Can vaping cause cancer?

Chris Price, Expert patient; have also worked in hospitals on tech side.

Dr Laugesen was the first medical professional to state directly that it is impossible for ecigs to cause lung cancer. He was the the first professional medical researcher to investigate vaping in 2009 / 2010 (that is, vaping as in the use of battery-powered liquid nebulisers utilising PG, glycerine and water as the excipients - not vaporising of tobacco in an HnB type of process). His resource site is at: Dr. Murray Laugesen's Publications
http://www.healthnz.co.nz/Publicnsall.htm
He is regarded as being among the most prominent public health researchers and longest-serving anti-smoking harm professionals in the southern hemisphere.
Since those early days in vaping, others have confirmed his opinion: there is no smoke and therefore the principal risk is absent; there are no other compounds present in vapour in sufficient quantity to pose any significant risk.

Junk science
There are enormous funds available for any researchers prepared to find ways to attack vaping, in order to protect the astronomical sums the smoking economy generates - as a $1.5 trillion a year sub-economy, there are many players who need to protect it by preventing smokers quitting or switching to other products.
High five-figure and low six-figure sums are frequently on offer to the research community for anyone who will produce studies that appear to put vaping in a poor light.
The principal value of junk science of this type is the media exposure that can be generated pursuant to the publication of the study, and its leverage by others to attempt to create an environment in which fewer smokers will attempt to cease smoking. Junk science is highly successful for this purpose and has high value for all the players who make so much money from smoking.
To illustrate this better, please read this collation of financial data surrounding the loss of tax revenue and cigarette sales caused by

vaping. What is equally relevant but not examined here is the loss of drug sales to treat sick smokers; in practice the pharmaceutical industry is often the biggest funder of anti-vaping junk science.
Are vapers like you paying for lost tobacco revenue?
https://www.ecigarettedirect.co.uk/ashtray-blog/2019/05/vaping-lost-tobacco-revenue.html

Discredited research
Recently, two research papers were published that reported large quantities of formaldehyde measurable in ecig vapour, and an elevated risk for cancer was mentioned in connection with these studies. However all such studies have turned out to be fraudulent in one way or another:

- They operated variable power hardware at excessive power levels that produced smoke as a result, and no vaper would want to inhale such products, or would be able to inhale such products at all, and certainly not for the multiple decades of daily use that might lead to cancer initiation.
- This information was omitted from or purposely misrepresented in the associated press releases, which achieved wide publicity as a result.
- Or: they did not actually find any formaldehyde *per se*, but precursors or associated compounds such as hemiacetals that cannot honestly be described as formaldehyde.
- However, this information was omitted from or purposely misrepresented in the associated press releases, which achieved wide publicity as a result.
- Nobody bothered to mention that formaldehyde is always present in the lungs anyway, in small amounts: it is a normal compound found in exhaled air; and this amount is increased for diabetics. The amount of formaldehyde diabetics exhale can be significant. It does not appear to be the case, though, that non-smoking diabetics are at elevated risk for lung cancer.
- But see this [Mark Stone's] comment below, with a good argument why lung cancer incidence is/may be low:

Marc Stone, Physician, Board-certified in Internal Medicine

Feb 24, 2018

There's one one point I noticed that may deserve review or clarification. You mentioned that diabetics have elevated levels of formaldehyde in their lungs. I suspect this is because on the presence of increased levels of ketones in the blood, which occurs only in Type I diabetics who are receiving insufficient insulin. So this is likely true only for a small subgroup of people with diabetes. Furthermore, these patients have lesser life expectancy because Type I diabetes begins relatively early in life and those with ketones are probably treated suboptimally. They therefore are less likely to live long enough to develop lung cancer. Those non-smoking diabetics who are old enough to develop lung cancer are much more likely to be Type II diabetics who have no reason to have increased formaldehyde in their lungs.

The value of the subsequent media furore

Note that the press releases, and especially the lurid newspaper articles that follow them, often bear no relation to the data reported in the clinical study. This happens too often to be a mistake - it is tempting to consider the main reason for these studies is to produce media propaganda that is not factually related to the study data, and secondly to punt for grants for more of the same.

