

Testimony of Schell Hammel
Owner, The Vapor Bar
Chapter Leader, SFATA
Before House Public Health Committee on CSHB 170
March 11, 2015

Good morning. For the record, my name is Schell Hammel and I am the owner of The Vapor Bar which operates in 7 locations in Texas. I am here today to testify on CSHB 170, and am testifying today as the Chapter Leader for the "Smoke Free Alternatives Trade Association", representing 69 other small business owners who operate retail vapor shops in Texas.

We would like to thank Chairman Crossover and the members of the Public Health Committee for the opportunity to be here and to speak before the committee.

We are here to today to talk about some of the remaining issues of concern we have with the Committee Substitute for HB 170. We would like, first, to thank Chairman Alvarado and her chief of staff for their continued effort in helping us address issues that we have raised, and for the changes made in the committee substitute already presented. They have worked diligently with us to address these issues and we are hopeful that we can continue these efforts.

Before addressing these remaining issues of concerns, we also want to make clear that all of the members of SAFTA support age restrictions on the sale of e-cigarettes or other vaporizing products to minors, and that our concerns with the bill are not related to the goal of restricting access of minors to e-cigarettes or vaporizing products.

We collectively are in agreement about the need for age restrictions to minors and already operate our businesses in this manner. We believe that restricting access to these products by a minor is, in all ways, our obligation and our responsibility, and we support any and all efforts to do so – and all efforts to make other businesses compliant as well.

The issues we still have are first and foremost addressing the treatment of these products within the framework of the statutes that deal with tobacco and tobacco products. The FDA has stated that regulation of these products under the family smoking and tobacco control act of 2009 is inappropriate, and we would like to see the treatment of these products set out in a separate section of the Health Safety Code, instead of being included in the existing statute for tobacco ad tobacco products.

As I mentioned, we are continuing to work with Chairman Alvarado and her office to find ways that address our concerns and minimize applying, what we believe, are unnecessary legacy tobacco provisions to our companies in the process of

applying the age restrictions on sales to minors, which as I said before, we fully support.

We would like to see Section 18, which amends Section 161.122, include a grandfather provision that ensures that current establishments do not have to move because they fall under the new advertising restrictions in the bill.

Sections 34 and 35 of the bill, which amend Sections 161.453 and 161.454, include a requirement for signature upon delivery. We would like to see if we could come to some negotiation solution regarding verification through online sales and delivery. This requirement would add a \$12 charge to every order and inevitably push individuals to purchase their products out of state to forego this charge. It could be detrimental to many small businesses and could stifle small business growth. We believe that, unless this becomes a federal law, making all states adhere to it, it would still not solve our problem with minors being able to order from other states, as this type of delivery cannot be monitored. We would like to find a statewide solution to 3rd party verification online.

Section 37, amending Section 161.456, addresses registration and reporting requirements that we believe pose an unnecessary burden on small businesses. This reporting structure as it is would require us to release personal information, which our customers are very sensitive about, and again, we believe would push our customers to purchase out of state to avoid that privacy concern.

My hope is that we can continue to work Representative Alvarado's office to come to a responsible minor restriction bill that makes sense for all parties involved. They have been very open to this – and we are very appreciative. We will continue to work with them on the issues we touched on here today.

Thank you for your time and your consideration - I would be happy to answer any questions you might have.



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Age Verification

As age-restricted commerce continues to grow, it becomes more important than ever to **protect our youth** and keep the products and services intended for adults out of the reach of children. Given the increasing level of identity theft, just validating that a customer is of age is no longer enough. Determining a minimum age needs to be **combined with gaining a deeper insight** into the validity of an identity along with fraud patterns to help meet compliance and prevent fraud.

IDology sets the industry standard for age verification solutions. That's why **Wine America** endorses us. And why some of the largest restricted product companies in the world choose to use **ExpectID Age**.

ExpectID Age

ExpectID Age was developed to quickly confirm an age while promoting the guidelines set forth in the Children Online Privacy Protection Act (COPPA). Specifically we designed our age verification solution to prevent and deter the activity of under-age consumer not-present activities for companies that want to replicate the protection standards in the bricks and mortar world.

ExpectID Age is combined with the **power of ExpectID**, IDology's identity verification and fraud prevention platform. Customers gain the ability to verify that an individual meets minimum age requirements while also gaining further insight into an identity and potential fraud indicators

"IDology's age verification solution gives wineries an important, effective and efficient way to instantly confirm someone's age when making remote wine sales"

Bill Nelson, President, WineAmerica

How ExpectID Age Works:

Through a sophisticated technology platform, **ExpectID Age** performs an age and identity verification check on your customers. Add in our knowledge-based solution, **ExpectID IQ** for further identity verification.

ExpectID Age Benefits:

- o Helps eliminate age-restricted product sales to minors online
- o Prevents minors from accessing restricted content
- o Increases protection of your business
- o Advanced reporting features help show your due diligence efforts
- o Alerts you to interactions with minors under COPPA
- o Provides flexible limit settings
- o Confirms age based on name and address only
- o More sales from faster approvals
- o Comprehensive fraud platform and dynamic decisioning to deter fraud

Sample Applications:

- o Alcohol and tobacco sales
- o Gaming & lottery
- o Rated entertainment
- o Wireless mobile content
- o Subscription based services
- o Restricted access websites
- o Promotional item requests
- o Gift purchases

Additional Resources:

- o Doing the Right Thing: How Electronic Age Verification Protects Kids Online Whitepaper
- o Age Verification Infographic: The importance of protecting children
- o Case Study: Zoey's Room
- o In the News: IDology Launches Enhancements to ExpectID Age

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ID Verification

Doing business in a customer-not-present environment provides not only **significant revenue opportunities**, but also a lot of risk. Knowing you are dealing with a legitimate, real person substantially minimizes these risks and also gives you the opportunity to drive more revenue without worrying about fraud. At IDology, we maintain a results-driven, entrepreneurial approach to identity verification and fraud prevention that helps you to effectively acquire new customers and build your business.

Fraudsters are constantly finding new ways to access your products and services. However, the tighter the fraud prevention is to protect your business, the more difficult it can be for consumers, the majority of which are legitimate. Therefore, organizations must **balance security with convenience** - enabling robust identity verification processes that ensures the good customers gain access and deters the fraud.

ExpectID

Our real-time and on-demand identity verification solution, **ExpectID**, instantly validates an identity to ensure transactions move forward quicker and without manual intervention. Since we can do this using as little data input as name and address, your customers are comfortable with the amount of information they are required to share. And with industry leading locate rates and built-in fraud detection tools, **ExpectID** is definitely your best choice when you want more revenue.

How ExpectID Works:

ExpectID uses its patent-pending process to access thousands of data sources containing billions of public records to validate an ID. Our identity verification results go beyond basic data matching by providing predictive, intelligent information and analytics around an identity. This enables you to make quicker and smarter decisions on what to do next — approve, deny or escalate. **ExpectID's** identity verification process is so fast that it happens without interruption to the transaction and without customer interaction.

"ExpectID's innovative delivery with exclusive features has proven to be the unsurpassed value and service offering in the ID verification space."

Executive Vice President,
Worldwide Chief Operating Officer, eCommerce Customer

ExpectID Benefits:

- o Drives revenue through faster transaction approvals
- o Improves customer satisfaction by requiring minimal personal identifying information from consumers
- o Increases orders processed per hour by eliminating manual review processes
- o Proven proprietary logic engine results in higher locate rates than other solutions
- o Protects the company from the potential improper use of customer data by employees
- o Provides flexible control for businesses to change rules and criteria settings
- o Move quickly up to a knowledge-based solution when needed
- o Offers strong analytics for detecting and preventing fraud

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Respiratory harm reversal seen in asthmatic smokers on e-cigarettes

By: BRUCE JANCIN, Family Practice News Digital Network

February 24, 2015

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HOUSTON – Asthmatic smokers who switched to electronic cigarettes showed evidence suggestive of respiratory harm reversal in a retrospective pilot study.

“Electronic cigarette use improves respiratory physiology and subjective asthma outcomes in asthmatic smokers. E-cigarettes are a safer alternative to conventional cigarettes in this vulnerable population,” Dr. Cristina Russo declared at the annual meeting of the American Academy of Allergy, Asthma, and Immunology.

Salutary changes following switch to e-cigarettes

	Baseline	12 months
Forced expiratory volume in 1 sec (FEV ₁)	3.3 L/sec	3.4 L/sec
Forced vital capacity	4.28 L	4.43 L
Midrange forced expiratory flow	2.75 L/sec	3.11 L/sec
Methacholine concentration required to produce a 20% fall in FEV ₁ from baseline	1.24 mg/mL	2.56 mg/mL
Asthma Control Questionnaire score	2.03	1.43
Mean conventional cigarettes per day	21.9	3.9

Note: Based on data from 18 smokers with mild to moderate asthma.

Source: Dr. Russo

FRONTLINE MEDICAL NEWS

She said that her small retrospective study is the first to examine the respiratory health impact of a switch to

e-cigarettes by asthmatic smokers.

Every one of the objective and subjective measures of asthma status evaluated in the study showed statistically significant improvement 1 year after patients adopted e-cigarettes, and the e-cigarette users' consumption of conventional cigarettes dropped precipitously, reported Dr. Russo of the University of Catania (Italy).

She and her colleagues in the university asthma clinic have taken to suggesting the use of battery-powered e-cigarettes to their asthmatic smokers who haven't benefited from or aren't interested in trying the more conventional approaches to smoking cessation or reduction, including medications. While abstinence from cigarette smoking is best, the available evidence indicates e-cigarettes are at least 95% less harmful than conventional cigarettes in the general population, she said.

The study included 18 smokers with mild to moderate asthma who switched to e-cigarettes and underwent spirometry and other testing at baseline and 6 and 12 months of follow-up. Ten patients switched over to e-cigarettes exclusively, while the other 8 used both conventional and e-cigarettes.

Among the highlights: The mid-range forced expiratory flow (25%-75%) showed a major, clinically important improvement, increasing from 2.75 L/sec to 3.11 L/sec. And patients' mean self-reported conventional cigarette consumption dropped from 21.9 per day at baseline to 5 at 6 months and 3.9 per day at 12 months.



Dr. Cristina Russo

Among the group at large, no significant change was seen in the frequency of asthma exacerbations resulting in hospitalization. However, among the frequent exacerbators – the six patients with two or more exacerbations during the 6 months prior to baseline – exacerbation frequency was cut in half both 6 and 12 months following the switch to e-cigarettes.

