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# Striving For Perfection & Achieving Excellence

Incisal Edge News letter

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# President's Message



**Thomas Kitsos, RDT**  
President, Incisal Edge

## Reasons to be cheerful for the future

**T**echnological changes, digitization, the rise of patients' savviness and social media; these are just some of the factors that could have an impact on the future of dentistry. These changes shift not only the way clinicians and technicians operate and how they see their career path, but also how the public views these professions.

I feel, we are working in dentistry during an exciting time. There are brilliant new materials to work with an advancement in technology that creates more efficient workflows and increasingly comfortable experiences.

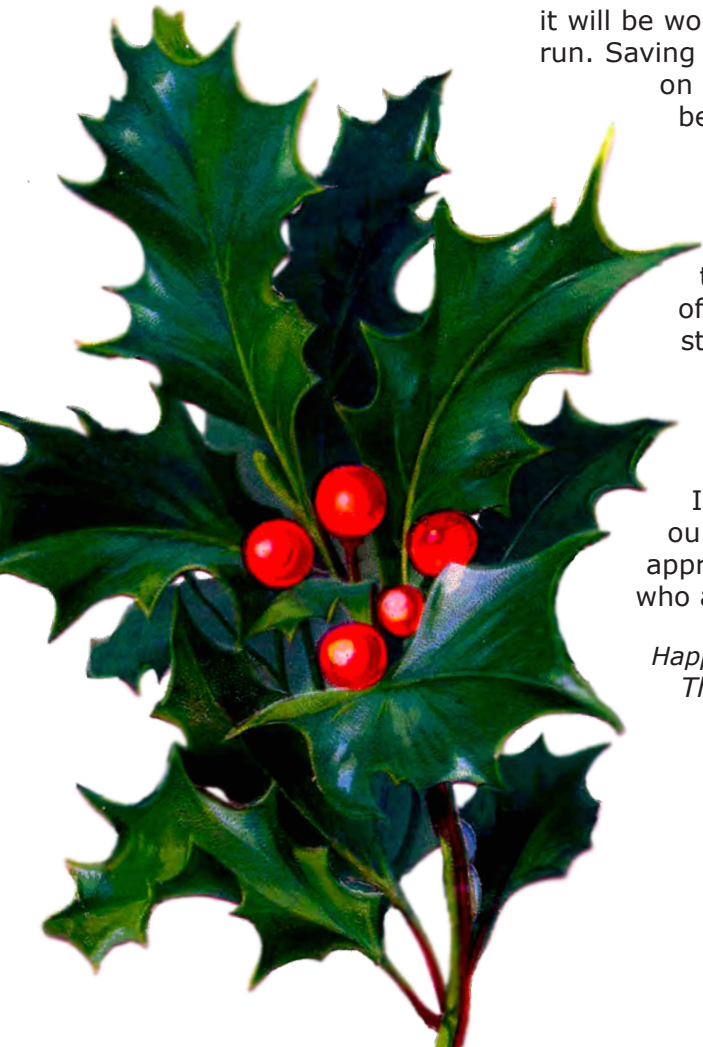
I believe we are also in a time where we can have more fun with our work. Social media is a great way to share cases, to learn from each other and to promote our work. It is also an opportunity to show patients behind the scenes of dentistry and point them towards helpful videos and websites where they can do research before starting treatments.

Yes, there is a learning curve ahead for the dental team: dentists, technicians and auxiliary staff as we embrace a more digital era: however, I feel it will be worth the investment in time, effort and money it in the long run. Saving appointment time, cutting material costs and even saving on shipping fees. We will have financial and environmental benefits.

I think it is amazing to be able to show patients real-time images of their teeth and 3D images of their mouths. Digital dentistry can also help the dentist-technician team by allowing us to save images and scans of patients' teeth indefinitely, rather than trying to physically store models, which may break or be lost over time. This also helps during the consent process, enabling patients to see what we are talking about on the screen and see the outcome of treatment before starting.

It is time to be cheerful not only for the exciting growth of our profession, but also because the holiday season is fast approaching and it is the time for caring and sharing with those who are less fortunate than we are.

*Happy Holidays,  
Thomas*



# Vaping and oral health: It's worse than you think

In the Vol. 4 No.2 issue of the Incisal Edge News Letter we reported on the oral manifestations of disease that may arise from the use of medical grade marijuana. In this issue we report on vaping and its negative impact on oral health.

THE USE OF E-CIGARETTES represents a significant and increasing proportion of tobacco consumption, posing a tremendous threat to oral health.