Their purpose appears to be an attempt to get more and larger grants by the means of inflammatory press releases that have value for commercial actors trying hard to protect cigarette sales from any threat. This is a successful financial model because one of these junk science creators then received a grant of $3.5 million. The sums involved are not petty by any measurement - it is clearly a case of lies for cash, and a great deal of cash too.

Other risks

The question of other or more esoteric cancers has not yet been addressed, and cannot be until about a 30 year+ data resource is available; so it requires another 20 years before this can be answered honestly. At present it does not seem as if any disease vectors at all are visible. We have 70 years of data on PG inhalation without any significant issues; and the giant pharmaceutical companies are currently advising B2B customers to move into glycerol excipients for

inhalable medicines, as there appears to be even less potential for the minor and temporary throat irritation issues and so forth that affect PG as the base for inhalable treatments and therapies (*search: Dow Optim*). In rare cases, intolerance to PG can present in the form of skin issues, and even more rarely, negatively affect prior existing tinnitus. This has not been a significant issue in a medicinal base inhaled for multiple decades in asthma inhalers and the like [1], before the relatively recent change to glycerol as the most popular excipient in inhalable therapies.

The two possible threats associated with vaping are the trending use of higher temperatures, possibly leading to the creation of thermal degradation products; and the inhalation of food flavours. A significant amount of research is being done in these areas. In general there is a good research base from which to evaluate potential issues with ecigs: several hundred studies (a comprehensive PubMed search shows 400+) [*Q4 2016 update: 1,000+*] and even more lab analyses, leading to a possible total of over a thousand single sources in this area (*2018 update: thousands*). A paucity of research does not exist: there is a plethora.

What is missing is long-term health data. It simply will not be available until 2025 or later. Current indications are that ecigs are an ultra-low-risk THR consumer product (Tobacco Harm Reduction) [2] of the clean nicotine delivery system class. The best way to describe such products is the EEV or electric/electronic vaporiser, rather than e-cigarette, as that is just a highly-successful marketing term that has no relevance to advanced products that are medium or large-format battery-powered liquid aerosol generators with no resemblance or connection to cigarettes.
Early models of EEVs were made to resemble cigarettes as this was the best way to market them to smokers. These micro devices are so inefficient they are no longer popular with vapers, apart from beginners in the process of converting from smoking (which can take some time).

Dual use: a Very Good Thing

Switching can be an instant achievement or it can take months. One of the unique benefits of vaping compared to any other switching

strategy, cessation method or product type is the involuntary switching effect: a smoker may try vaping but have no plans to quit smoking. Over time, they vape more, and smoke less. They will probably graduate to better products than the beginner ecig type.

One day they find they haven!t smoked for some time and they are now vapers not smokers: an involuntary switch took place. This unique process has converted many smokers; it does not occur overnight, obviously, and requires time to complete, and therefore *many will be dual users for an extended time*. It is not unknown for this involuntary process to take 12 months although it is often shorter.

By definition, then, the majority of new vapers will be dual users - an excellent situation to be in since it is likely to lead to smoking avoidance or cessation (in practice the same thing, of course). A person who avoids smoking by switching to a THR product can expect the same health outcomes as a person who ceases smoking using a medically-approved route.

Scale of risk

As with any other product of any type, the individual may reduce or elevate risk according to their personal scale of risk/benefit values:

1. People who vape a small amount daily (e.g. <3ml) of unflavoured base or minimally-flavoured refills, in low-power hardware (with or without nicotine, which is clinically irrelevant to negative health impact) clearly have an elevation of absolute risk so small that it is unlikely to be discernible even with millions of subjects.
2. Those who vape very large daily quantities (30ml daily has been reported) of heavily-flavoured liquid of the type believed to have most potential for harm (custard flavours and similar, which probably contain diketones such as diacetyl or acetyl propionyl) in high-power rigs at high temperatures may be subject to similar risk elevations to daily smoking of a small number of cigarettes (although the types of potential morbidity will differ since the toxic compounds present differ).

For comparison, a teaspoon contains 5ml of liquid.

