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E-Cigarettes: What a Practising Cardiologist Needs to Know

Should E-cigarettes be tolerated, or even favoured over tobacco, as a less harmful substitute for those unable to stop smoking tobacco? Although E-cigarettes may be less harmful than tobacco cigarettes, they are definitely not harmless, according to a systematic review published in The American Journal of Cardiology.

See Also: Study: 28% of U.S. Adults are Tobacco Users

Tobacco smoking is a leading cause of lung and laryngeal cancer and a major contributing factor in coronary heart disease, peripheral vascular disease, and hypertension. Despite massive educational efforts and various initiatives (e.g., cigarette tax increases; smoke-free workplace laws) aimed at reducing prevalence of smoking in the U.S., nearly 42 million Americans still smoke today. As a result, an estimated half a million tobacco-related deaths occur each year, disproportionally affecting the poor, those with low educational attainment, and the mentally ill, whose rates of tobacco use are especially high.

Alternate methods of delivering low concentrations of nicotine alone, such as chewing gum, nasal sprays, inhalers, and transdermal patches, have been used to assist in smoking cessation for many years and appear to be safe, although only marginally effective in achieving tobacco abstinence.

Electronic nicotine delivery devices, or “E-cigarettes,” have become increasingly popular over the last decade, providing an alternative method for rapidly delivering nicotine to the brain without the necessity of burning tobacco.

"E-cigarettes are definitely not innocuous, harmless gadgets. The potential for harm ranges from overheating or explosion of the E-cigarette device to harm caused by inhalation of the E-cigarette vapour and to the risk of inducing nicotine addiction in previous non smokers. These devices can also be used to vaporise marijuana and cocaine," according to the journal article.

Only recently has the U.S. FDA begun to regulate E cigarettes. Manufacturers will be required to register with the FDA, provide product listings and ingredients (including potentially harmful constituents), place health warnings on product packages and advertisements, and require premarket review and authorisation for all new tobacco products.

While uncertainty remains, the authors say the following conclusions can be made based on a review of existing data and expert opinion:

- Nicotine delivered by either tobacco smoking or E-cigarette vaping is highly addictive;
- E-cigarette vaping can be an effective substitute for cigarette smoking and may have a role in comprehensive behavioural health programmes to help cigarette smokers stop smoking;
- Nicotine and E-cigarettes are “not” harmless but may be less likely to cause cardiovascular disease and cancer than tobacco smoking, perhaps providing an acceptable alternative for reducing harm in tobacco cigarette addicts unable to stop smoking;
- Clinicians should gently but firmly counsel their patients to avoid both tobacco smoking and E-cigarette vaping, empathising that nicotine addiction is not a trivial bad habit easily given up but rather a serious behavioural disease with physical and genetic determinants and serious adverse health consequences.

JAMA Study: E-cigarettes "Not Harmless"

A study published in JAMA Cardiology has added to growing evidence that E-cigarettes are not harmless. It found that habitual E-cigarette users were more likely than non-users to have increased cardiac sympathetic activity (increased adrenaline levels in the heart) and increased oxidative stress – known mechanisms by which tobacco cigarettes increase cardiovascular risk.

In a related editorial, also published in JAMA Cardiology, Aruni Bhatnagar, PhD, Division of Cardiovascular Medicine, Department of Medicine, University of Louisville, Kentucky, notes that the increasing use of E-cigarettes has created an entirely new public health dilemma.

"Although some public health activists believe that E-cigarettes represent a new addition to the armoury of tobacco control and harm reduction, others are unsure how the widespread use of E-cigarettes will affect the prevalence of nicotine addiction and premature mortality owing to tobacco product use," Dr. Bhatnagar writes. "The central issue in the debate is the disease risk imposed by E-cigarettes. Because E-cigarettes do not contain tobacco per se and do not burn tobacco, many of the toxic compounds produced during tobacco combustion are either eliminated

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or significantly reduced in abundance in e-cigarette aerosols."

E-cigarettes produce little or no tar or carbon monoxide and only trace levels of metals and other toxicants abundant in combustible cigarettes. Thus, proponents of E-cigarettes argue that many of the harmful health outcomes of combustible cigarettes, such as lung cancer, emphysema, and heart disease, are unlikely to be associated with long-term E-cigarette use, Dr. Bhatnagar points out.

Source: The American Journal of Cardiology ; JAMA Cardiology
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