E-cigarettes: What Health Professionals Need to Know

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What are they?

An electronic, or e-cigarette, is typically a metal device that holds a cartridge containing nicotine and other substances in liquid form, a battery, and a heating element which vaporizes the liquid.[1] Some e-cigarette brands combine the cartridge and the heating element into a "cartomizer." Devices may look like conventional cigarettes, pens/markers, or have intriguing designs. The contents of e-cigarettes vary greatly from brand to brand, and they even vary between individual cartridges marketed under the same brand.[1]

Most e-cigarettes contain nicotine in varying amounts, and can be up to 500 mg which is 10 times the lethal dose.[2] In addition to nicotine, the cartridges and vapor from some e-cigarettes contain volatile organic compounds such as acetone, cresol, xylene, styrene, ethyl alcohol, and acetaldehyde; all of which are associated with negative health effects.[3] Carcinogens such as formaldehyde and β-nicotyrine have also been found in e-cigarette cartridges and vapor.[3,4] Not only do e-cigarettes contain potentially dangerous chemicals, but they also emit fine and ultrafine particles into the air, polluting the environment.[4,5]

Why do e-cigarettes pose health concerns?

Using electronic cigarettes for even a span of five minutes has been found to cause lung effects similar to smoking.[6] The high levels of nicotine in electronic cigarettes pose risks to e-cigarette users, as it is difficult to refill e-cigarette cartridges without coming into skin contact with the liquid in the cartridge.[7] This may lead to accidental nicotine overdose and even death, particularly for children in places where e-cigarettes are used. Also, volatile organic compounds,[3] carcinogens[3,8] and particulate air pollutants[5] have been found in the vapor of electronic cigarettes, potentially endangering others sharing the indoor air. Using electronic cigarettes (also called vaping) looks similar to smoking traditional cigarettes. Vaping may cause confusion about where cigarettes can be used, creating difficulty enforcing smoke-free policies and causing indoor air pollution putting workers and others at risk.[9] Sweet, candy flavors and ads glamorizing e-cigarettes have captured the attention of the largely unregulated youth market. As of 2012, 1.78 million middle and high school students had tried e-cigarettes, 160,000 of them never-users of conventional cigarettes.[10]

Do e-cigarettes help patients quit smoking?

There is not enough scientific evidence to support the claim that e-cigarettes are an effective smoking cessation aid, nor to refute the possibility that e-cigarette use may derail quit attempts.[9] Many smokers who attempt to quit by using e-cigarettes use both traditional cigarettes and e-cigarettes. This outcome

is not beneficial to patients, as smoking even 1-4 cigarettes per day poses significantly higher risk of dying from ischaemic heart disease and from all causes.[11]

Should e-cigarettes be included in smoke-free legislation?

Yes. E-cigarettes are derived from tobacco and they are an inhaled product emitting fine and ultrafine particles into the air. 'Vaping' creates a dense mix of vapor and fine particles that looks like tobacco smoke. If exempt from smoke-free laws or tobacco-free policies, the 'smoky look' creates confusion with enforcement.

E-cigarettes may pollute the air less than conventional cigarettes but they still pollute the air. Even if we find that e-cigarettes are less harmful than conventional cigarettes, they may keep people addicted and using both products.

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