



SUBSTANCE AND OPIOID USE DISORDER TOPIC STUDY POINTS

Tobacco Use

Study points can be used to focus areas of study and learning.

Demographics and Background (CDC data)

- There is a link between tobacco smoking and more severe illness from COVID-19.
- Approximately 16.5% of high school students in the U.S. use at least one tobacco product, including e-cigarettes, according to the 2022 National Youth Tobacco Survey.
- Smoking is the number one preventable cause of death in the U.S., killing over 480,000 people per year.

Tobacco Control Interventions in the Emergency Department¹

- Strengthens relationship between patient-centered acute care and public health practices.
- 26% of patients expressed smoking cessation as the health topic in which they were most interested
- The three main toxins in cigarettes are nicotine, carbon monoxide, and tar.
 - Nicotine stimulates the release of dopamine in regions of the brain that are responsible for pleasure and reward seeking.
 - Carbon monoxide reduces the oxygen carrying capacity of hemoglobin

¹ Bernstein SL, Boudreaux ED, Cydulka RK, Rhodes KV, Lettman NA, Almeida S, et al.; American College of Emergency Physicians Task Force on Smoking Cessation. Tobacco control interventions in the emergency department: a joint statement of emergency medicine organizations. *Ann Emerg Med* 2006 Oct;48(4):e417-26. doi: 10.1016/j.annemergmed.2006.02.018. Epub 2006 Jun 8.

E-Cigarette, or Vaping, Product Use-Associated Lung Injury (EVALI)

- Microparticulates (e.g., flavoring containing diacetyl) can be inhaled deep into the lung and can result in lung disease
 - Lead, nickel, and arsenic are heavy metals that have also been noted in vaping liquids²
- ² Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion; Centers for Disease Control and Prevention. About electronic cigarettes (e-cigarettes). https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html#aerosol. Accessed August 9, 2023.

Treatment

Addressing Nicotine Use in the ED

- Patients should be provided with education on the health risks of smoking, secondhand smoke, and vaping.³
- Referral is indicated for patients with tobacco use disorder to obtain resources to assist in reducing or quitting nicotine.³

³American College of Emergency Physicians. *Addressing nicotine use. Policy Statement.* Irving, TX: ACEP, April 2022. <https://www.acep.org/siteassets/new-pdfs/policy-statements/addressing-nicotine-use.pdf>.

<https://www.acep.org/patient-care/policy-statements/addressing-nicotine-use>

- Behavioral change interventions can be billed for by emergency physicians⁴
⁴American College of Emergency Physicians. *Behavior change intervention FAQs.* Irving, TX: ACEP. <https://www.acep.org/administration/reimbursement/reimbursement-faqs/behavior-change-intervention-faq>.
- Emergency physicians can provide patients a referral to the National Smokers' Quitline (800-QUIT-NOW) where the patients can be provided with options for smoking cessation and locally available programs.⁴
- Physical activity can help with restlessness when trying to quit smoking.⁵
- Removing a nicotine patch one hour prior to going to bed can help to improve sleep quality.⁵
- Patients who smoke are more likely to have associated anxiety and/or depression. They should be reminded that they may **Call or text** the [988 Suicide & Crisis Lifeline](https://www.988lifeline.org/) at [988](https://www.988lifeline.org/), available 24 hours a day, 7 days a week. [Online chat](https://www.988lifeline.org/) is available 24/7.

⁵Centers for Disease Control and Prevention. *How to quit smoking.*
<https://www.cdc.gov/tobacco/campaign/tips/quit-smoking/index.html#print>

<https://www.cdc.gov/tobacco/campaign/tips/quit-smoking/index.html>

The Five A's of Intervention⁶

1. **Ask** about nicotine and tobacco use in the emergency department.
2. **Advise** – Clearly urge every patient to quit tobacco use.
3. **Assess** – Is now the time that the patient is willing to try to quit smoking?
4. **Assist** – Help patients, who are willing to try to quit, with the use of counseling referrals and pharmacotherapy.
5. **Arrange** follow-up ideally within the first week that the patient has chosen to quit.

⁶Agency for Healthcare Research and Quality. *Five major steps to intervention (the "5 A's").* Rockville, MD: AHRQ. <https://www.ahrq.gov/prevention/guidelines/tobacco/5steps.html#:~:text=Successful%20intervention%20begins%20with%20identifying,Assess%2C%20Assist%2C%20and%20Arrange>

Medications for Nicotine Withdrawal and Dependence

- There are three medications that are FDA approved:
 - Nicotine Replacement Therapy (NRT)
 - Varenicline (Chantix)
 - Bupropion (Zyban)
- The nicotine in NRT differs from smoking only in that NRT contains pharmaceutical grade nicotine without accompanying toxic chemicals.
- NRT can be delivered via gum, lozenge (transmucosal), patch (transdermal), oral inhaler, and nasal spray. In concept, it can be inhaled as an e-cigarette, but these are not FDA approved.
- Varenicline works as a partial agonist at the nicotinic receptor, blunting the euphoria of nicotine from smoking/vaping.