Dr. Russo's presentation sparked vigorous audience discussion. Several physicians cited a Centers for Disease Control and Prevention warning about the unknowns regarding e-cigarette safety, and one allergist declared he didn't think physicians should ever encourage patients to smoke anything. But others defended the "lesser of two evils" approach adopted by Dr. Russo and coworkers.

Dr. Russo noted that the prevalence of smoking among asthma patients is similar to that of the general population. She called smoking and asthma "a dangerous liaison." Smoking accelerates asthma patients' decline in lung function, worsens persistent airways obstruction, and increases insensitivity to corticosteroids.

Her study was supported by a university grant and the Italian League Against Smoking. She reported having no financial conflicts.

Article

Comparison of the Cytotoxic Potential of Cigarette Smoke and Electronic Cigarette Vapour Extract on Cultured Myocardial Cells

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Received: 16 August 2013; in revised form: 30 September 2013 / Accepted: 12 October 2013 /

Published: 16 October 2013

Abstract: *Background:* Electronic cigarettes (ECs) have been marketed as an alternative-to-smoking habit. Besides chemical studies of the content of EC liquids or vapour, little research has been conducted on their *in vitro* effects. Smoking is an important risk factor for cardiovascular disease and cigarette smoke (CS) has well-established cytotoxic effects on myocardial cells. The purpose of this study was to evaluate the cytotoxic potential of the vapour of 20 EC liquid samples and a “base” liquid sample (50% glycerol and 50% propylene glycol, with no nicotine or flavourings) on cultured myocardial cells. Included were 4 samples produced by using cured tobacco leaves in order to extract the tobacco flavour. *Methods:* Cytotoxicity was tested according to the ISO 10993-5 standard. By activating an EC device at 3.7 volts (6.2 watts—all samples, including the “base” liquid) and at 4.5 volts (9.2 watts—four randomly selected samples), 200 mg of liquid evaporated and was extracted in 20 mL of culture medium. Cigarette smoke (CS) extract from three tobacco cigarettes was produced according to ISO 3308 method (2 s puffs of 35 mL volume, one puff every 60 s). The extracts, undiluted (100%) and in four dilutions

for EC liquid production, which would contain significant amounts of tobacco impurities. The same applies for other liquid constituents [45]. Finally, studies on the underlying causes for the difference in cytotoxic potential of EC samples should be undertaken, evaluating the quality and quantity of flavourings used among other factors. This study examined only the end-result of exposure, without evaluating the cause for the differences in cell survival.

5. Conclusions

In conclusion, from 20 commercially-available EC liquids that were tested in vapour form, four were found to be cytotoxic on cultured cardiomyoblasts. Cytotoxicity was mainly observed in most (but not all) samples produced by using tobacco leaves, while one sample using food-approved flavouring was marginally cytotoxic. EC vapour production by using higher-voltage devices caused a decrease in cell survival. Overall, EC vapour extracts showed significantly higher cell viability compared to CS extract, based on a realistic-use rather than a standardized comparative level of exposure. This supports the concept that ECs may be useful as tobacco harm reduction products; however, more studies are needed, especially in clinical level, in order to evaluate the effects of EC use on human health.

Acknowledgments

Funding: The study was funded in part by the Greek Association of E-cigarette Businesses (SEEHT). *Role of the funding source:* The study was investigator-initiated and investigator-driven. The sponsor funded the expenses of the laboratory (ABICH S.r.l, Verbania, Italy) where the experiments were performed. The sponsor had no involvement in the study design, data collection, analysis and interpretation, writing or approving the manuscript and decision to submit the manuscript for publication.

Conflicts of Interest

None reported by all authors. No author has received any financial or other compensation for this study.

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OPINION

The E-Cigarette Gateway Myth

The evidence is lacking that people who use them go on to become addicted to cigarette smoking.

By **MICHAEL B. SIEGEL**

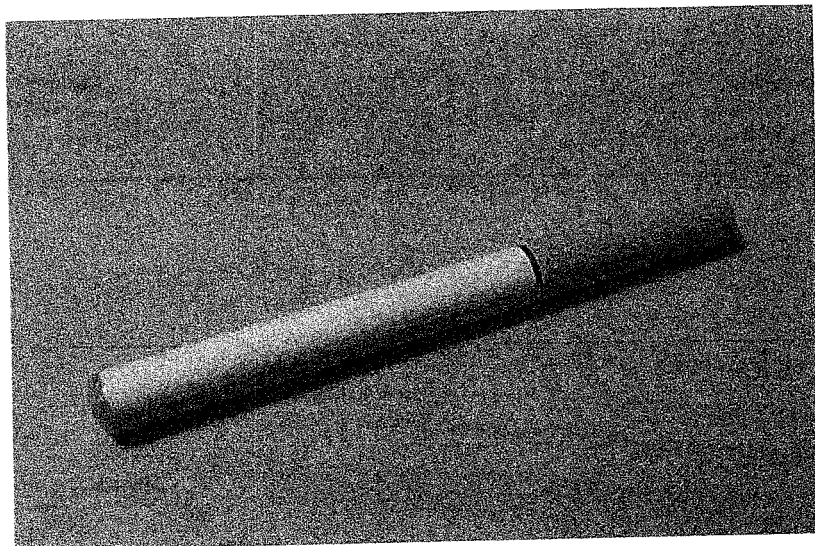
Aug. 5, 2014 8:05 p.m. ET

Fifty years after the Surgeon General's landmark report on smoking and health, cigarettes remain the leading preventable cause of death in the U.S., and some 40 million Americans still smoke.

Enter the electronic cigarette, which has enormous potential to improve public health because many smokers can replace the deadly cigarettes that burn tobacco, producing tens of thousands of toxins, including more than 60 known human carcinogens. The e-cigarette is a battery-powered, smoke-free device that delivers nicotine vapor without most of the carcinogens produced by tobacco combustion. Yet it is feared and stigmatized by legislators and health officials, and may even be regulated out of existence.

One reason is the so-called gateway theory, which has been the subject of newspaper headlines and city council meetings, and even prompted a Senate investigation. Last September, in an interview with Medscape (a website for medical professionals) Thomas Frieden, director of the Centers for Disease Control and Prevention said that "many kids are starting out with e-cigarettes and then going on to smoke conventional cigarettes." The same month he was quoted by the Associated Press as warning that e-cigarettes are "condemning

many kids to struggling with a lifelong addiction to nicotine.”



E-cigarette GETTY IMAGES

The gateway hypothesis is a myth. The evidence shows that very few nonsmokers “vape.” The primary reason people use e-cigarettes is to quit or cut back on smoking conventional cigarettes. Moreover, of the few nonsmoking youths who do experiment with

e-cigarettes, there is currently no evidence that they subsequently progress to cigarette smoking.

The first study to examine the gateway hypothesis was by Dr. Ted Wagener from the University of Oklahoma Health Sciences Center. His research, presented at the annual meeting of the American Association for Cancer Research last October, found only one young person out of a sample of 1,300 college students who initiated nicotine use with vapor products and then went on to smoke cigarettes.

In June, Dr. Constantine Vardavas of the Harvard School of Public Health published a broader analysis of 26,566 European smokers in the journal *Tobacco Control*. It showed that e-cigarette users are likely to be heavy smokers who have tried to kick the cigarette habit over the prior year. Dr. Vardavas and his two colleagues found that just 1% of nonsmokers tried vaporizing products like e-cigarettes.

Cigarette smoking among young people, whom public-health experts are rightfully focused on protecting from use of either type of product, continues to decline. The CDC’s National Youth Risk Behavior Survey shows that teenage smoking has dropped over the last several years, falling to 15.7% in 2013 from 18.1% in 2011. The smoking rate among U.S. high-school students in 2013 was the

lowest level since the survey began in 1991. Meanwhile, experimentation with e-cigarettes among high-school students doubled from 2011 to 2012.

Recent data from the U.K. confirm the same phenomenon. Despite a dramatic increase in e-cigarette experimentation among young people, smoking rates in England in 2013 reached a historic low, according to a report from the U.K.'s Health and Social Care Information Centre.

By promoting a message that flies in the face of the government's own statistics—which show a sharp decline in youth smoking concurrent with a dramatic increase in e-cigarette experimentation—some federal public-health officials appear to be trying to create a "gateway" narrative where none exists.

The government has an obligation to carefully scrutinize any new consumer product that is presented as an alternative to smoking. But government agencies and public-health officials have no business discouraging or disparaging e-cigarettes in the absence of any data that they are causing harm. This is especially the case when these products have so much potential to curb cigarette smoking, the public health scourge that still claims half a million lives a year.

Dr. Siegel is a professor at Boston University's School of Public Health. He has 25 years of experience in tobacco control, including two years at the Centers for Disease Control and Prevention.

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Article Link: <http://www.webmd.com/smoking-cessation/news/20140903/e-cigarette-vapor-may-be-less-toxic-than-tobacco-smoke-study?page=2>

Smoking Cessation Health Center

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E-Cig Vapor May Be Less Toxic Than Tobacco Smoke

But researcher says the devices should still be regulated

WebMD News from HealthDay

By Randy Dotinga

HealthDay Reporter

WEDNESDAY, Sept. 3, 2014 (HealthDay News) -- Secondhand vapor created by one brand of electronic cigarette harbors fewer hazardous chemicals than regular cigarette smoke, although the researchers report the finding doesn't leave e-cigarettes in the clear.

The study has caveats. For one, it doesn't examine which hazardous chemicals in e-cig vapor actually make it into the lungs of people nearby. And the scientists only looked at indoor smoking, which is often banned in the United States.

Still, the findings indicate that "generally speaking, e-cigarettes are safer than traditional cigarettes," said study author Arian Saffari, a graduate student and fellow with the department of civil and environmental engineering at the University of Southern California. However, "we can still find some hazardous material in e-cigarette smoke," Saffari noted. "And therefore we cannot leave e-cigarettes unregulated."

The World Health Organization and the American Heart Association (AHA), along with other health agencies, recently called for the regulation of e-cigarettes. The AHA wants the U.S. Food and Drug Administration to ban the marketing and sale of e-cigarettes to young people. The FDA first proposed a rule last April that would allow it to regulate e-cigarettes as it does tobacco products, but that proposal has not been finalized yet.

The AHA has noted that a recent study found that youth exposure to e-cigarette advertising rose 250 percent from 2011 to 2013, and now reaches roughly 24 million young people.

In the new study, researchers analyzed the air in an office space at a cancer research center in Milan, Italy. Two men and a woman smoked either regular cigarettes or an e-cig known by the brand name Ovale that's

sold around the world.

