Going Within and Beyond the Vape Mist

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Vaping is the inhalation of heated aerosols which may contain nicotine, typically delivered via an electronic delivery system also known as an electronic nicotine delivery systems (ENDS) device or an electronic cigarette (e-cigarette).[1] These ENDS devices are better known colloquially as vapes, and their introduction in 2007 heralded a new "epidemic" with the rapid rise in e-cigarette users, especially among the youth.[2] Vape became the Oxford dictionary's word of the year in 2014,[3] further signalling its ascension in popularity.

E-cigarettes deliver nicotine to the user efficiently and come in different shapes and sizes. Initial devices looked very much like cigarettes while newer devices have innocuous looks that can be easily hidden in plain sight. There are both single-use vapes and rechargeable devices with replaceable cartridges. It has been marketed as a flavoured tool that is less harmful than regular cigarettes to appeal to current smokers and curious adolescents.[4]

What is in a vape?

The main content within a vape pod (the canister that holds the liquid) is the solvent that is required to carry the nicotine along with the chemical components that produce the flavours. The two most common solvents are propylene glycol, also known as glycerol, and vegetable glycerin.[5] Although these compounds are known to be safe for ingestion, inhalation can lead to airway irritation.

The amount of inhaled nicotine can vary depending on the nicotine concentrations within the pods, the electric current used for the heating element, and the composition of the aerosol.[6] Nicotine is absorbed easily and quickly via the airways, and pods containing high nicotine concentrations pose a threat of nicotine toxicity.[7] There is also the danger of grazing, where the person vapes continuously,[8] with the potential to take in nicotine contents higher than a pack of 20 cigarette sticks in a day.

Aldehydes, diacetyl and acetyl propionyl are used to produce flavours, and these substances have been associated with respiratory diseases when inhaled.[6] Other components that have been identified in the solvents, such as benzene and formaldehyde, have also been shown to be potential carcinogens, and have direct effects on the cardiovascular, ocular and respiratory systems.[5] Along with numerous other chemicals found within the vape pod solvents, the solvent's toxic transformation from liquid to aerosolised form has

the potential to cause both early and devastating late damages within the body.

The subtle but ominous danger

There are acute and potential long-lasting damages that have been seen with vaping. Though the long-term effects of vaping have not yet been established, there have been numerous scientific evidence as to its ill effects.[6] One of the most devastating phenomena that can result from vaping is e-cigarette or vaping use-associated lung injury, commonly known as EVALI, where patients develop severe respiratory failure that may require invasive mechanical ventilation.[9] There has been evidence showing a resultant increase in cardiovascular risks, respiratory diseases and neurological toxicities. Animal studies have also shown links to cancers, not just in the lungs, but in the bladder as well.[5]

There have been a lot of efforts made by the tobacco and vape industries to capture younger users, who could potentially be future long-term users.[10] Strategies such as using social media, subtle advertisement placements, sponsoring events, handing out free samples, propagating myths and promoting vapes as fun items have helped to create divisive views on its supposed safety. The steady increase in young users will cause a rise in nicotine addiction rates. Vaping has also been linked to cigarette use, which may subsequently lead to a higher smoking prevalence in the future, causing a rise in smoking-related diseases.

Taking steps to stop vaping

The World Health Organization has declared that e-cigarettes are harmful to health. E-cigarettes are neither safer alternatives to regular cigarettes nor legitimate cessation aids.[11]

A guidance document on vaping cessation, *Clinical Guidance for Care of People Who Vape*, was written after the Singapore roundtable policy discussion on vaping held in April 2024.[12] Although there is a lack of good quality evidence on vaping cessation, the authors combined available international advice on how to treat people who seek to stop vaping. The principles within are similar to smoking cessation guidelines where a combination of non-pharmacological and pharmacological strategies are recommended.

Though there are currently no evaluative instruments that have been proven to be superior, the severity of the patient's dependence on vaping should still be assessed with the available tools, eg, the e-cigarette Fagerstrom Test of Cigarette Dependence. There is also a need to personalise the clinical approach to vaping cessation. Behavioural therapy through motivational interviewing is recommended together with the use of nicotine replacement therapy (NRT). The aim is to reduce the cravings and the nicotine withdrawal symptoms during the person's quit journey. A combination of NRTs together with bupropion or varenicline may be recommended after a discussion with the person who vapes, to improve the odds of successfully quitting.

Patients who come forward to seek treatment should receive help without prejudice and judgement. There is no need to report to the authorities regarding people or patients who vape and are keen to stop vaping. We should be sensitive to the fact that in Singapore, people will be reluctant to come forward and seek proper help in view of the Tobacco Act, and that people who want to quit should get the help they need. However, it is still important to iterate that it is against the law to use, import, distribute or sell e-cigarettes and their components. People who are caught using e-cigarettes can face a maximum fine of $2,000, while those involved in the distribution and selling of e-cigarettes can be fined up to $10,000 or face imprisonment of up to six months or both for the first offence, and a fine of up to $20,000 or imprisonment of up to 12 months or both for the second or subsequent offence.

Summary

The dangers of vaping have been underplayed by the tobacco industry and sit within a mist of misinformation and guile. What is worrisome is that their current targets are the youth, and these are the group of people who have a very long exposure time after getting hooked to vaping, opening up the possibilities of a variety of long-term damage. There is an unimaginable potential financial load that can burden not only the user but also the healthcare system, just as how cigarettes continue to ravage lives. The doors should remain closed to vapes and its products, and support should be readily rendered to assist all who come forward to seek help. ◆

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