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Lowdown on e-cigarettes

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ADDICTION MEDICINE

Whatever your view of e-cigarettes, a growing number of people are using them. Here's how to help your patients vape safely.

E-cigarettes are being increasingly used by smokers as quitting aids or as an alternative to smoking. This article gives practical information for GPs who need to discuss e-cigarettes with their patients.

E-cigarettes are essentially battery-operated, nicotine-delivery devices that heat a nicotine solution (e-liquid) into a vapour that the user inhales. They are unique in that they also simulate the behavioural (hand-to-mouth), sensory (throat hit, taste) and social aspects of the smoking experience.

The latest NHMRC advice, issued in April 2017, states there is currently insufficient evidence to demonstrate that e-cigarettes are effective in assisting people to quit smoking, and no brand of e-cigarette has been approved by the TGA for this purpose.[1]

However, medical organisations in other countries have concluded they are a valid therapeutic option for smokers who are unable or unwilling to quit with other therapies.[2,3]

The NHMRC also cautions that "further research is required to enable the long-term safety, quality and efficacy of e-cigarettes to be assessed".

However, although e-cigarettes are not harmless, there is scientific consensus that they are far less harmful than smoking.[2,3]

The harmful effects of smoking are almost entirely due to the tar, carbon monoxide and other toxic chemicals produced by burning tobacco.

The vast majority of these poisons are absent from e-cigarette vapour or are only present at trace levels. Nicotine itself is relatively harmless, except in pregnancy.[4]

GPs should recommend approved medications first for nicotine-dependent smokers wishing to quit, such as nicotine replacement therapy, varenicline and bupropion.[5]

However, current treatments have only modest quit rates, with only 1-2 quit attempts out of 10 succeeding for 6-12 months or more.[6]

As with nicotine replacement therapy, e-cigarettes are likely to be most effective when combined with counselling and support from a GP, and when used in conjunction with other cessation pharmacotherapies.[7]

Which device?

New users may need advice on which device to purchase, which e-liquid to use and how to use the product.

Beginners usually start with a second-generation e-cigarette (see figure). These have a rechargeable battery, refillable tank, heating coil ('atomiser') and a button that is pressed to activate the heating coil when the user breathes in.

The heating coil needs to be replaced every two weeks or so, when the vapour develops a burnt taste. The tank is filled from a refill bottle of e-liquid.

Popular starter models cost between $30 and $40, and are easy to use. It is a good idea to have two devices, in case of device failure, breakage or loss.

Some users prefer first-generation devices ('cigalikes') which are prefilled with e-liquid and are designed to look like cigarettes. These are simple to use, but do not deliver as much nicotine as other models.

More experienced users sometimes favour third-generation devices (personal vapourisers), which have larger batteries, are customisable and may have adjustable power settings.

Figure: (L to R) First-, second- and third-generation e-cigarette devices.

It is best for beginners to purchase e-cigarettes initially from Australian vape shops as staff can provide assistance with selecting a suitable model and advice on how to use it correctly. Most outlets also offer online sales.

Device quality has improved substantially in recent years. Reliable brands include Joyetech, Innokin, Eleaf and Kangertech.

Which e-liquid?

E-liquid typically contains different concentrations of nicotine (from 0.3-2.4%), with flavours dissolved in propylene glycol and vegetable glycerine.

The starting strength of nicotine depends on the level of nicotine dependence. Most users start with a nicotine concentration of 1.2-1.8% although more nicotine-dependent smokers may need 2.4%.

However, the nicotine strength is often initially a matter of trial and error. The amount of nicotine delivered by an e-cigarette is also influenced by the vaping technique (length and frequency of puffs) and the efficiency of the device itself.[8] Nicotine is usually needed as it provides the psychoactive effect and the 'throat hit' that many smokers enjoy.

Users can choose from a wide variety of flavours. Most beginners start with the familiar tobacco flavour and often progress to fruit or sweet flavours, or food and beverage offerings.

Flavours should also be free of diacetyl, which gives a buttery taste. High doses of diacetyl have been associated with a serious lung disease.