With the help of battery power, e-cigs create a nicotine vapor that users inhale. Sometimes called "vaping," e-cigarettes are touted as a safer alternative to smoking cigarettes and even as an aid to help smokers quit. But there's debate about whether these claims are true.

The Italian study found that hazardous substances known as "particulates" -- liquids or solid particles -- were 10 times higher in the cigarette smoke than in the e-cig vapor.

continued...

But the e-cig vapor was still unhealthy. Researchers found that it contained levels of "heavy metals," such as chromium and nickel, possibly released by the cartridge that holds a nicotine solution in the e-cig, Saffari said. "In terms of their health effects, some of these metals are extremely toxic even in very low amounts," he added.

Saffari suggested that e-cig manufacturers could limit the heavy metals in vapor by using higher-quality materials for cartridges.

Already being done!

Peter Hajek, a professor of clinical psychology at Barts and The London Queen Mary's School of Medicine and Dentistry at the University of London, is not worried by the levels of heavy metals in the e-cig vapor.

"The study shows that regarding the most dangerous chemicals released by tobacco smoke, e-cigarette vapor contains none. Other chemicals it does contain are mostly a small fraction of those from cigarettes, and the metal compounds it releases are at levels unlikely to pose a risk," said Hajek, who studies tobacco risks.

"The conclusion should be that e-cig vapor is unlikely to pose any risk to bystanders. This tallies with other studies conducted so far," he noted.

Gregory Conley, president of the American Vaping Association, said the level of heavy metals and other chemicals in e-cigarette vapor is similar to that of inhalable products other than cigarettes, in particular the FDA-approved Nicorette Inhaler that's used to help people quit smoking.

In the big picture, he said, "this study, as well as hundreds of other studies, provide clear evidence that e-cigarettes are far, far less hazardous than smoking, likely in the range of 98 to 99 percent."

The study was published Aug. 22 in the online edition of the journal *Environmental Science: Processes & Impacts*.

Slideshow: 13 Best Quit-Smoking Tips Ever

Top Picks

Are You At Risk for AAT Deficiency?

Are You At Risk for COPD? Find Out in 5 Questions

10 Worst Cities for Asthma

7 Tips for Fresh, Up-Close Breath

Bronchitis: See What Happens

Surprising Ways Smoking Affects Your Looks

SOURCES: Arian Saffari, graduate student and fellow, department of civil and environmental engineering, University of Southern California, Los Angeles; Peter Hajek, Ph.D., professor, clinical psychology, Barts and The London Queen Mary's School of Medicine and Dentistry, University of London; Gregory Conley, president, American Vaping Association, Hoboken, N.J.; Aug. 22, 2014, *Environmental Science: Processes & Impacts*, online

HealthDay

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My Notes:

Principles to Guide AAPHP Tobacco Policy

1. AAPHP tobacco policy should be based on the best available scientific evidence.
2. Tobacco use is a major cause of illness and death in the United States.
3. Almost all tobacco-attributable mortality in the USA is due to cigarette smoking.
4. While nicotine is the primary addictive substance in cigarette smoke, other factors substantially enhance the addictiveness of cigarettes. These factors include habituation to the cigarette handling ritual, psychological appeal based on advertising themes, the strength and speed of the nicotine "hit," and other factors. This set of factors make cigarettes the most addictive of tobacco/nicotine products.
5. Substances in the cigarette smoke, other than the nicotine, inhaled deep into the lung, cause most of the tobacco-attributable illness and death in the United States.
6. Smoke-free tobacco/nicotine products, as available on the American market, while not risk-free, carry substantially less risk of death and may be easier to quit than cigarettes.
7. Since susceptibility to tobacco/nicotine addiction is strongest in adolescence and early adulthood, measures to prohibit sale of tobacco/nicotine products without a physician prescription should be maintained and strengthened.
8. The healthiest option is to never initiate tobacco/nicotine use.
9. For those already using a tobacco/nicotine product, the best option is to quit.
10. Harm Reduction: Smokers who have tried, but failed to quit using medical guidance and pharmaceutical products, and smokers unable or uninterested in quitting should consider switching to a less hazardous smoke-free tobacco/nicotine product for as long as they feel the need for such a product. Such products include pharmaceutical Nicotine Replacement Therapy (NRT) products used, off-label, on a long term basis; electronic "e" cigarettes, dissolvables (sticks, strips and orbs), snus, other forms of moist snuff, and chewing tobacco.
11. Harm reduction should be considered as an addition to current tobacco control policies and programming and should be done in a way that will minimize initiation of tobacco/nicotine use, maximize quit rates and assure that dual use does not increase potential harm to the user.
12. Mandated health related warnings on tobacco/nicotine products should be periodically reviewed to assure that each warning reflects a real-life hazard posed by the product in question and is not misleading in any way.
13. AAPHP tobacco policy should be intended to reduce the burden of illness, death and property damage attributable to tobacco products in American society. In pursuit of this goal, AAPHP must consider the needs and risks of current tobacco users, those potentially exposed to tobacco smoke, and those at risk of initiating future use of tobacco/nicotine products.
14. The tobacco page of the AAPHP web site should be configured to serve as an informational resource to physicians, other health-related organizations and the general public.

AAPHP Tobacco Documents

AAPHP 2008 Harm Reduction and Resolutions White Paper [AAPHP 2008 Harm Reduction and Resolution White Paper](#)

AAPHP 2010 Harm Reduction Update <http://www.aaphp.org/special/joelstobac/2010/harmredcnuupdateiuly2010.html>

AAPHP Statement on the State Regulation of E-cigarettes - [This document is undergoing review at this time.](#)

American Association of Public Health Physicians, Tobacco Control Task Force (AAPHP) - Citizen Petition Document ID: FDA-2010-P-0095-0001 Docket ID: FDA-2010-P-0095: available at <http://www.regulations.gov/#!documentDetail;D=FDA-2010-P-0095-0001> Also available here [20100207FDAPetition1.pdf](#) . A second related petition is available here: [20100207FDAPetition2.pdf](#) FDA Petition Summary: [20100207FDAPetitionSummary.pdf](#) References to materials included as attachments to FDA Petitions [20100208Petition_TOC.pdf](#) Attachment Set A1-A40 [A1-A40.pdf](#) For material from all other attachment sets and for additional information please contact Joel L. Nitzkin, MD at jl-n-md@mindspring.com.

For additional background information relative to Tobacco Harm Reduction, plus brief narratives and bibliographic references to deal with the objections most commonly raised by opponents to Tobacco Harm

CERTIFICATE OF ANALYSIS

Product Name:	Lot Number:	CAS No.	Catalog No.
Nicotine USP/EP	NI004/14	54-11-5	NI160
Manufacture Date:	Expiration Date:	Formula:	Molecular Weight
April, 2014	April, 2019	C10H14N2	162.23
Test	Specifications	Test Method	Results
Description	Colorless to brownish viscous liquid		Colorless viscous liquid
Identification by U.V	U.V absorption spectrum of the test solution and the standard solution exhibits maxima and minima at the same wavelength.	USP36 - <197U>	Complies
Specific Optical Rotation at 25°C±0.5°C	Between -130° and -143°	USP36 - <781S>	-140°
Water Content	Not more than 0.5% w/w	USP36 - <921>	0.1% w/w
Heavy Metals	Not more than 0.002%	USP36 - <231>	Complies
RELATED SUBSTANCES BY HPLC			
Specified Impurities			
Anatabine	Not more than 0.30%	EP Impurity A	≤0.0067%
β-Nicotyrine	Not more than 0.30%	EP Impurity B	≤0.0304%
Cotinine	Not more than 0.30%	EP Impurity C	≤0.0035%
Myosmine	Not more than 0.30%	EP Impurity D	≤0.07%
Nicotine N' oxide	Not more than 0.30%	EP Impurity E	≤0.0019%
Normicotine	Not more than 0.30%	EP Impurity F	≤0.0307%
Anabasine	Not more than 0.30%	EP Impurity G	≤0.0044%
Any Unspecified Impurities (Single Greatest)	Not more than 0.10%		None Detected
Sum of Impurities (Identified & Unidentified)	Not more than 0.80%		0.07%
Assay by Potentiometer on anhydrous basis	Not less than 99.0% and not more than 101.0%	USP36 - <541>	99.9%
ADDITIONAL TESTS			
Total Viable Count*			
a) Total Bacterial Count	NMT 2000 cfu/gm		None Detected
b) Total Fungal Count	NMT 200 cfu/gm		None Detected
Pathogens Tests*			
a) E.coli	a) Should be absent		None Detected
b) Salmonella species	b) Should be absent		None Detected
c) Pseudomina s aeruginosa	c) Should be absent		None Detected
d) S.aureus	d) Should be absent		None Detected
e) Bile Tolerant Gram Negative Bacteria	e) Should be absent		None Detected
f) Candida Albicans	f) Should be absent		None Detected
Conclusion:	Meets USP 36/EP Standards		
*Additional Tests to be performed for once in five batches Test carried out as per EP which meets USP requirements as well.			