Professional risk evaluation
The gold standard for clinical evaluation of risk is the Cochrane Review. This is a risk analysis by a cooperating and comparative group of senior medics and researchers expert in the topic area, chosen for impartiality.
There is now sufficient research to enable such a review, and it currently reports that no significant risk is apparent. A Cochrane Review is also updated if new information becomes available.
http://www.cochrane.org

The review covers a certain style of evaluation of efficacy for a specific outcome, and associated risk; but its importance is better understood as an ultra-conservative method of stating that risk elevations currently appear minimal - because the research evaluated would certainly have been far wider than that cited as core to the study.
2016 update: the Cochrane Review has recently been updated, and the conclusions are the same - no visible risk to health from vaping.
https://www.cochrane.org/news/conclusions-about-effects-electronic-cigarettes-remain-same

Current state of play
Now that tens of millions of smokers have switched to vaping, it is clear that:

- Vaping works extremely well as a THR product attractive to smokers.
- The epidemiologic resources will be significant in years to come.
- No significant threat to health has been identified.
- The THR approach is by far the most efficient way to reduce smoking once smoking prevalence falls to low levels; and is the only known way to reduce it past the 20% mark, due to the 20% Prevalence Rule.
- Much of the moneymaking propaganda about nicotine has been revealed as fatuous rubbish since it was impossible to maintain with millions demonstrating it to be false [3].

2018 update

Now with well over 30 million vapers worldwide, we have reports of half a dozen individual cases of assorted morbidity - and none show any trend. All appear to be isolated and even unique cases of individual intolerance.
Even if these cases were to be multiplied by a thousand, it would still make vaping safer than sitting in an armchair.
Unfortunately this won!t stop the paid army of tobacco control and pharma shills and their desperate fight to protect cigarette sales in order to preserve their jobs. Even when smoking is reduced by 50% in the developed West, and mortality / morbidity resolves to 50% of the current rates as a result, they!ll still be squealing. Every year they find new arguments why stopping people smoking is a bad idea, when last year!s argument gets torn to shreds.
When smoking is reduced to 5% of the population and smoking-related mortality falls through the floor, they will still be claiming it!s all wrong.
Those second homes and the yacht have to be paid for.

2019 update
The matter is settled in the UK. The NHS (National Health Service) is installing vape shops in hospitals, to help accelerate the switch rate from smoking to ultra low risk alternatives.

Comparative risk
So, the short answer to your question, “Can vaping cause cancer?” is: apparently not - but come back in 2030; we may have discovered a trivial elevation of risk above absolute zero for unusual cancers resulting from ultra high temperature vaping that will not in any case be definable as clinically significant in number. It seems unlikely at this point, but who can tell when risk is close to but not equal to zero.

The inherent risk of vaping compared to smoking is at least 4 orders of magnitude lower; perhaps 5 or 6 OoM in some circumstances. Four orders of magnitude is 10x by 4, or 10,000. According to the majority of senior UK tobacco control spokespersons, vaping is unlikely to kill anyone. Therefore, for risk comparisons, it must be compared with the activity it is designed to replace: smoking. In the UK smoking is said to kill 100,000 persons per year per 10 million

smokers, or 1% per annum.
Vaping at the same level would kill no one except for rare cases of individual intolerance or similar. Recently, in the UK, there was a one-week period within which two people died from eating a sandwich (allergic reactions to unlabelled ingredients). Vaping seems likely, therefore, to be found to be safer than eating a sandwich.

It has already been established that deaths from vaping are likely to be zero or close to it; and any related mortality is likely to include co-morbidities including previously existing conditions caused by smoking. The comparative risk of vaping versus smoking is negligible and indeed close to nonexistent as far as mortality is concerned.

My viewpoint
My evaluation of these data, studied in real time since 2009 based on global data reporting by consumers, is that the principal risk appears to be for minor elevation of risk for reversible stage 1 COPD; and some few persons will always encounter tolerance issues reversible by discontinuation of use.
There is an issue of contra-indication concerning interactions for subjects receiving multi-therapy in the area of anti-depressants due to nicotine/pharmaceutical interactions.

