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Perfect storm can spur nicotine addiction in youths :

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Among the reasons to keep youths from starting to smoke: Each year, only about 4% of 12- to 19-year-old smokers will successfully quit. While half of adult smokers try to quit annually, less than 5% succeed. And the younger people are when they begin smoking, the less likely they will kick the habit.

Tobacco exposure through personal use or second- or thirdhand smoke exposure remains the most important preventable cause of illness, disability and death among adults in the U.S. Internationally, tobacco use is the No. 1 cause of preventable death.

After a gradual decline in smoking, the rate of decline has begun to slow for cigarettes. There also has been a significant rise in the use of nicotine products such as e-cigarettes, hookahs and smokeless tobacco, according to a new AAP technical report.

Nicotine and Tobacco as Substances of Abuse in Children and Adolescents, from the Committee on Substance Use and Prevention, reviews the stages of use in progression to dependence on nicotine-containing products, as well as the physiologic characteristics, neurobiology, metabolism, pharmacogenetics and health effects of nicotine. The report is available at <http://dx.doi.org/10.1542/peds.2016-3436> and will be published in the January issue of *Pediatrics*.

Multiple contributing factors

While tobacco products contain more than 4,000 chemicals, nicotine is the major contributor to the development of dependence and the primary pharmacologic component of tobacco. Rapidly developing brains are especially susceptible to nicotine addiction, but behavioral, social, environmental and psychological factors also influence the development and maintenance of addiction.

The urge to smoke occurs early on after kids first try it, the report notes, and then drives adolescents to smoke more often.

A predictable sequence of events often unfolds: wanting to smoke, having cravings and then needing to smoke to avoid withdrawal symptoms. This “neurophysiologic dependence” leads to tolerance, and a greater amount of nicotine is needed to maintain equilibrium.

Appealing sensations

Increasing the palatability of cigarettes are additives like menthol, with its candy-like taste and cooling properties. The sensory effects may result in the perception that cigarettes are less harmful than they really are and may drive up smoking frequency.

Similarly, the sweeteners and fruit flavors in hookahs and the more than 7,000 flavors now available in electronic nicotine delivery systems including e-cigarettes also add to the products’ appeal. E-cigarette experimentation and recent use among middle and high school students in the U.S. doubled from 2011 to 2012, according to the report. About 1.78 million students had used e-cigarettes as of 2012.

Toxic soup

Although the delivery systems of products like e-cigarettes may reduce exposure to some of the toxic chemicals in cigarettes, additional toxins are associated with electronic delivery systems.

“Exposure to nicotine and its high addiction potential remain major concerns,” the report says.

Despite aggressive promotion of e-cigarettes as smoking cessation aids, research has not documented their effectiveness in adults, according to the report. Recent studies suggest that e-cigarette use “may encourage, rather than discourage, the use of conventional cigarettes among U.S. adolescents,” according to the report.

Most of the adverse health consequences of tobacco use actually are the result of damage caused by tar, carbon monoxide, oxidizing chemicals and other constituents in the product rather than nicotine.

Adverse effects of nicotine

There are not enough data to conclude that nicotine causes cancer, but evidence shows it may increase the risk for oral, esophageal and pancreatic cancer. Among other effects, nicotine:

- increases concentrations of dopamine, a neurotransmitter essential for boosting attention, reward-seeking behaviors and the risk of various addictions, from gambling to drug use;
- is at least partly responsible for the progression of chronic kidney disease in cigarette smokers;

- increases risk of osteoporosis and bone fractures;
- impacts body weight;
- has a negative dose-related impact on both male and female fertility; and
- significantly increases cortisol concentrations in daily smokers.

Tobacco or nicotine also can have major effects on early neurodevelopment. Infants born to mothers who smoked during pregnancy had reduced weight, length and head circumference and exhibited impulsivity, hyperactivity and significant impairments in cognitive functioning.

The report addresses cessation measures, suggesting pharmacotherapy to help moderately to severely tobacco-dependent teens. However, there is concern that nicotine replacement therapy use during adolescence may change the neurodevelopmental trajectory. Further research is needed.

Most research to date has been on behaviorally based interventions, which are most effective for youths with mild dependence. There are not enough data to support any one clinical approach to adolescent cessation of nicotine use, the report concludes.

Resources

- [AAP News article "AAP releases multiple policies to protect youths from tobacco, nicotine"](#)
- [AAP Julius B. Richmond Center of Excellence](#)
- [Smokefree teen](#)

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Child-centered care needed at U.S. border facilities, AAP leaders say

by Steve Schering • Staff Writer

A recent visit to the U.S.-Mexico border with other AAP leaders provided many eye-opening experiences for AAP President Benjamin D. Hoffman, M.D., FAAP. He saw the tireless work being done by many to assist those seeking asylum in the U.S. as well as areas where improved care is needed.

"Getting to see the best of humanity in a circumstance where people were fleeing because of the worst of humanity was really affirming," Dr. Hoffman said. "We still have a tremendous amount that we need



AAP: Use updated, trivalent vaccines for 2024-'25 flu season

by Melissa Jenco • News Content Editor

The AAP is not expressing a preference for any of next season's flu vaccine products, all of which will be trivalent.

The AAP's 2024-'25 season recommendations continue to call for everyone 6 months and older to get vaccinated. Any licensed vaccine appropriate for age and health status can be used.

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