Prepared By:
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Approved By:
Daryl DeBonte
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Quality Control Manager

CERTIFICATE OF ANALYSIS

Product Name:	Lot Number:	CAS No.	Catalog No.
GLYCERINE 99.7% MIN. USP KOSHER	232-HTT-312	56-81-5	GLK3587BA
Manufacture Date:	Expiration Date:	Formula:	Molecular Weight
June 24, 2014	June 24, 2016	C3H8O3	92.10
Test	Specifications	Test Method	Results
Appearance	Clear & Free of suspended matter	*Visual Inspection	Clear & free of suspended matter
Identification (A) – IR	Pass	*USP 36 (Method 197F)	Pass
Identification (B) – Limit of EG and DEG	0.10% Max.	*USP 36	<0.10%
Identification (C) – Confirmation of Glycerine by GC	Pass	*USP 36	Pass
Diethylene Glycol	0.1% Max.	*USP 36	<0.1%
Ethylene Glycol	0.1% Max.	*USP 36	<0.1%
Assay, Anhydrous Basis	99.70 – 101%	*USP 36	99.75%
Color (APHA)	10 Max.	In house Method based on ASTM D1209-93	5.0 APHA /PT-Co
Arsenic	1.5ppm Max	*ICP	<1.5ppm
Specific Gravity @ 25° C	1.2612 Min.	*USP 36 (Method 841)	1.2614
Residue on Ignition	0.0100% Max.	*USP 36 (Method 281)	0.0021%
Chloride	10ppm Max.	*USP 36 (Method 221)	<10ppm
Sulfate	20ppm Max.	*USP 36 (Method 221)	<20ppm
Heavy Metals	5ppm Max.	*USP 36 (Method 231)	<5ppm
Limit of Chlorinated Compounds	30ppm Max.	*USP 36	<30ppm
Fatty Acids & Esters (0.5N NaOH)	1.00ml Max.	*USP 36	0.29ml
Water	.50% Max.	*USP 36 (Method 921-1)	0.10%
Individual Impurity	0.1% Max.	*USP 36	<0.1%
Total Impurities; Including DEG	1.0% Max.	*USP 36	<1.0%
Organic Volatile Impurities	Meets requirements as per test methods	USP 31 (Method 467-IV)	Meets requirements as per test methods
<p>“*As per the USP Test Methods listed above, the above referenced sample is certified to meet or exceed all of the specification requirements as set by the U.S Pharmacopeia 36th Edition.”</p>			

Approved By:

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Quality Control Manager

Electronic cigarettes: review of use, content, safety, effects on smokers and potential for harm and benefit

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ABSTRACT

Aims We reviewed available research on the use, content and safety of electronic cigarettes (EC), and on their effects on users, to assess their potential for harm or benefit and to extract evidence that can guide future policy. **Methods** Studies were identified by systematic database searches and screening references to February 2014. **Results** EC aerosol can contain some of the toxicants present in tobacco smoke, but at levels which are much lower. Long-term health effects of EC use are unknown but compared with cigarettes, EC are likely to be much less, if at all, harmful to users or bystanders. EC are increasingly popular among smokers, but to date there is no evidence of regular use by never-smokers or by non-smoking children. EC enable some users to reduce or quit smoking. **Conclusions** Allowing EC to compete with cigarettes in the market-place might decrease smoking-related morbidity and mortality. Regulating EC as strictly as cigarettes, or even more strictly as some regulators propose, is not warranted on current evidence. Health professionals may consider advising smokers unable or unwilling to quit through other routes to switch to EC as a safer alternative to smoking and a possible pathway to complete cessation of nicotine use.

Keywords Electronic cigarettes, harm reduction, prevalence, product safety, regulation, smoking cessation.

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Submitted 3 May 2014; initial review completed 13 May 2014; final version accepted 12 June 2014

INTRODUCTION

Electronic cigarettes (EC) are devices designed to deliver nicotine without tobacco smoke by heating a solution of nicotine, flavouring, additives and propylene glycol and/or vegetable glycerine. Invented by Lik Hon in Hong Kong in 2003 [1], they became available in Europe and the United States in 2006 [2]. EC are undergoing a rapid evolution driven by competition. There are dozens of manufacturers and hundreds of EC models. Tobacco manufacturers joined this market in 2012, when Lorillard bought Blu e-cigs (<http://investors.lorillard.com/investor-relations/news/2012/default.aspx>).

During the past few years EC have been gaining popularity, primarily among smokers who want to reduce the risks of smoking [3,4]. The growing sales of EC, driven initially by word of mouth and user enthusiasm, are now seen by financial analysts to threaten sales of cigarettes

[5,6]. The reaction by the public health community to this unfolding phenomenon has ranged from enthusiastic support to vigorous opposition. Regulatory bodies around the world are deciding whether to allow EC to compete with cigarettes freely, submit them to a more restrictive regulation than cigarettes, e.g. as medicinal devices, or ban them. Their verdicts will probably feature among the key public health decisions of our time.

Commentators in favour of EC restrictions believe that the product has a potential to increase cigarette use by re-normalizing smoking, i.e. reducing motivation of smokers to quit completely, providing a gateway to smoking for non-smokers or facilitating an increase in smoking prevalence indirectly. They argue that EC should be banned or submitted to much stricter controls than smoked tobacco. They emphasize evidence that nicotine can be addictive and warn that health risks from long-term EC use may yet emerge (e.g. [7–10]).

EC advocates believe that, on the contrary, the product has a potential to reduce and, if it continues to develop, eventually end cigarette use by allowing smokers to switch to a safer product. They argue that achieving this potential requires little government expenditure and involvement and that it is in the public health interest to allow EC to compete with cigarettes in the market-place. They emphasize evidence that use of nicotine without tobacco toxicants poses minimal risks, except in the case of well-defined subpopulations such as pregnant smokers (e.g. [11–15]).

Both sides of the debate agree that any policy and regulatory decisions affecting EC should be guided by evidence. This review summarizes the literature on patterns of EC use, content, safety and effects on users and considers the implications of the evidence.

Search strategy and selection criteria

We searched Medline, PsycINFO, EBM reviews (including Cochrane Methodology Register, Health Technology Assessment and NHS economic evaluation database), Google Scholar, EMBASE and CINAHL (to February 2014). We combined the following search terms 'e-cig*' OR 'elect* cigar*' OR 'electronic nicotine'. We also searched the reference lists of articles identified by this search strategy and selected those that addressed the key themes of the review. After removing duplicates, this search identified 286 records that were screened independently by two reviewers (P.H. and H.M.). Most papers were opinion-pieces. Ninety-nine full-text papers were reviewed. Papers were deemed relevant ($n = 81$) to this review if they presented original data and provided evidence that could guide regulatory decisions.

Note that we use the words 'EC' for electronic cigarettes and 'cigarettes' for conventional cigarettes. EC use is increasingly labelled as 'vaping' and EC users as 'vapers', but we are using EC use/EC user throughout.

SURVEYS OF EC USERS

Prevalence of EC use and characteristics of users

EC use was negligible in 2008–09, but increased steadily over the following years: in the United States in the general population it increased from 0.6% in 2009 to 2.7% in 2010 [16] and to 6.2% in 2011 [17]. In the United Kingdom, use in smokers increased from 2.7% in 2010 to 6.7% in 2012 [2] and to 11% in 2013 [18]. About one-third (30% to 38%) of ever users used EC within the past 30 days [2,16,17,19–23]. Some 12–14% of smokers who tried EC progressed to daily use [23,24].

EC users tend to be younger, more educated and have higher income than non-users [17,25,26]. There is no clear association between e-cigarette use and gender

[20,26–28]. Most of these surveys are from Europe and the United States, and the results may not apply to other countries.

EC experimentation and regular use by never-smokers

Studies conducted to date have found that the prevalence of EC experimentation (ever use) in never-smokers ranged from 0.1 to 3.8% (median 0.5%), and use in the past 30 days ranged from 0 to 2.2% (median 0.3%) [2,16,17,20,22,23,25,27–29]. A recent report on EC use among US children was interpreted as showing worryingly high levels of use [30], but extrapolated data show that among middle school students in 2012, 0.5% of never smokers tried EC. The figure for high school students was 0.7%. Among children, current use was confined to those who have already tried smoking [18]. 'Current use' in non-smokers (any use over the past 30 days, not daily use) was reported in only 0.04% [31]. A study assessing daily use in non-smokers found none [23]. For comparison, 39.5% of twelfth-graders (17–18-year-olds) tried cigarettes in the United States in 2011 [32], and about half of children who try conventional cigarettes progress to regular use.

Surveys of regular EC users

A number of studies recruited EC users over the internet. These results need to be interpreted with caution, because internet surveys attract primarily EC enthusiasts [3].

The most popular e-liquids had a nicotine content of 18 mg/ml [3,33–37], and the most popular flavours were tobacco, mint and fruit [3,4,36,38].

Users reported consistently that EC helped them either to quit smoking (42–99%) [3,4,34–37,39] or to reduce it (60–86%) [3,24,36,39]. EC were perceived as less addictive than cigarettes [35,37], and time from waking up to use was longer for EC than for cigarettes [36,37]. Only 18% reported that they craved EC as much as tobacco [36].

Summary

EC use is on the increase. Experimentation by children is a small fraction of experimentation with cigarettes, and daily use in never-smokers has not been documented so far. It appears that some 12–14% of smokers who try EC become daily users, suggesting that EC in their current form are less satisfactory than cigarettes to most users. In surveys, regular EC users report that these devices helped them to limit or stop smoking and they perceive EC as less addictive than cigarettes.

EC CONTENT

The interpretation of studies of the chemical composition of the e-liquids and aerosols is complicated by the fact that there exist many brands and models with different e-liquids, batteries, heating elements, nicotine concentrations and flavourings, although most of them use e-liquids from a small number of manufacturers in China, the United States and Europe [40]. It is also important to differentiate between the chemical compositions of e-liquid and aerosols that users inhale.

Propylene glycol (PG) and glycerol

The results of extensive studies on animals, reviewed elsewhere [40,41], suggest that PG should be safe for inhalation in humans, although in children, chronic exposure to PG in indoor air may exacerbate or induce rhinitis, asthma, eczema and allergic symptoms [42]. Acute and chronic respiratory effects, including reduced lung function, were reported in people chronically exposed to theatre fogs containing PG [43]. PG has a desiccation effect, which is why EC users sometimes report dry throat and mouth [3,4,36,37].

Glycerol (purified vegetable glycerine) is non-toxic, but can produce toxic acrolein when heated to higher temperatures. Acrolein was detected in the aerosol of some EC brands, but at levels much lower than in cigarette smoke [44]. Acrolein intake by smokers given glycerol-based EC was reduced by 60% in those who continued to smoke (EC use was accompanied by a reduction in smoking) and by 80% in those who stopped smoking [45].

Impurities and toxicants in e-liquids

Nicotine in e-liquids, like nicotine in nicotine replacement treatment (NRT), is extracted from tobacco and thus includes impurities such as cotinine, anabasine, anatabine, myosmine and beta-nicotyrine [46,47]. An early study found nitrosamines and tobacco-specific impurities 'at very low levels' and diethylene glycol in one of the cartridges [48]. Later studies of other products found no evidence of diethylene glycol [46]. No tobacco-specific nitrosamines or polycyclic aromatic hydrocarbons were found in 20 EC products [49], while an analysis of samples from 11 manufacturers [50] found nitrosamine concentrations approximately 1000 times lower than those in smokeless tobacco products [51]. Analysis of EC aerosol (as opposed to e-liquid) identified low levels of some toxicants [44]. In some cases these were comparable to levels found in NRT, which are considered safe, and overall at levels 9–450 times lower than in cigarette smoke [44].

Metal particles were found in the liquid and aerosol from an EC model [52], but the report did not assess the

clinical significance of the levels detected. These levels are 10–50 times below the levels allowed in inhalation medicines [53].