Interesting symptoms have been observed in smoking cessation and vaping initiation in thyroid patients pre- and post-diagnosis, but these have not resolved into contra-indication for vaping; rather, in observed smoking and smoking cessation-related effects on thyroid patients and adjustment of meds dosages unrelated to vaping. Incorrect Syntroid dosage, in particular, can result in alarming symptoms. Smoking cessation is one of the most common reasons thyroid issues may present; it seems difficult at present to state whether smoking is a cause, or cessation is a trigger, or if smoking masks thyroid issues and cessation then causes presentation. In any case these issues are not related to vaping.
I have written the world's most comprehensive list of smoking cessation symptoms in the context of vaping, together with vaping-related intolerance issues encountered to date, which can be found at:

A list of symptoms when quitting tobacco and changing to an ecigarette
https://www.e-cigarette-forum.com/threads/a-list-of-symptoms-when-quitting-tobacco-and-changing-to-an-ecigarette.3305/

I do not anticipate any major shocks.

[1] PG was widely used in asthma inhalers as an excipient in the past. There are better materials for this now, such as Dow's synthetic glycerol. The reason why PG is still popular in vape refills is because the astringency or throat tickle ('throat hit') it creates helps to mimic tobacco smoke, and this is very useful for smokers in the process of switching.

There is a strong move toward all-glycerol base ('100% VG') for vaping refills that parallels the move away from PG toward glycerol in inhalable medicines. However, we should consider the very useful antibacterial and antiviral potency of PG, and perhaps retain a small amount even in all-glycerine mixes - PG is one of the most powerful antimicrobial aerosols known.

Vapers widely note their reduction in colds and flu-type infections after switching; while some of this must be attributable to cessation of inhalation of smoke, some thought should be given as to whether the PG content of the refills commonly used by most vapers in the first year of vaping may also have some effect. Aerosolised PG is one of the most powerful bacterial and viral killers known; it is reported to kill all airborne pathogens, at a strength of only 0.5ppm.
[2] THR or Tobacco Harm Reduction is the consumer choice of low-risk smoke-free alternatives to cigarettes, and (to a lesser extent) the public health policies that support such choices. THR is *exclusively* a consumer process; if THR is employed medically, it becomes THM or Tobacco Harm Management, which is the medical term for it.

Because the national health statistics of Sweden are unique in the developed Western world, we know that THR works spectacularly well. Sweden has the lowest tobacco-related mortality of any Western developed country by a wide margin, since half of tobacco

consumers there do not smoke: they use a local product called Snus, an oral tobacco that has no statistically-identifiable association with morbidity or mortality due to its specialised manufacture. Thus, half of tobacco consumers in Sweden do not contribute to the mortality figures. Since these are mostly men, and women prefer to smoke, it means the male population derive the greatest benefit from this.

Sweden has the lowest male lung cancer and oral cancer rates in the EU.
Because THR has been so spectacularly successful in Sweden, we can expect similar benefits in those countries where vaping has so far enabled the largest percentage of smokers to switch, such as the UK - somewhere between 20 and 25% of smokers here have switched, and it may be possible that the UK achieves Sweden!s 50% switch rate at some stage; together with its attendant fall in tobacco-related morbidity and mortality to half of the 100% smoker rate after sufficient time has elapsed.
[3] See: Chris Price's answer to https://www.quora.com/Nicotine-does-not-initiate-carcinogenesis-but-promotes-tumor-development-so-does-nicotine-replacement-therapy-help-or-hinder-cancer-development/answer/Chris-Price-69
…scroll down to: "The problem with nicotine

Chris Price, good customer of the NHS - expert patient.
Updated May 26

Nicotine does all sorts of things in clinical studies using models of one kind or another. It does even more such things when the funder!s agenda is to make nicotine look bad, the usual reasons being commercial advantage or zealotry bordering on insanity.
Unfortunately for this agenda there is a vast data resource on nicotine consumption without cigarette smoke, and the inescapable deduction from that enormous pile of epidemiology is that nicotine has no association of any kind with cancer *in humans, in real life*.
What it does in vitro or in vivo or in animal models is totally, completely and utterly irrelevant because we know beyond the slightest doubt that **nicotine has no association with cancer in humans**. It doesn!t cause it, assist it, promote it, increase it, or stop it. It just has no effect on/with/to cancer at all.