There may also be a choice of the ratio of propylene glycol (PG) to vegetable glycerine (VG) in the e-liquid from some vendors. The most common ratios of PG:VG are 70:30 or 60:40, and this can be varied if required. Higher amounts of VG produce more cloud and higher levels of PG enhance flavours.

E-liquid with nicotine can be purchased from Australian or international websites.

Prescribing nicotine

Nicotine is classified as a 'dangerous poison' in the Poisons Standard and it is an offence to sell, possess or use it in all states and territories without a prescription or permit.

GPs may be asked to provide a prescription for nicotine so the patient can purchase nicotine and vape legally (see box for how to write a nicotine prescription).

HOW TO PRESCRIBE NICOTINE E-LIQUID FOR A REFILLABLE DEVICE
Initial prescription (1 month) • Nicotine liquid 1.8%[a] • 90mL[b]
Ongoing supplies (3 months and 3 repeats) • Nicotine liquid 1.8%[a] • 300mL[b] repeat x 3
Notes: a = Nicotine concentrations range from 0.3-2.4%; b = based on an average daily use of 3mL

Nicotine e-liquid can be legally dispensed by a compounding pharmacy when a prescription by a registered Australian medical practitioner is provided. Currently, Nicopharm is the only pharmacy business providing this service.

Alternatively, patients can order e-liquid from overseas websites under the TGA Personal Importation Scheme. Up to three months' supply of nicotine at a time can be imported for a therapeutic purpose, such as smoking cessation. The nicotine prescription is retained by the user in case it is requested by authorities.

Advice on the use of an e-cigarette

It is important to explain to smokers that e-cigarettes may help them to quit, but that they are not yet conclusively established or regulated as smoking cessation aids.

Some people experience mouth and throat irritation and dry cough. However, serious adverse health effects are rare. The long-term adverse effects of e-cigarettes are unknown, although they are highly likely to be much less than the effects of smoking.

Vaping requires a slightly different technique to smoking to achieve adequate nicotine levels. Experienced vapers take longer and slower puffs than when smoking to increase nicotine delivery and to overcome the higher draw resistance of e-cigarettes. Typical puff duration with an e-cigarette is 3-4 seconds, compared with about 2 seconds when smoking.

E-cigarettes can be used as often as needed to manage nicotine withdrawal and urges to smoke. Users can take one or two puffs at a time, or use them like cigarettes, taking 10-15 puffs over a 5-10 minute period. Regular daily use is more effective for quitting than intermittent or non-daily use.[9]

There is a learning curve when starting to use e-cigarettes. Encourage patients to persevere for several weeks as satisfaction and nicotine delivery increase substantially with practice.[10] Users may also need to experiment with different devices, flavours or nicotine strengths before finding a product combination that suits them.

Some smokers quit after their first experience with an e-cigarette and never inhale tobacco smoke again.

Other smokers go through a transition stage of smoking and vaping together (dual use) for a variable period, before finally quitting smoking permanently.[11] Dual use is less harmful than only smoking.[12]

However, the greatest health benefits are seen when people stop smoking tobacco completely, so quitting smoking should always be the end goal.

Patients should aim to stop vaping within 3-6 months if possible. Although vaping is much safer than smoking, vapour does contain some chemicals at low levels. As with nicotine replacement therapy, users can wean off e-cigarettes by progressively reducing the nicotine concentration (for example, reducing to 1.2%, then 0.6%, and finally nicotine-free solutions).

E-cigarettes are less addictive than tobacco cigarettes and are much easier to stop than smoking.[13] However, long-term use is preferable to relapsing to smoking and is a valid form of tobacco harm reduction.[2]

The risks of passive vaping are negligible.[1,2] However, it is best to avoid vaping indoors around children, pregnant women, or others with heart or lung disease. Nicotine e-liquid should be kept out of the reach of children and stored in childproof containers.

Explosions and fires have been reported rarely from e-cigarettes, particularly when the incorrect charger is used. Advise patients to only use the charger supplied with their device and not to leave batteries charging unattended.

New vapers can get valuable support from vape shop staff or online forums. Popular forums in Australia include Vaper Cafe Australia and Vape Train Australia, while E-CigaretteForum is the most popular international forum.

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