EC liquid can be cytotoxic in *in-vitro* studies (e.g. [54]) but users inhale aerosol, not liquid. Aerosol from one of 21 e-liquids was cytotoxic, due to the flavouring containing substances from roasted coffee beans, but this was 800 times less cytotoxic than tobacco smoke [55].

PG and glycerol inhalation is likely to pose a low risk, although their long-term effects as well as the effects of long-term inhalation of EC flavourings and additives need to be studied.

Passive exposure

Most second-hand smoke from cigarettes is generated as sidestream smoke from the tip. EC do not generate sidestream aerosol. It is only what is exhaled by the users that enters the ambient air. EC aerosol does not include most of the chemicals found in tobacco smoke or the 'sidestream' smoke, but users exhale nicotine and some other particles, primarily consisting of flavours, aroma transporters, glycerol and PG [56–59].

No long-term study has been conducted so far, but pollutant levels are much lower than from cigarettes and are likely to pose a much lower risk (if any) compared to cigarettes [41,56].

Labelling of nicotine content of e-liquid

Nicotine is the addictive chemical in tobacco smoke, but its involvement in smoking-related harm (outside pregnancy) is very small, if any, compared to cigarette smoking [60,61].

In several reports, nicotine was detected in products labelled as zero nicotine. In one study, a manufacturer included similar nicotine levels in differently labelled cartridges, including zero nicotine [47]. In all other cases, nicotine detected in zero-nicotine cartridges was only at trace levels and unlikely to have any psychoactive effects [47–49].

For the major e-liquid brands tested thus far, the labelling of nicotine content is accurate [46] and the nicotine content across cartridges and across batches has good consistency [62,63], although labelling for some brands can be vague, inaccurate or absent. However, beyond the general rule that EC users cannot obtain high nicotine levels if there is too little nicotine in the e-liquid, there is little relationship between nicotine in cartridges and nicotine in aerosol [63]. This is because the mechanical features of EC, such as the size of the battery, the nature of the heating element and the ventilation holes, etc. play a major role. In addition, individual inhalation characteristics have further substantial influence on nicotine levels delivered to the user (see below).

See Certificate of Analysis
NRT refers to Nicotine replacement therapy (nicotine e.c.)

Summary

E-liquids and aerosols tested so far contain some toxicants in concentrations much lower than in tobacco smoke and negligible concentrations of carcinogens. Passive exposure to EC aerosol can expose non-users to nicotine, but at concentrations unlikely to have any pharmacological significance. Humectants in EC appear to be safe for inhalation, but the effects on EC users with asthma and other respiratory diseases are not known. Nicotine intake from EC is determined by a host of factors in addition to nicotine content of the e-liquid.

EC SAFETY

Adverse events

None of the experimental [37,59,64–73] or prospective follow-up studies [74,75] reported serious adverse events (SAEs). Adverse events (AEs) were mild to moderate and included symptoms such as mouth and throat irritation and dry cough, similar to those reported in surveys of EC users [3,4,35–37]. There were no significant differences in AEs between EC and control groups in two randomized trials [76,77]. There were no SAEs in one trial [77], and in the other SAEs were considered to be unrelated to the products under study [76].

Among reports from 481 EC users on online forums that had sections dedicated specifically to the reporting of adverse health effects of EC use, the most common AEs were effects on the mouth and throat (around 50% of events) [78]. An increase in blood pressure, a potentially more concerning effect, was reported by 2% of correspondents.

The US Food and Drug Administration Center for Tobacco Products (CTP) collects data regarding AEs from a variety of sources. Between 2008 and the first quarter of 2012, the CTP received 47 reports of AEs related to EC, eight of which were deemed serious. With the exception of two, no causality was attributed to the EC. The two were infant death caused by choking on an EC cartridge and facial burns caused by EC exploding [79]. We are aware of two further media reports of exploding EC [80,81].

Regarding AEs reported in the medical literature, an EC user developed lipoid pneumonia, which resolved when EC use ceased [82]. An elderly heavy smoker experienced three episodes of acute asymptomatic atrial fibrillation, each preceded by EC use. She stopped EC use and had no further episodes [83].

Regarding the cardiovascular effects of EC, nicotine in EC increases heart rate after overnight abstinence [72,73]. Short-term EC use does not adversely affect haematological or blood chemistry parameters, or cardiovascular function in smokers or ex-smokers [84–87].

Regarding effects on respiratory function, 5 minutes of EC use generated an increase in airways resistance, associated with a 16% decrease in fractional exhaled nitric oxide (FeNO), a marker of bronchial inflammation, with no change in the control group. These effects were not considered clinically significant [59].

In another study, smoking a cigarette led to a significant reduction in forced expiratory volume in 1 second/forced vital capacity (FEV₁/FVC), while EC use generated no acute change in lung function. There were no significant changes in FeNO in either group [69].

Risks of nicotine poisoning

A claim is often repeated that an ingestion of 30–60 mg of nicotine is fatal [88], but this assertion is based on dubious self-experiments in the 1890s [89]. Tobacco and NRT have been available to hundreds of millions of people, but fatal poisoning by nicotine is extremely rare. We are aware of one newspaper report of a fatal poisoning of a 2-year-old child who drank e-liquid [90] and of one case study on an 18-month-old child who drank e-liquid, was admitted to hospital with vomiting, ataxia and lethargy, and was discharged after 24 hours of observation [91]. With the increase in EC use, there has been an increase in calls to poison centres following accidental exposures, but these remain lower than calls following such exposure from tobacco and none resulted in any serious harm [92]. Several suicide attempts were recorded where adults drank up to 1500 mg of nicotine in e-liquid, which resulted in vomiting but recovery within a few hours [93].

Summary

Although surveys of users, prospective clinical studies and randomized controlled trials to date have not found any SAEs, several such events have been reported as case studies and in the media. Given the high media interest in EC, the number of such reports is remarkably low. Data to date show that EC pose a minimal risk of nicotine poisoning from the device as intended to be used, but e-liquid can be dangerous or lethal if ingested, particularly by small children.

EFFECTS ON SMOKERS

Nicotine levels in EC users

Early studies using brief fixed puffing schedules and smokers naive to EC use found low or no nicotine delivery [64,68,71]. With greater familiarity with the device and less restricted use, plasma nicotine delivery was comparable to that from oral NRT products (4–5 ng/ml) [3,70,73]. Some experienced EC users achieve nicotine

levels which are close to those obtained from smoking, but only after extended EC use (up to 14 ng/ml after 60 minutes of *ad libitum* use [33,65,72,94] compared with 10–20 ng/ml after smoking a cigarette) [95,96]. Importantly, users experienced in using the same model differed in how much nicotine they extracted from it [65]. As with cigarettes, user behaviour is an important factor in nicotine delivery.

Effects of EC use on withdrawal symptoms and on smoking behaviour

Using EC after overnight abstinence from smoking significantly reduces urges to smoke within 5–30 minutes [64,66–68,71,73]. Non-nicotine EC can also have this effect [64,66,67].

Three small studies evaluated the effects of EC in smokers not intending to reduce or quit smoking. They reported a $\geq 50\%$ reduction in smoking at the end of 1 week in 32% of participants, including 14% who stopped smoking altogether [70]; sustained $\geq 50\%$ reduction in 28% of participants and additional 13% abstinence rate at 2 years [75,97]; and $\geq 50\%$ reduction in 50% of participants and additional 14% abstinence rate at 1 year in smokers with schizophrenia [74].

Data from representative surveys [19], surveys of EC users [3,4,24,34–37,39] and from clinical trials [45,74–77,97,98] show consistently that smokers who use EC and smoke at the same time (so called dual users) reduce their cigarette consumption.

Effects of EC on smoking cessation

Several case studies reported the benefits of EC in helping people who have failed to quit with other methods [99–101].

Several studies evaluated relationships between EC use and smoking reduction and cessation. Among the general population, EC users and non-users had the same quit rate, but EC use was associated with a significant reduction in cigarette consumption [19]. Among callers to a quitline, those who ever used EC compared with other callers had more previous failed quit attempts, were more likely to live with smokers and were less likely to quit at the current quit attempt [102]. The finding is due probably to bias by intention—more dependent smokers who choose to use EC and are also less likely to quit smoking. Similar findings have been observed with NRT [103]. One other study was interpreted as showing that EC use inhibits cessation, but another interpretation is that it showed that EC use is related to smoking history [104]. Adolescents who tried cigarettes at least once but are not smoking now were less likely to ever try EC than adolescents who smoke. In two cohorts, smokers who have tried EC had a similar likelihood of quitting as other smokers [19,21], but in a

large population sample, smokers attempting to stop smoking with the help of EC were more likely to succeed than those using NRT bought from a store (without any professional supervision) or trying to quit unaided [105].

Among 'dual users', 46% quit smoking altogether after 1 year [106].

A randomized trial of 300 smokers not intending to quit compared the effects of two nicotine-containing and a nicotine-free EC provided for 12 weeks. The study used an EC with poor nicotine delivery that often malfunctioned and was subsequently discontinued [77]. At 1 year, smoking abstinence rates were 13, 9 and 4% in the three groups, respectively. There were no differences in smoking reduction in those who continued to smoke. The two nicotine EC groups merged had a higher quit rate than the non-nicotine group (11 versus 4%, $P = 0.04$).

A randomized trial in 657 treatment-seeking smokers compared EC with nicotine patches (21 mg) and with non-nicotine EC. The study used EC with low nicotine delivery [76]. Participants received a referral to a telephone quitline but no face-to-face contact. In this minimal support context, biochemically validated continuous abstinence rates at 6 months were 7.3, 5.8 and 4.1% in the three groups, respectively [not significant (NS)]. While the results were suggestive of a benefit for EC users, the study did not have adequate power to detect what would be a realistic margin of difference from the two active comparators. EC generated significantly higher self-reported smoking reduction and higher user endorsements than patches.

In the United Kingdom, where the use of EC to assist smoking cessation has now overtaken use of NRT, and detailed figures are available on month-to-month changes in smoking behaviour, the rise in EC use has been accompanied by an increase in successful quit attempts [107] and a continuing decrease in smoking prevalence [108].

Summary

EC reduce urges to smoke and there is preliminary evidence that EC use facilitates both quitting and reduction in cigarette consumption in smokers interested in quitting smoking. In England, which has the most detailed data on EC and cigarette use, the growth in EC use has been accompanied by an increase in smoking cessation rates, a continued reduction in prevalence and no increase in smoking uptake [107,108]. Whether EC are contributing to these favourable tobacco control trends is as yet unclear.