Assessment and Diagnosis⁷

- Emergency physicians should have a familiarity with the diagnostic criteria used to assess and diagnose tobacco use disorder (nicotine use disorder) including:
 - Patients will often state that their tobacco use is greater or has lasted longer than intended and that attempts to quit have not been successful
 - Tobacco use has resulted in failures to fulfil roles at work, school, or home.
 - Social or recreational functions have been reduced or eliminated because of tobacco use.

⁷American Psychiatric Association. *Diagnostic and statistical manual of mental disorders (5th ed.)*. American Psychiatric Publishing, 2013. <https://doi.org/10.1176/appi.books.9780890425596>

Tobacco Withdrawal

- Daily Use for at least several weeks
- Abrupt cessation of tobacco use, or reduction in the amount of tobacco used, followed within 24 hours by four (or more) of the following signs and or symptoms (look up)
- Signs or symptoms cause clinically significant distress or impairment
- The signs or symptoms are not attributed to another medical condition or disorder

Smoking & Nicotine

Rigotti NA, Kruse GR, Livingstone-Banks J, Hartmann-Boyce J. *Treatment of tobacco smoking: a review*. *JAMA* 2022; 327(6):566-77. doi:10.1001/jama.2022.0395

BACKGROUND

- More than an estimated 8 million smoking-attributed deaths occur globally each year
- Approximately 34 million people in the US (14% of adults) currently smoke cigarettes.
- One-third to one-half of people who regularly smoke cigarettes die of a tobacco-related disease, typically approximately 10 years earlier than people who do not smoke cigarettes (cancer (34%), cardiovascular diseases (32%), or respiratory disease (21%))
- Repeated nicotine intake generates tolerance and physical dependence, which produce nicotine withdrawal symptoms when nicotine blood levels fall.

WITHDRAWAL

- Withdrawal symptoms include cigarette craving and nonspecific symptoms such as irritability, restlessness, difficulty concentrating, anxiety, and anhedonia.
- Smoking cessation is a challenge because it requires individuals to overcome both physical nicotine dependence and a longstanding rewarding behavior.
- Among individuals attempting to quit smoking, abstinence for a few days or weeks is common, but most individuals relapse within 3 months after quitting smoking. However, many smokers who continue to attempt to quit can succeed.

ASSESSMENT

- Any tobacco use, even intermittent cigarette smoking, warrants treatment.
- Inquiring about past attempts to quit smoking and cessation treatments allows tailoring of treatment intensity and recommended smoking cessation methods.
- Nicotine dependence, which is associated with the patient's degree of difficulty quitting, can be assessed with 2 questions:
 1. How many cigarettes are smoked daily (a larger number indicates more dependence)?
 2. Is the day's first cigarette smoked within 30 minutes of waking?

TREATMENT

- Pharmacotherapy and behavioral support are each effective when used alone, but combining them is more effective. Combined pharmacotherapy and behavioral interventions increased quit rates from a mean of 8.6% with brief advice or usual care to 15.2% in a pooled analysis.
- Pharmacotherapy helps reduce nicotine withdrawal symptoms (i.e., nicotine replacement therapy [NRT]) and/or minimizes the favorable effects experienced while smoking (i.e., varenicline), while behavioral interventions seek to change learned behaviors associated with smoking.
 - Nicotine replacement therapy (NRT) promotes cessation by reducing symptoms of nicotine withdrawal. All forms of NRT are comparable in effectiveness as individual products. A meta-analysis reported that NRT was associated with higher increased quit rates than placebo or no support (17% vs 10%).
 - Varenicline reduces nicotine withdrawal symptoms, blocks nicotine inhaled in cigarette smoke, and reduces the rewarding effects of cigarettes smoked. In a meta-analysis, varenicline was associated with a higher chance of quitting at the 6-month follow-up than placebo or no treatment (11% to 26%).
 - Bupropion sustained-release formulation is FDA-approved as both an antidepressant and a smoking cessation aid. It blocks reuptake of dopamine released by neurons stimulated when nicotine binds to nicotinic receptors, and thereby reduces nicotine withdrawal symptoms. A meta-analysis showed that bupropion was associated with a higher rate of smoking cessation among individuals with and without depressive symptoms than control conditions (19% vs 11%).
 - The efficacy of nicotine patch, varenicline, and bupropion was statistically significant compared with placebo. The efficacy of varenicline when used alone was statistically superior to both bupropion and to the nicotine patch.

Varenicline and combination NRT are similar in efficacy and the most effective options currently available. The physician should consider cost, patient preference, and side-effects when selecting pharmacotherapy for tobacco use disorder.

E-Cigarettes

- e-Cigarettes are battery-powered devices that generate an inhaled aerosol that usually contains nicotine. Users are exposed to fewer toxins and are less likely to cause harm compare to cigarettes in known smokers.
- More effective than NRT or non-nicotine e-cigarettes to help stop smoking.
- Behavioral interventions are diverse and can include:
 - Education about the benefits of quitting
 - Cognitive behavioral therapy
 - Social support/peer groups
 - Environmental changes (e.g., avoiding bars)

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