When compared to traditional tobacco use, an argument that e-cigarette use may be as dangerous to oral health—if not more dangerous—can be made. Using e-cigarettes, referred to as vaping, works by heating a liquid to generate an aerosol that the user inhales. The liquid in the e-cigarette, called e-liquid, is usually made up of propylene glycol, glycerin, flavorings, water, and nicotine, although some users will substitute THC for nicotine. In practice, e-cigarette users tend to reach lower blood nicotine concentrations than tobacco smokers, although it is difficult to make a direct comparison because nicotine concentrations in e-cigarettes vary wide. Individuals vape for a variety of reasons including the following:

- Stop smoking
- The idea that vaping is less harmful than cigarettes
- Circumvention of smoke-free areas
- Recreational enjoyment<sup>(1)</sup>

Researchers and antitobacco advocates are especially concerned that irresponsible marketing has made e-cigarettes appeal to the segment of the young population that had no history of tobacco usage and never intended to start smoking. However, since the introduction of the e-cigarette, that number is now increasing, and it is estimated that 20 percent of high school students may now be using tobacco products.<sup>(2)</sup> E-cigarette use from 2017 to 2018 increased 78% among high school students and 48% among middle school students.<sup>(3)</sup>

## Danger ahead

The first danger of e-cigarettes is associated with the carrier product known as propylene glycol (PG). PG is primarily used in the production of polymers and in food processing. It can be found in various edible items, such as liquid sweeteners, ice cream, and whipped dairy products. PG is a viscous, colorless

liquid that possesses a faintly sweet taste and is one of the major ingredients of the e-liquid used in e-cigarettes. When used orally, the breakdown products of PG include acetic acid, lactic acid, and propionaldehyde, which are all toxic to enamel and soft tissue.<sup>(4)</sup> In addition, PG is a hygroscopic product, which means water molecules in saliva and oral tissue will bond to the PG molecules, leading to tissue desiccation.<sup>(5)</sup>

The result of this is xerostomia, or “dry mouth,” which has been shown to lead to an increase in cavities, gum disease, and other oral health issues.

The second danger of e-cigarettes is due to other major components of e-liquid: glycerin and flavorings. Vegetable glycerin (VG) is a colorless, odorless, viscous, and sweet-tasting liquid. It has a myriad of applications, including medical, pharmaceutical, and personal care. In the food industry, it serves as a humectant, solvent, and sweetener. It is 60% as sweet as sucrose and is not metabolized by cariogenic bacteria, and is therefore thought not to cause cavities. However, studies have shown that the combination of VG with flavorings produces a fourfold increase in microbial adhesion to enamel and a twofold increase in biofilm formation.<sup>(6)</sup>

In addition, a 27% decrease in enamel hardness was demonstrated when flavorings were added to e-liquid as compared to unflavored controls. The viscosity of the e-liquid also allowed *Streptococcus mutans* to adhere to pits and fissures. In other words, e-liquid allows more cavity-causing bacteria to stick to a softer tooth and can lead to rampant decay.

Just recently Vitamin E acetate, which is legal in most USA states but not in Canada, has become a possible culprit in the recent vaping illness outbreak.





Vitamin E acetate is a synthetic form of Vitamin E which is used safely in nutritional supplements and skin creams but it is not safe to inhale.

Another danger associated with e-cigarettes has to do with nicotine. Although the percentage of nicotine is much lower (0.3%–1.8%) than traditional tobacco products, one electronic cartridge (200–400 puffs) can equal the smoking of two to three packs of regular cigarettes. The dangerous effects of nicotine on gum tissue are well known. The literature suggests that nicotine affects gingival blood flow as it is a vasoconstrictor. It also affects cytokine production, neutrophil function, and other immune cell function.<sup>(7)</sup> In addition, nicotine decreases connective tissue turnover. All of this results a much higher chance of developing gum disease and tooth loss.

Finally, recently, a 24-year-old man from Texas was killed when his vape pen exploded, and part of the device wound up severing his jugular vein.<sup>(8)</sup> Although these types of sensationalized deaths are rare with e-cigarettes and vaping pens (only two reported to date), the explosions of these pens are not. The problem lies within the vape pen and the lithium batteries overheating and exploding.<sup>(9)</sup> These explosions are usually attributed to improper charging of the device or have been linked to a type of device called a mechanical mod that has no internal safety and can overheat and explode.<sup>(9)</sup>

## Summary

The bottom line is vaping can be just as dangerous, if not more dangerous, when compared with smoking. The problem is that vaping is thought to be a safer alternative to traditional tobacco products, and companies are adding flavoring products to attract younger generations. According to a 2013–2014 survey, 81% of current youth e-cigarette users cited the availability of appealing flavors as the primary reason for use.<sup>(10)</sup>



## Effects of e-cigarette usage

Many advocates of vaping claim that e-cigarette use and vaping poses 5% the health risks of traditional tobacco smoking and claim its use to be helpful in getting people to quit.<sup>(11)</sup> This particular use does have merit and has helped many individuals quit smoking. Unfortunately, these studies have only analyzed e-cigarette use in former smokers using vaping as a way to stop smoking. The studies have not looked at the health effects of nonsmokers who start vaping because of the perceived innocuous health effects and because it “tastes yummy.” In addition, these studies have not looked at vaping in middle school and high school individuals, the group where e-cigarette use is increasing the most in percentage of use. Because of this, a tidal wave of oral health problems is heading our way.

In the Spring Issue of the 2020 Incisal Edge news letter we will report on edible marijuana products and their impact to oral health.

*\*References are available online: [www.incisaledge.ca](http://www.incisaledge.ca)*



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