CONCLUSIONS

Important regulatory verdicts are being currently made and science-based decisions are needed to maximize

benefits and minimize risks to public health. The key issue to consider is whether EC use is likely to increase or decrease smoking-related morbidity and mortality. There are several hypothetical routes to a negative outcome and one route to a positive outcome. The reviewed evidence can contribute to their assessment. EC would generate negative outcomes if:

- Chemicals in EC cause excess morbidity and mortality. *Evidence:* health effects of long-term EC use are currently not known and a degree of risk may yet emerge. However, based on the data available regarding the toxicant content of EC liquid and aerosol, long-term use of EC, compared to smoking, is likely to be much less, if at all, harmful to users or bystanders. This is because unlike cigarettes, EC do not deliver combustion-generated toxicants that are linked to cancer, chronic lung disease and cardiovascular disease (CVD).
- Smokers who would otherwise quit combine EC and cigarettes instead of quitting and maintain a similar smoking rate. *Evidence:* EC use is associated with smoking reduction and there is little evidence that it deters smokers interested in stopping smoking tobacco cigarettes from doing so.
- Young people who would not try cigarettes otherwise start using EC and then move on to become smokers. *Evidence:* although there have been claims that EC is acting as a 'gateway' to smoking in young people, the evidence does not support this assertion. Regular use of EC by non-smokers is rare and no migration from EC to smoking has been documented (let alone whether this occurred in individuals not predisposed to smoking in the first place). The advent of EC has been accompanied by a decrease rather than increase in smoking uptake by children [109]. Ongoing surveillance is needed to address this important point.
- EC use will increase smoking prevalence indirectly, e.g. by making smoking acceptable again in the eyes of people who cannot tell the difference between EC and cigarettes, via machinations of the tobacco industry, or by weakening tobacco control activism. *Evidence:* there are no signs that the advance of EC is increasing the popularity of smoking or sales of cigarettes.

There is one hypothetical route to the positive outcome, i.e.:

- That EC reduce harm at the individual and population level by reducing cigarette use. In the most optimistic scenario, EC would continue to improve in providing smokers with what they want from their cigarettes, until the use of conventional cigarettes virtually disappears. *Evidence:* EC reduces cigarette use by facilitating smoking reduction and cessation on individual level, but the prevalence of EC use has been low until recently and the effect of EC use on cigarette consumption on the population level has not been established so far.

Implications for policy makers

The European Parliament has recently rejected a proposal to licence EC as medicines. There is a concern that medicinal regulation would disadvantage EC compared to cigarettes, make them more expensive, stifle their development and may drive them fully into the arms of the tobacco industry as the only player able to afford the large entry barriers [12,110]. In Europe, EC are subject to consumer protection legislation, and most countries are likely to ban sales to people under 18, as has recently been introduced in the United Kingdom. Advertising restrictions are also forthcoming [111,112]. Some regulators, however, believe these actions are not sufficient because of the hypothetical routes to negative outcomes discussed above. Regulatory decisions will provide the greatest public health benefit when they are proportional, based on evidence and incorporate a rational appraisal of likely risks and benefits.

Implications for researchers

Our review points to two key research priorities. One is ongoing surveillance of the temporal relationship between country-specific markers of EC use and smoking behaviour. Close monitoring, for which some instruments already exist [113–115], is needed to track changes in EC use and smoking prevalence. Sales data will also be informative; if increased EC sales are accompanied by an increase in cigarette sales, EC could be re-normalizing smoking and further regulatory steps would be required, while if they are associated with a decrease in cigarette sales, this would indicate a public health benefit of liberal regulation. The second priority concerns EC safety. Epidemiological studies are required that compare health outcomes in cohorts of regular EC users (who either use only EC or both EC and cigarettes) with matched cohorts of smokers and non-smokers. These need to be supplemented by laboratory and clinical studies of EC contents and effects on smoking behaviour.

Implications for health professionals

While there is not yet conclusive evidence about the effectiveness of e-cigarettes to generate smoking cessation or reduction, health-care professionals (HCP) should support smokers unable or unwilling to stop tobacco use who wish to switch to EC to reduce harm from smoking. HCP should emphasize the importance of stopping using cigarettes and nicotine altogether.

Declaration of interests

P.H., N.B. and T.E. have no links with any e-cigarette manufacturer. J.F.E. was reimbursed by a manufacturer of e-liquids for travelling to London and to China. H.M. was

an investigator in a public-good funded ASCEND e-cigarette trial for which PGM International provided products at no cost, and has undertaken research on Ruyan e-cigarettes, for which the University of Auckland was funded by Health New Zealand, independently of Ruyan.

Acknowledgements

T.E. was supported by the National Institute on Drug Abuse of the National Institutes of Health under Award Number P50DA036105 and the Center for Tobacco Products of the US Food and Drug Administration. N.B. was supported by the National Institute on Drug Abuse grant R01DA02277 and the National Cancer Institute and Center for Tobacco Products of the US Food and Drug Administration grant P50CA180890. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the Food and Drug Administration. The other authors were supported by their respective institutions.

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Effects of electronic cigarette use on the elastic properties of the ascending aorta in healthy subjects: comparison with the effects of tobacco cigarettes

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Results

Cigarette smoking has well-documented acute and chronic adverse effects on the vascular wall. It has been found to reduce distensibility and increasing stiffness of the aorta. Electronic cigarettes have been marketed in recent years as substitutes to smoking. Research has found that they release by far less toxic chemicals compared to cigarette smoke. However, clinical studies on their effects are relatively low. The purpose of this study was to evaluate the acute effects of electronic cigarette (EC) use on the elastic properties of the ascending aorta and compare them with the effects of tobacco cigarette smoking.

Methods

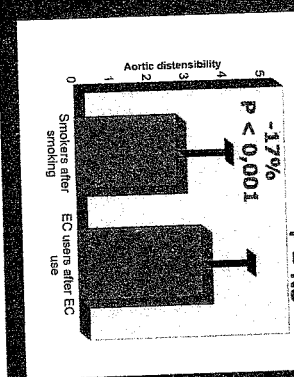
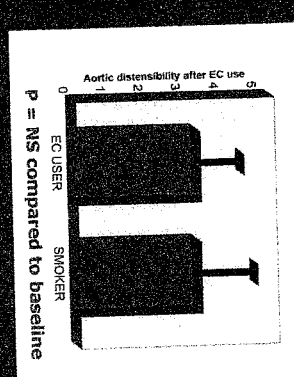
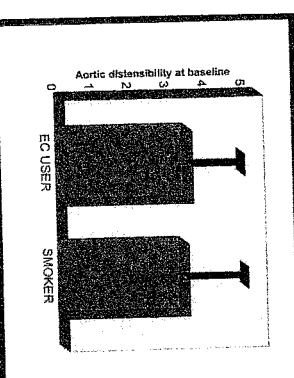
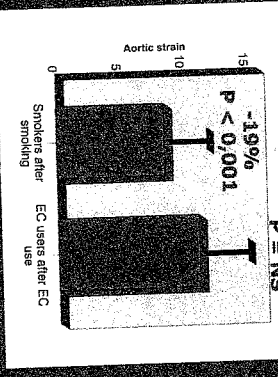
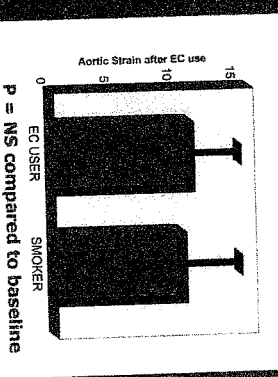
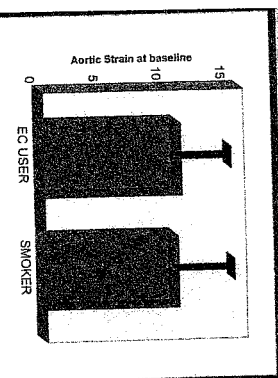
We recruited 108 healthy participants, aged 20-55 years; 51 smokers, and 57 daily EC users who had stopped smoking since 10.5 ± 8.7 months. Smokers were asked to smoke 2 cigarettes (0.7 mg nicotine) and use an EC with nicotine-containing liquid (1.8 mg/ml) for 10 minutes in a randomized, cross-over design. Two-dimensional guided M-mode evaluation of systolic (AoS) and diastolic (Aod) diameters of the ascending aorta, 3cm above the aortic valve, was performed at baseline (8 hours abstinence from smoking, above the aortic valve), 20 minutes after smoking and 20 minutes after using the EC. Blood alcohol and caffeine, 20 minutes after using the same EC device and liquid as smokers. The at baseline and 20 minutes after using the same EC device and liquid as smokers. The following aortic elasticity indices were measured:

aortic strain = 100 (AoS - Aod)/Aod
aortic distensibility (DIS) = 2(AoS - Aod)/[(AoS x pulse pressure) + (Aod x pulse pressure)]
aortic stiffness index (SI) = ln(SBP/DBP)/[(AoS - Aod)/Aod]

Both groups had similar characteristics. Blood pressure and heart rate were similar at baseline and 20 minutes after use of tobacco or EC. No difference was observed in aortic elasticity indices at baseline. In smokers, significantly decreased **aortic strain** (from 10.48 ± 4.49% to 8.47 ± 3.49%, $P < 0.001$) and **DIS** (from 3.24 ± 1.57 to 2.69 ± 1.25, $P = 0.001$), and elevated **SI** (from 5.73 ± 2.34 to 7.01 ± 3.75, $P = 0.004$) was observed after cigarette smoking compared to baseline. On the contrary, no difference from baseline was observed after using the EC (**aortic strain**: 10.32 ± 4.44%, $P = 0.694$; **DIS**: 3.26 ± 1.49, $P = 0.873$; **SI**: 5.86 ± 2.76, $P = 0.655$). In EC users, no difference was observed between baseline and post-use measurements (**aortic strain**: 10.85 ± 3.99% vs. 11.05 ± 3.77%; **DIS**: 3.39 ± 1.39 vs. 3.29 ± 1.16; **SI**: 5.37 ± 2.58 vs. 5.24 ± 1.84, $P = NS$ for all).

Table 1. Baseline characteristics of the participants.