Even NICE says so (see NICE PH45) - the official clinical guidance authority for all British practitioners of medicine - and if this group of senior British doctors state so (possibly the most ultra conservative people in the world), it can be regarded as a safe indicator of how the establishment view the issue.
And for the same reasons that:

- Ethics panels routinely approve clinical trials in which large amounts of nicotine are administered daily for long periods of time to never-smokers: they clearly consider these CTs and the material used in them - nicotine - to be harmless.
- People consume nicotine in the normal diet and everyone everywhere ever tested in a large-scale clinical study has tested positive for nicotine.
- No person has ever been found who tested negative for nicotine in any large-scale clinical study.
- Senior researchers are now being funded for multiple millions, repeatedly, to find new therapies to treat the rising incidence of Parkinson!s and other neurodegenerative diseases; auto-immune / inflammatory diseases; and cognitive function disorders - by giving a lot of nicotine to those never exposed to tobacco. It is clearly harmless or they would never do this. These CTs are ongoing, now, all of the time. Nicotine is regarded as harmless and with therapeutic value as yet not fully explored. Since it is almost certainly a nutrient, this is not earth-shattering news.
- Nicotine in NRTs has been sold since 1984 and as yet no indication of any type of changes in cancer outcomes has been seen. This would include untold millions of patients, many of whom are long-term consumers.

We can state without reservation, just as NICE have, that it doesn!t matter what lies, propaganda and junk science is churned out in California for hard cash - nicotine has no association with cancer in humans.
What nicotine does to lab rats swimming in it for a year is another matter. It's probably bad for them, just as swimming in sea water for a year would be, although I find it quite nice for 10 minutes every now and then.

…….

The problem with nicotine

The basic problem with nicotine is that it!s found in cigarettes. In addition, before the incompetent morons who declaim on this subject knew anything about nutrition, they needed a soundbite scapegoat for all the ills of smoking - and chose nicotine. This was probably a mistake given that there are over 10,000 compounds present in tobacco and cigarette smoke (9,600 have been identified to date, with more to come promised) and the only one that - with sufficient intelligence and knowledge - anyone could say with some kind of reliability was relatively harmless was nicotine. If they!d stuck their pin in anywhere else, it would have worked out better.

I have often thought that the primary qualification for doctors ought to be a degree in clinical nutrition before they are let loose anywhere near a patient, and this sort of debacle confirms it.

They didn!t know it was a normal component in the diet, and everyone consumes it.

They didn!t know that everyone tests positive for it, as a result.

They didn!t know that many vegetables contain it.

They didn!t know that you consume it in your cup of tea.

They didn!t know that you feed it to your baby in her mashed-up baby food.

They didn!t know that it wasn!t nicotine that caused all the health issues in smoking.

They didn!t know that chronic nicotine consumption lowers the blood pressure (not raises it).

They didn!t know that it is impossible to clinically demonstrate any sign of dependence on pure nicotine when administered to never-smokers: *it has no effect at all*.

They didn!t know that huge amounts of it can be shoveled down the throat or onto the skin or into the lungs of never-smokers and it has no dependence-creating effect at all. Never-consumers of tobacco when given pure nicotine react exactly as if you are giving them cabbage: nothing. It doesn!t matter how much you give them or for how long, or how you administer it, or anything else. It makes no difference. It doesn!t matter how much the professional liars lie about this, it can!t change the facts. The *facts* are that a dozen or more published clinical trials in which a lot of nicotine was given to never-

smokers for a long time reported no effect of any kind, except that where this was measured and recorded, it lowered their blood pressure; **and that not a single published clinical trial exists in which any sign of dependence on nicotine is reported in never-consumers of tobacco**.

They didn't know that smoking protects against auto-immune and neuro-degenerative disease such as Parkinsons, and that it is presumed that nicotine is the agent active in the protective effect (as it is present in the normal diet, and is an effective treatment for these conditions).

