September Pharmacy Newsletter

The Impact of Vaping

In recent years, vaping with either nicotine-based e-cigarettes or tetrahydrocannabinol (THC) products has gained popularity as a perceived safer alternative to traditional smoking. Vaping's accessibility and variation in content have contributed to widespread use across different populations. Growing evidence reveals significant health risks however, particularly affecting the cardiovascular and respiratory systems. Vaping has become increasingly common across age groups, raising serious public health concerns due to its long-term physiological and developmental consequences.

Cardiovascular Impact

One of the most concerning findings relates to cardiovascular health. Vaping has been associated with a 19 percent increased risk of developing heart failure, specifically heart failure with preserved ejection fraction (HFpEF). HFpEF is becoming increasingly prevalent in younger adults. Nicotine stimulates the sympathetic nervous system, leading to elevated heart rate, vasoconstriction, and increased blood pressure. These effects contribute to oxidative stress, endothelial dysfunction, and platelet aggregation, all of which increase the risk of myocardial infarction and stroke. Habitual vapers are nearly twice as likely to experience heart attacks compared to non-users.

Respiratory Impact

Respiratory health is also significantly affected by vaping, with both short and long-term consequences. The aerosols generated by vaping contain harmful compounds such as formaldehyde, acrolein, and heavy metals, which induce oxidative stress and airway inflammation. Research shows that vaping users have a 1.3-fold increased risk of developing respiratory illnesses such as asthma, chronic bronchitis, and chronic obstructive pulmonary disease (COPD) compared to non-users. In 2019, United States experienced an outbreak of vaping associated lung injury (EVALI) resulting in over 2,800 hospitalizations and sixty-eight deaths, largely among individuals under age 35. Many cases were linked to illicit THC vape products containing additives such as vitamin E acetate.

Effects on Adolescents

Adolescents remain among the most vulnerable groups impacted by vaping. As of 2024, approximately 1.63 million middle and high school students in the United States reported vaping. Nicotine exposure during adolescence disrupts neural circuitry associated with learning, memory, and impulse control. Young adults who vape are at higher risk for mood disorders, substance use disorders, and early onset respiratory illness such as asthma or COPD.

THC vaping among adolescents is rising, with reports indicating that up to 42 percent of youth who vape also use cannabis. THC rapidly enters the brain and has been shown to affect cognitive development, especially in areas responsible for attention, memory, and learning. Adolescents who vape THC are at increased risk of developing depression, anxiety, and psychosis, including long-term mental illness such as schizophrenia.

Effects on Pregnant Women and Infants

Pregnancy is a critical period during which vaping poses risks. Despite common misconceptions that vaping may be safer than smoking during pregnancy, studies show that aerosolized nicotine and other toxicants from vaping can cross the placenta. This exposure increases the risk of adverse outcomes like preterm birth, fetal growth restriction, and miscarriages. Infants who were exposed to nicotine while in utero are also at higher risk for wheezing, asthma, and COPD in adulthood.

When THC is vaped during pregnancy, risks are further elevated. THC crosses the placenta and has been associated with fetal growth restriction, stillbirth, low birth weight, and abnormal neurological development. Infants exposed to THC in utero may experience long-term developmental consequences such as cognitive impairments, memory and learning difficulties, behavioral issues, and sleep cycle disturbances.

Role of Providers

- Routinely ask about e-cigarette use, especially in adolescents, young adults, and pregnant patients.
- Assess symptoms of nicotine dependence, respiratory issues, cardiovascular complaints in users.
- Provide evidence-based education on the health risk of vaping and dispel common myths about "harmless vaping."
- Provide resources for smoking cessation.

Key Takeaways

- General Population
    - **Heart Failure:** Leading to fatigue, dyspnea, exercise intolerance, and frequent hospitalizations.
    - **Myocardial Infarction:** Elevated incidence of non-fatal heart attacks, often requiring emergency intervention.
    - **Hypertension:** Contributes to overall cardiovascular burden.
    - **Chronic Bronchitis and COPD:** Persistent cough, mucus production, and reduced lung function.
- Adolescents & Young Adult
    - **Reduced Pulmonary Function:** Early decline in lung capacity, increased airway resistance, and exercise intolerance.
    - **Chronic Respiratory Symptoms**: Persistent cough, phlegm, and chest tightness.
    - **Neurocognitive effects:** Increased clinical diagnoses of attention deficits, anxiety, and depression.
    - **Increased risk of EVALI**: Acute respiratory distress requiring hospitalization with risk of long-term lung scarring.
- Pregnant Individuals
    - **Preterm Birth:** Increased risk of NICU admission, complications with feeding, and infection risk.
    - **Fetal Growth Restriction:** Long term developmental delays requiring physical, occupational, and/or speech therapy.
    - **Childhood Asthma Risk:** More likely to develop persistent wheezing.
    - **Obstetric Complications:** Increased monitoring for fetal distress, gestational hypertension, and higher likelihood of caesarean delivery.

References:

1. https://www.acc.org/About-ACC/Press-Releases/2024/04/01/21/51/study-links-e-cigarette-use-with-higher-risk-of-heart-failure
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3. https://www.ucsf.edu/news/2019/12/416216/e-cigarettes-significantly-raise-risk-chronic-lung-disease-first-long-term
4. https://pmc.ncbi.nlm.nih.gov/articles/PMC4560573/
5. https://www.cdc.gov/tobacco/e-cigarettes/youth.html
6. https://www.cdc.gov/tobacco/e-cigarettes/health-effects.html
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9. https://fod-infobase-com.proxy.cc.uic.edu/p_ViewVideo.aspx?xtid=206205
10. https://www.cdc.gov/cannabis/health-effects/cannabis-and-teens.html
11. https://americanaddictioncenters.org/marijuana-rehab/effects-of-marijuana-on-teenage-brain
12. https://www.cdc.gov/cannabis/health-effects/pregnancy.html
13. https://pmc.ncbi.nlm.nih.gov/articles/PMC10401888/

PREFERRED DRUG LIST UPDATES CAN BE FOUND HERE:

ACC-RBHA, DD, ALTCS and DCS CHP	Behavioral Health (Non-Title 19/21)

** Drugs that are not on the formulary will require a PA (prior authorization) request to be submitted**

Reminder for quicker determinations of a Prior Authorization use the ePA link for Our Providers: Please click here to initiate an electronic prior authorization (ePA) request.

This newsletter is brought to you by the Mercy Care Pharmacy Team. For questions, please email Fanny A Musto (MustoF@mercycareaz.org), Denise Volkov (VolkovD@mercycareaz.org) or Trennette Gilbert (gilbert@mercycareaz.org)