Characteristics	EC users (n=57)	Smokers (n=51)	P
Age, years	38 ± 7	40 ± 8	0.266
Males, n (%)	48 (84.2)	40 (78.4)	0.440
BMI, kg/m ²	26.8 ± 2.6	25.9 ± 2.8	0.076
Smoking duration, years	19.6 ± 7.8	21.9 ± 8.8	0.160
Cigarette consumption, n per day	34 ± 14	29 ± 11	0.071
Birchman index	670 ± 379	675 ± 408	0.940
EC use duration, months	12 ± 9		
Smoking cessation duration, months	10 ± 9	124.5 ± 10.7	0.739
SBP, mmHg	125.2 ± 10.9	74.1 ± 8.7	0.286
DBP, mmHg	76.0 ± 9.2	69.3 ± 8.5	0.487
HR, /min	70.7 ± 11.8		



CONCLUSIONS. Significantly decreased elasticity and elevated stiffness of ascending aorta was observed after smoking, confirming previous studies. However, no adverse effects were observed after using the EC. Research on ECs should be intensified since they may be potentially useful in reducing the adverse vascular effects associated with smoking.

Constant Contact Survey Results

Survey Name: Feb 18 2015 Survey

Response Status: Partial & Completed

Filter: None

2/22/2015 7:59 AM CST

What is your age?

Answer	0%	100%	Number of Response(s)	Response Ratio
Under 18			6	<1 %
18 - 25			367	15.0 %
26-35			673	27.5 %
35-50			826	33.8 %
Over 50			578	23.6 %
Totals			2443	100%












I smoked tobacco for how many years?

Answer	0%	100%	Number of Response(s)	Response Ratio
I never smoked tobacco.			51	2.0 %
Less than a year			50	2.0 %
1-5 years			282	11.5 %
5-10 years			378	15.4 %
10-20 years			745	30.5 %
over 20 years			950	38.9 %
Totals			2442	100%




I now use:

Answer	0%	100%	Number of Response(s)	Response Ratio
A vapor product only			2264	92.8 %
both tobacco and vapor products			144	5.9 %
neither a vapor product nor tobacco anymore			35	1.4 %
tobacco products only			1	<1 %
Totals			2439	100%





Since switching to a vapor product, I have noticed positive results in these ways:

Answer	0%	100%	Number of Response(s)	Response Ratio
My breathing has improved			2207	90.4 %
My cough has improved			1807	74.0 %
My taste/smell has improved			2139	87.6 %
I sleep better			1460	59.8 %
My energy has improved			1647	67.5 %
I no longer require certain medications			313	12.8 %
I no longer require an oxygen tank			46	1.8 %
I am ill less			1094	44.8 %
My mental health has improved			828	33.9 %
No health changes			74	3.0 %
Other			151	6.1 %
Totals			2440	100%

I have slowly lowered my nicotine level since switching to a vapor product

Answer	0%	100%	Number of Response(s)	Response Ratio
True			2199	89.5 %
False			230	9.3 %
No Response(s)			27	1.0 %
Totals			2456	100%

I no longer use tobacco flavored eliquid because:

Answer	0%	100%	Number of Response(s)	Response Ratio
It no longer tastes good to me			1597	65.0 %
I still use a tobacco flavor			354	14.4 %
I require variation to stay successful			441	17.9 %
No Response(s)			64	2.6 %
Totals			2456	100%

Constant Contact Survey Results

Survey Name: Feb 18 2015 Survey

Response Status: Partial & Completed

Filter: None

Feb 22, 2015 7:46:19 AM

4. Since switching to a vapor product, I have noticed positive results in these ways: - Other responses

Answer

Got more healthy and lost weight
greater stamina
I have more money!!!!
I'm no longer dizzy
Allergies have almost gone away
My life is SO MUCH BETTER
I don't stink.
able to exercise
No longer have sinus problems
Anxiety attacks have stopped
sinus issues significantly reduced
I don't stink anymore
\$\$\$\$ savings
My skin and teeth look better
I used vapes to quit smoking, and then stopped vaping. I am now nicotine free
Dont tire as easily
I don't stink
I'm no longer endangering myself OR others
Congestion
so many I cannot list them all but suffice is to say MY ENTIRE WORLD IS BETTER!
My Crohns has improved
I don't stink like smoke!
saving money
All the above
I finally consider myself healthy and am finally losing weight. I found cycling
I have helped others quit smoking in the process
no more bronchitis nor pneumonia
All around feeling better
MORE MONEY IN MY POCKET
Hearing improved
I feel free
Uhhmm, better blood flow if ya know what I mean?!

I live better
My relationships have exponentially improved in quality.
thoughts are more consistent (A.d.h.d)
I don't sneeze like an ashtray. I don't reek of cigarettes!
I feel better about myself
my gums and teeth are healthier!!!
nails are clear
Vaping for fun
NEVER SMOKED
Cravings curbed
i can play sports again.
Less headaches.
less stress
My overall weight has become easier to control
Save money
I have more money left
I smoke a lot less cigarettes
I have more energy and I've lost 75 lbs
Shortness of breath from vapor
no longer short of breath
I can't stand the smell of cigarette smoke
I will live longer. My wife and daughter don't have to worry
My Oral health ie gums and teeth improved vastly
I dont stink like cigarettes anymore and I have more self esteem
No smokers cough anymore
No asthma attacks
I heal faster
I can sing again!
I don't smell like an ashtray, nor does my house.
I feel& look so much better. Even my lupus has improved!
I am able to play sports
The items not checked are n/a to me.
weight loss
No COPD
Improved stamina while exercising
i can play with my son
Overall feel better, health, mental and social.
I feel overall better in every way.
quit smoking
Increased job performance
Improve workouts

My skin cleared up and brightened
I like turtles
no tobacco smell in my house, clothes or car
My skin has cleared up.
I no longer stink
I don't smell like smoke all the time.
lungs feel better
I caught phenomenon, vapor helped get the junk out of my chest.
my diabetes has gotten under control
I no longer smoke cigarettes
My stamina has improved during exercise but may be related to easier breathing
lung ulcer went away
Never smoked!
I feel better
vaping helped me not to start smoking
I work at a particular store, and love helping people.
my quality of life has improved
I don't smell nasty.
lost 50+ Lbs.
I smell better
No Tobacco needed
increase in sex drive
I don't stink!
I lost weight
I no longer reek of tobacco smoke
Lower blood cholesterol
Sinus infections
heart pace, stamina, no flem, feel and smell clean, no littering
I enjoy vaping more than I enjoyed smoking and don't get intense cravings
Dip until I bought a vaporizer.
Personal Hygeine Is Better (Explained in comments)
not addicted to nicotine any longer
I don't smell like smoke
My possessions and I no longer smell like trash
I can actually live a long life to enjoy with my family. Unlike with cancer cigs
Pets Health has improved.
my skin has improved
Increased sex drive
see below
my cardio is better when working out
No nasty yellow stains

smoking less often
i no longer worry about second hand smoke
See comment
Inhaler
Asthma Inhaler
social benefits
C.o.p.d
blood pressure went down
I get oily fingers from the liquid
vehicle & dress attire don't reek of smoke
I'm a runner, and my lung capacity has been greatly improved.
No more anxiety
No more anxiety
I just feel better in the morning, it's as simple as that.
dont smell and no bad breath
Spot on lung shrunk
My overall health & well being has improved greatly!
i have never valued or smoked.
blood pressure has gotten closer to a normal range over time
my preemie son (6)has not needed his nebulizer once from numerous times a winter
people tell me I smell "good" now, rather than a cigarette's wet ass
I got the full range of my singing voice back!
I do not stink
Headaches reduced
They got flavors
No stanky breath
Just when stressed because of the low nic and no chemicals
I'm more socially active
i am not depressed anymore and can workout again.
I breathe MUCH easier & can now hold my breath longer as well.
Smoke smell that linger
I don't stink like an ashtray and I have no burn holes in my clothes.
I smell better
no more shakes
I smoked tobacco product significantly less
I don't smell like an ash tray
smoking less

4. Since switching to a vapor product, I have noticed positive results in these ways: - Comments
Answer

I find that there is actually more time in a day. When I was a smoker I spent more time smoking than I did doing actual productive work. Now I don't have the cravings for combustible tobacco cigarettes and don't realize that I've been working for hours. The next thing I realize is that it's time to eat or quit for the day.

Beyond the smells and tastes are the wonderful times playing with my grandchildren. This is why we are passionate about helping people evolve from smoking to vaping and beyond. Ridding myself of more and more carcinogens has been the best thing I've ever done for my health. We meet wonderful friends and embrace our community. We need to avoid the hazard of grouping vapers with smokers, back into carcinogen filled areas rather than having more smokers join those who vape responsibly.

No other health issues were preexisting.
No cough!

Vaping has improved my life and the life of others around me. As a healthcare provider, I understand that though vaping might have risk factors, the benefits far out way the risk. All substances used in Eliiquid are FDA approved, we have seen the positive changes in the well beings of our citizens already.

I feel so much better since I started vaping have not had a cigarette in 2 1/2 years. My family is very happy they don't have to smell the smoke on me anymore. I smoked for 40 years. I have no desire to smoke again. I also have taken up running.

I enjoy being able to vape in my apartment, and the smell doesn't linger like with analogs. My last physical I had doctor said I'm in better health I have gone from 1 and 1/2 pack of Camel Wide full flavor cigarettes to less than 6mg of nicotine in my e-cig and only "vape" 4-5 times per day saving hundreds of dollars a month on cigarettes and Dr visits. Because I quit smoking and started using an e-cig, several family members and friends have done the same as well as many co-workers with great success.

Love this product!!

Chest pains have gone away.

The best I've felt in 20 years.

I use to smoke 2 packs a day, I quit the same day I brought there electronic cigarette pipe. **NO LONGER HAVE THE URGE TO SMOKE TOBACCO PRODUCTS**. they have changed my life. I have a little girl and I wanna see her grow up. thank you so much vapor bar I love y'all.

Smell as well

I quit smoking and began vaping 18 months ago. After 6 months of not smoking, I started working out again! I have lost 64 pounds.

