules on cells in the brain including those in the prefrontal cortex. Nicotine then causes these cells to release signaling molecules such as dopamine. These signals travel across the synaptic gap between nerve cells and when the next nerve cell is reached, it releases the 'message' and gives the nicotine user a feel-good high. But those brain cells can change after repeated exposure to nicotine and will eventually reduce the body's natural ability to release its own pleasure-giving chemicals.

Therefore, young e-cigarette users may create more receptors to handle the flood of nicotine to which they have become accustomed. But, over time, as the number of receptors increase, users will need more nicotine to get the same high. They will ultimately crave the nicotine and seek hit after hit which can then lead to nicotine addiction.

Young people are also especially at risk for the long-term, long-lasting effects of nicotine exposure to their brains. These risks include nicotine addiction, mood disorders and permanent decrease of impulse control.

The e-cigarette aerosol that is inhaled has also been found to contain harmful chemicals. This includes the aforementioned nicotine, ultrafine particles that can be inhaled deep into the lungs, the flavoring such as diacetyl which is a chemical linked to serious lung disease, volatile organic compounds such as benzene found in car exhaust, cancer causing chemicals and heavy metals, such as nickel, tin and lead.

Another risk for the young user involves defective e-cigarette batteries. There are reports of them exploding and causing fires. Horrific injuries such as burns to the hands and face, fractured bones and loss of eyesight have resulted from these explosions. These incidents typically happen when the e-cigarette batteries are being charged. While these occurrences were once considered rare, they are now being reported more frequently.

As for the e-cigarette itself, it can resemble regular cigarettes, cigars or pipes. But some don't look like typical tobacco products and can go easily unnoticed at school or by parents. They can resemble pens, USB flash drives or other everyday items.

There is also evidence suggesting that e-cigarette use among young people is strongly linked to the eventual use of other tobacco products such as cigarettes, cigars, hookah and smokeless tobacco. A study has also shown that teens who started vaping early were more likely to try marijuana in the future.

The bottom line is e-cigarettes are simply not safe for youth and young adults. Scientists are still learning more about e-cigarettes but at this time only have enough evidence to justify efforts to prevent young people from using e-cigarettes.

Currently, the FDA does not regulate these types of products. There are no requirements in regards to ingredient disclosure, warning labels or youth access restrictions. Unfortunately, the FDA made the decision in 2017 to allow e-cigarettes that are already on the market as of August 8, 2016 to stay on the market until 2022 without filing applications and undergoing a public health review by the FDA.

In the meantime, the surgeon general recommends continued efforts to prevent and reduce e-cigarette use among young people. This includes adding e-cigarettes into the smoke-free indoor air policies, restricting access to e-cigarettes in retail environments, establishing specific package requirements (minimum pack sizes) and adding health warnings.

There should be more prevention strategies and comprehensive tobacco control for all tobacco products, including e-cigarettes, when it comes to youth and young adults. In addition, it is necessary and important to regulate the manufacturing, distribution, marketing and sales of e-cigarettes as well as any other tobacco product, especially to children.

Tobacco use typically starts during adolescence. This is not a new phenomenon. Therefore, action must be taken in order to protect our young people from the dangers associated with tobacco use and the possible lifetime of nicotine addiction. It is important to work together, make the effort and do what's necessary so that the health of young people will be protected.