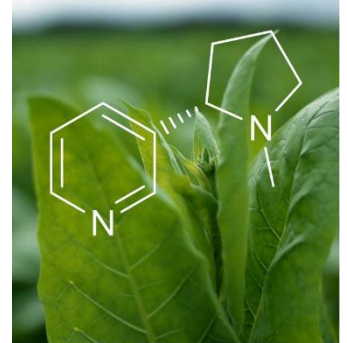


Overview

- Nicotine is the highly addictive chemical found naturally in tobacco
- Most tobacco users become addicted to nicotine¹
- Tobacco use is the single largest cause of death and disease in America²
- Nicotine poses danger to youth, pregnant women and fetuses³
- Nicotine use in adolescence may increase risk for future addiction to other drugs⁴
- Quitting the use of nicotine is one of the hardest things a person can do, but also one of the most important things they can do for their health²
- Quitting may take several attempts before success²



ENDS* and Nicotine Levels

- A CDC study of 2015 scan sales data from stores found that 99% of ENDS sold contained nicotine⁵
- The amount of nicotine in ENDS is highly variable due to the e-liquid, the temperature of heating, and the depth of the puff
- Although most e-liquids on the market previously contained 36 mg/ml or less, new products utilizing nicotine salts instead of freebase nicotine have increased the level of nicotine
 - JUUL Pods (.7 ml cartridge labeled 5%) contain 59 mgs of nicotine per ml⁶
 - Juul was introduced to the market in 2015 and rose to over 70% of the market
 - The majority of youth and young adult Juul users surveyed did not know they contained nicotine⁷

Key Points:

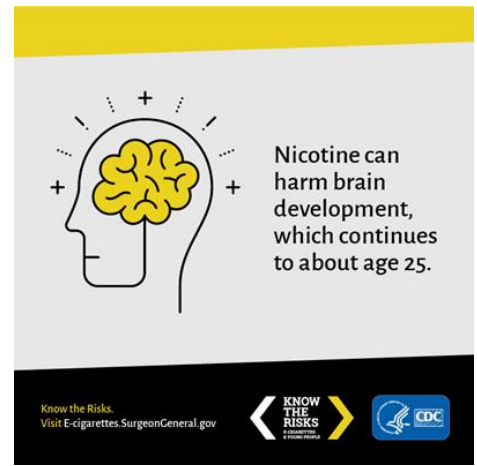
- Nicotine is very addictive
- Most ENDS devices contain nicotine, with varying levels
- Youth are especially vulnerable to becoming addicted quickly
- Quitting nicotine addiction is hard but evidence-based treatments work

* ENDS= Electronic Nicotine Delivery Systems and vapor products, also referred to as vaping, e-cigarettes

**WARNING: This product
contains nicotine.
Nicotine is an addictive chemical.**

Nicotine and Youth

- Liquid nicotine is toxic and exposure to high doses can be fatal especially to young children
- Intentional or accidental exposure to liquid nicotine via ingestion, inhalation or absorption through the skin or eyes can have adverse health effects²
- Children and adolescents are likely more sensitive to nicotine and become addicted faster than adults³
- Nicotine disrupts the development of brain circuits that control attention and learning



Nicotine Pathway

- ❖ It only takes 10 seconds for the nicotine from a puff to reach the brain
- ❖ Nicotine causes cells in the brain to release dopamine, which triggers a 'pleasure response'
- ❖ The number of nicotine receptors increases over time, changing the anatomy of the brain
- ❖ The brain keeps wanting more
- ❖ Quitting triggers withdrawal symptoms that makes the brain crave nicotine
- ❖ As nicotine intake is reduced, the number of nicotine receptors goes back to normal

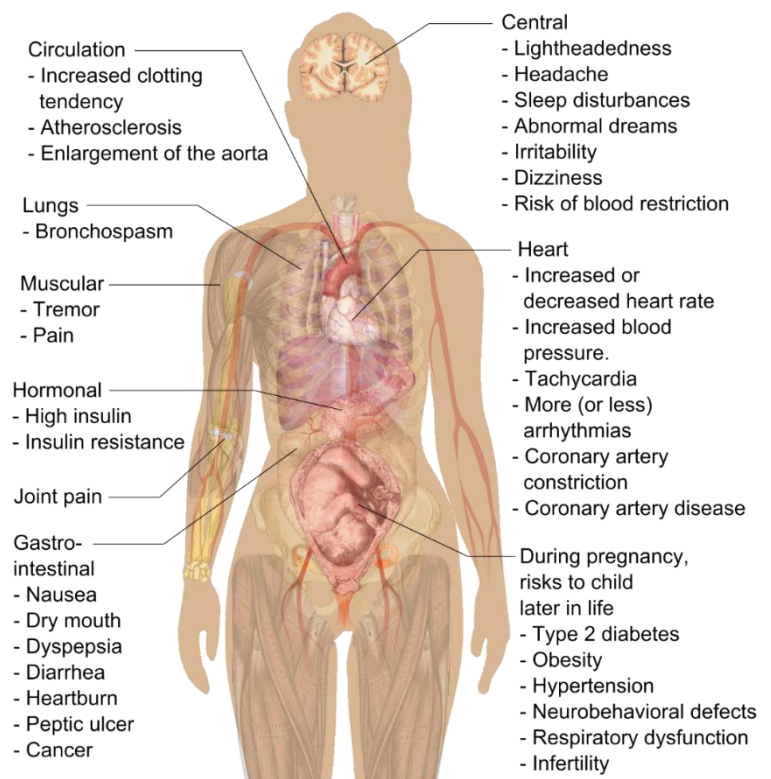
Nicotine can affect the body in other ways. For example, a rapid increase in nicotine blood levels can raise the heart rate and blood pressure and narrow arteries around the heart.

Nicotine Withdrawal

Symptoms include:

- Feeling anxious, fidgety and restless
- Trouble sleeping
- Trouble concentrating, thinking
- Crave tobacco products
- Feeling hungrier than usual

Side effects of nicotine



Graphic Courtesy of TobaccoFree Life, CA. 2019

References

¹U.S. Department of Health and Human Services, National Institute of Health, National Institute of Drug Abuse. *Tobacco, Nicotine, and E-Cigarettes*. <https://www.drugabuse.gov/publications/research-reports/tobacco-nicotine-e-cigarettes/nicotine-addictive>

²U.S. Department of Health and Human Services. *Smoking Cessation. A Report of the Surgeon General*. Atlanta, GA. 2020.

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⁴U.S. Department of Health and Human Services. *E-cigarette Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA. 2016.

⁵Marynak, etal. *American Journal of Public Health*. *Sales of Nicotine-Containing Electronic Cigarette Products: United States*, 2015. May 2017;107(5):702-705. doi: 10.2105/AJPH.2017.303660

⁶Juul Labs , information available via www.juul.com. Accessed January 2020.

⁷Willett, etal. *Journal of Tobacco Control*. *Recognition, use and perceptions of JUUL among youth and young adults*. Vol 28, No. 1 January 2019.

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