I was a pack and a half smoker for many years. I started vaping and within a month I stopped smoking. I have been cig free for 1 and a half years now. I had tried every quit smoking method out there nothing worked. My dr says he can't tell I ever smoked by listening to my lungs. These probably saved my life

I haven't smoked for 21/2 years.
I thank God VAPe came to us. Its a God sent. Blood pressure is way down, no stinky clothes. No embarrassment, love it
I truly believe the process of quitting tobacco usage was much easier due to the use of the electronic cigarette.
I feel 1000 times better since no longer smoking cigarettes.
My chest Xrays are clear after a year, compared to 30 years of cigars and Marlboros.
Have been vaping for 4 years at very low and 0 nicotine
I had no desire to quite smoking cig. But when I started vaping it easy to put down cig.
I am down from 18 mg to 10mg so not to far from stopping all together. This has been a life saver to me. I have saved money and I most important I can breath so much better!!!!
I don't smell like cigarettes and neither do those around me.
Vaping has saved my life.
I am a cancer survivor 3 times now and my oncologist looked over this and is glad I made the change. Also supports it and has recommended it to other patients she said.
Freedom
you can kiss someone And not taste like an ash tray
I believe vaping has saved my life!! After 22 years of smoking and never successfully being able to quit, I can now say March 10, 2015 will mark 1 year cigarette free!!!
I can now run, exercise and enjoy playing with my grandchildren.
Since switching I have been feeling a lot better I don't cough a lung up anymore. Since switching I don't feel like death or feel the need to try to kill my self.
Vaping has saved my life!
Since I've switched to vapor I have yet to come down with any type of sinus, respiratory, or ear infections which used to occur 3 to 4 times every year prior.
Drastic reduction in tobacco use
My father introduced me to vain two years ago. I am proud to say that I have now been a non smoker for two years.
4 months after switching to vaping my girlfriend was pregnant. Never used protection before. 2 yes no protection
this was the best thing I could have done for myself.
I was waking up at night not being able to breath. Sense using vapor I do not have that problem. I love it.
Vaping has changed my life and many others in my family. Before vaping was introduced to me I thought I would never quit smoking. Since vaping cigarettes have become a huge turn of to me and my family. We all have also gone down on our nicotine from some of the highest levels to now some of the lowest levels. Vaping is important to me and my family. If the government taxes it, takes it away or by any way makes it more difficult for people to have access it will send people back to smoking.

I quit cigarettes completely May 1, 2012. I began using ecigs and then started vaping in Feb 2012. I have not had a cigarette since 2012 and have felt better than ever. No cough, no chest colds or bronchitis.

Since I know exactly how much nicotine I'm getting, I can easily reduce the amount! Tried to stop smoking for years. Took Chantix and that was like poison to me. Tried patch and gum and it didn't work either. Vaping is the best for me.

The best decision I've ever made.

I no longer subject my children to toxins that will kill them in the future. Furthermore, my asmatic son has zero issues with vapor.

The Vapor bar is simply AMAZING!

I was with my mother the day she died of COPD and assisted my father with home care for her for over 3 years. I, too, have COPD but do not have to take medicines because I stopped smoking by using vapor products. I lowered my nicotine after less than a year, but prefer small amounts although I have done without for a week or two with the only noticeable issue of feeling more tired and more easily distracted. I'd give up 10 years of my life to have had this answer for my mother!

I now run marathons

Vapor has allowed me to breathe more easily, sleep better, no night coughing or rattle in my chest. Best of all I don't worry about the tobacco smell in my clothing, hair or breath.

Vaping has allowed me to not smoke cigarettes with all the health hazards they entail and yet I was unable to quit until I found vaping.

I don't smell like stinky cigarettes!!!

I no longer crave tobacco products.

I can breathe! I no longer have coughing fits at 6:00 every morning. I don't have to force my friends, colleagues and family to sit outside in the Houston heat at restaurants to eat, take smoke breaks at work, or be treated like a second class citizen in or near a buisness when I need to exercise my cigarette habit.

If I didn't check it I never had that problem to begone with

My asthma has definitely improved, i dont get sick nearly as much now that i have quit smoking and switched to vaping

I just recently stopped vaping and now I have 0 vices. I went from smoking a pack and a half of reeds a day and dipping a can of snuff every other day to no nicotine products whatsoever. I tried Chantix and patches and gum, but they did nothing. Vaping is how I quit

I haven't even wanted a cigarette. And I've saved money. Vaping is about a quarter to a third of the cost of cigarettes. I feel better and smell better. The only downfall is I have gained weight. Food just taste better now!

I haven't smoked a cigarette in two and a half years.

Don't smell like an ashtray

I feel so much better now that I don't smoke

When I first started Using vapor products I went from 20 plus cigarettes a day to 10 day,, then 5 day, now I use vapor only. My smokers cough is gone and I mo longer have a weeze. I don't always inhale with the vapor it the first thing that has actually helped me to quit smoking after 40 plus yes.

My bronchial smoker's cough is completely gone!

I can actually play soccer with my daughters more than 5-10 minutes. When I smoked 5-10 minutes and I was done sitting on the ground gasping for air.

I tried to quit with every Nicotine Replacement Therapy available, including Zyban and Chantix. I was unsuccessful in quitting smoking until I started to Vape with good equipment and a high nicotine liquid. It was recommended by my doctor. I have not smoked since. I can honestly say it has changed my life and the lives of my family.

So happy to be free, is how it makes me feel to not smoke anymore. My clothes don't stink. My car doesn't stink. No rude looks because I'm not trying to find a place to smoke. Government needs to start staying OUT of peoples personal affairs. Did your ridiculous tax increase on cigarettes change anything about cigarette smokers habits. NO. Why would government want to try and put hurdles in the way of someone trying to quit smoking and use vaping as a tool to do so? If government wants to start a new ban "Just for the hell of it" as they usually do, do something productive, like keeping that witless POS out of the WH.

I now run and I am 58 years old. Couldn't do that before I quit smoking. Switched to an e-cig and never smoked another cigarette-it has been 27 months since I quit

Don't stink or bother others!

On 0 nictatin

I had Sudden Cardiac Arrest in 2009 and all of my DRs have approved of me vaping over smoking.

Just awesome , I just feel so much better not stinking like an ashtray after 45 yrs!!!!

I really love the vapor products!! I never thought I'd quit smoking!! But I started with the highest miligram of nicotine and now I'm on 12 mg. And plan to go down on my next bottle of juice!

My Rheumatoid disease has improved drastically

I've never smoke cigarettes in my life but vaping was introduced to be two years ago and I took off with it as hobby

My clothes and house don't stink, am not constantly looking for smoking areas because I have to smoke. Money saved is amazing!

My doctor said it was the best thing I could do for my health!!!

I am so glad i started this process. I now i will stop smoking permanently
I have had a pack of cigarettes sitting next to me every day in case the urge is ever there as well as to be a constant reminder. I can say that there has been no urge whatsoever to "light-up" again.

I drink much more water/less soda, less salt and am down to zero nicotine now after stepping down for a year.

I was not on medication nor using oxygen when I smoked. I retired just before I stopped smoking. It should have been difficult to stop when due to my lifestyle change and that my husband continues to smoke. I did not plan to stop; it was a spur of the moment decision to buy a vapor cigarette. I have not smoked tobacco since that day and rarely use the vapor but when I do it only has 2mg of nicotine.

Vaping has changed my life for the better. My family and friends along with myself, feel better and happier knowing that I can enjoy something that is safe and has no damaging effect to the human body.

I lost my dry smoker's cough in 1 week

My 74 yrs-old mother who has been smoking since she was a teenager and is on oxygen had tried everything to stop and nothing worked. She continued to smoke even while on oxygen and had multiple home fires, mostly small but one very big one, because of smoking cigarettes while using oxygen. I was scared to leave her alone because she would often fall asleep while smoking a cigarette. For the past 7 months, she has only used e-cigs and the increase in quality of life is unmeasurable.

I'm doing so much better I have been valuing for 20 months.

Major impact in my overall well being. Thank you vapor bar!

I have lost my constant cough! I do not wheeze anymore trying to relax to go to sleep.

My skin has improved! My health has improved! I had pneumonia last 4 years of my smoking and had to be on breathing machine!! Since I turned to vape I have not had flu, bronchitis and thank god pneumonia!!

The first product that I have found that effectively got me of cigarettes. I was an occasional smoker but could never kick the habit. It has now been 2 years since my last cigarette.

My mate says my snoring is better

I've tried many times to quit smoking over the past 40 years, and failed miserably until last July when I started vaping. I haven't had or even had the urge to have a cigarette in 8 months.

Vaping has changed my life, I smell things better, I taste things better, my kids have not had to go to the hospital because of the second hand smoke that was causing ear infections, and would have resulted in my kids getting tubes in there ears. Vaping has changed my life, I can never see myself ever going back to cigarettes. I love vaping and I hate the smell of cigarettes, as does all of my friends that vape.

I also have no desire to smoke regular cigarettes and can't stand the smell of them any longer.

Most significant is how much of a difference I noticed in my ability to breath better.

After 43 of smoking cigarettes, I thought I would never quit because of the anger and anxiety withdrawal caused. It took me a year to completely give up the cigarettes and use only e-cigs; however, I'd find myself reaching for the e-cig to help get rid of the nasty cigarette taste.

Though I used to light a cigarette first thing when I awoke before leaving my bed, I now only reach for my vapor after I've been up for a while and can calmly go hours without thinking about it at all.

I feel the best I have in 20 years.

Using E-Cigs has saved my life. I can breath, walk without running out of breath. All they times I tried to quit and couldn't and now almost 3 years smoke free. That Means something. That means Life.

My check up was the best it has been this year as only smoke the vapor bar.

I don't like the smell of regular tobacco on anyone else.. I smell better, hair don't stink.

I TRIED ALL OF THE PRODUCTS TO HELP ME QUIT SMOKING CIGARETTES, NONE OF THEM WORKED. WHEN I TRIED THE VAPOR, I HAVE NOT SMOKED ONE CIGARETTE SINCE I STARTED. NOV2015 WILL BE 5 YEARS WITHOUT A CIGARETTE.

My smokers hack more than improved it's completely gone! I also used to have horrible acid reflux and thought I would be on nexium for life. But now that I've been vaping I no longer need the nexium at all. My dentist commented about just how much whiter my teeth are now and I used to have problems with deep gum pockets despite top notch oral hygiene but now that is a thing of the past too!

My cardiologist gave me a report after 6 months--function had improved 50% greater than before.

Great alternate adult ADHD treatment as well.

I have suffered from fairly severe ADHD since I was a child. In the past year I have been able to stop taking my medication (Vyvanse) with no adverse affects. I contribute this completely to vaping as the nicotine helps me to focus and stay alert. Through vaping I am able to receive the positive benefits of nicotine without the nasty side effects of more traditional tobacco products. It has been a god send in my life and has positively impacted my health as well as my wallet.

I no longer smell like cigs. My skin looks much better, wrinkles are less noticeable. My oral health is better, no more yellowing teeth. Even my hair is healthier now that it's not covered in a layer of carcinogenic filth all the time!

My blood oxygen level rose 10% in the first 8 months.

The Vapor E-Cigs are the absolutely BEST! I haven't had a cigarette in over 3 years and I can thank this Industry for that. Its amazing that I don't even want one, and I've smoked for 40+years. This is a "Must" have product if anyone ever wants to quit the nasty habit of smoking without the withdrawals. I highly recommend these e-cigs.