They didn't know that nicotine is not just an effective treatment for these conditions, but that it is so efficient it can even reduce the side effects of the main treatment used for Parkinson's, L-Dopa.
There is a lot they didn't know. The very, very little they did know is that some people were earning a lot of money from smoking and they wanted in on the gravy train. They got their wish.
If you think that it is unfortunate that people so ignorant can be put in charge of public health messages, you are probably right. However, that is not the end of the story, by a long chalk: when they *did* find out these things, do you think they did what any honest person would do? Do you think they then did what any person with a normal moral compass would do? Do you, by some chance, think they then did what any honest person in a position of responsibility would do, given that a great many lives depended on their actions? Do you think they admitted their mistake; or, perhaps, quietly found a more deserving candidate for all the evil they rather simplistically wished to hang on a single component from 10,000?
No. They didn't either admit their error, or even shift smoothly on to another scapegoat. Instead, they doubled down on their error, as if by shouting louder they could somehow hide the cock-up or somehow make nicotine the culprit by magic. They screamed ever louder that nicotine was the devil, despite not only that there was no evidence for it but that all the evidence was opposite to their fantasy.
If that causes you to think that some people in the Public Health industry are incompetent, corrupt, ignorant, bungling, murderously corrupt liars, and simply evil beyond any understanding, you may not

be alone in that sentiment.

……..

And now you have the result

As a consequence, it is a safe bet that everything you think you know about nicotine is the opposite of the truth. And that process is still continuing, every time you pay your tax or buy a product with supertax that goes to fund more professional liars.

The scientific community does nothing to stop the lies or corruption because they are gutless cowards. They all know that peer review is broken and useless; that scientific journals are nothing more than gutter press for hire; that the only honest way to publish is to pre-publish in draft and acknowledge all criticism; and that any science you want can be obtained if you have the money, no matter how far it is from the truth and how bent the disinformation is. And they say nothing because they are all gutless cowards who are part of the system and know they!ll get the boot if they speak out.

You say you are tired of experts? And we don!t need any more research funding as it is clearly going toward paying for more lies from professional liars?

You and a hundred million others. The question is what to do about it, since all the gutless cowards in the scientific, academic and research communities clearly won!t lift a finger to stop it - they all depend on the gravy train themselves.

Continuing on from "Can vaping cause cancer? (No)
https://www.quora.com/Can-vaping-cause-cancer/answer/Chris-Price-69

The following comes from
https://www.e-cigarette-forum.com/threads/a-list-of-symptoms-when-quitting-tobacco-and-changing-to-an-ecigarette.3305/

Contents

Section 1: Medical symptoms of tobacco cessation

The following are all symptoms of tobacco smoking withdrawal. They may affect quitters irrespective of the quitting method, and have no relation to the quit method, or lack of one, or alternatives switched to.

1. Mouth Ulcers

The Quit Ulcers are a common symptom of tobacco withdrawal, affecting many quitters. The ulcers can be very painful, but there are effective topical treatment gels. It has been suggested that high-dose vitamin therapy may also be effective.

The ulcers or gum inflammation may start a week or more after tobacco cessation. They generally clear up after a few days or weeks.

It may be possible that nicotine being absorbed through the mouth can also exacerbate this, as some users of nicotine gum have experienced these mouth sores; although it would need to be shown that those using nic skin patches did not suffer so commonly.

It may be that after ecig use, at first, drinking something to rinse the mouth out may help. This will get the nic (or perhaps flavorings or other materials) out of your mouth and not give it a chance to sit there and irritate your mouth tissues and make any sores worse, if this is in fact an issue.

Admin note
Note that PG is a bactericide and virucide, and used medically for that purpose, so that it is more likely to

improve this type of symptom than worsen it. It is unlikely that ecig vapor from an e-liquid with PG in will affect the Quit Ulcers in any way except beneficially.

However: Cinnamon flavoring in an ecig refill is known to cause or exacerbate this problem in some people.

2. The Quit Zits
A less common symptom of tobacco withdrawal is skin eruption, in the form of spots through to severe acne even in those who never experienced it when young. The 'quit zits' have no relation to ecigarette use.

The bad news is that in some cases these eruptions last for months, for some who successfully stop smoking cigarettes (whether or not e-cigarettes are used). There has been some experimentation to see if various e-liquid ingredients may exacerbate the condition (such as PG or flavorings), as some e-cig users have questioned this, but without any solid results.

3. Headache, Nausea, Shakiness - but see #V4
These, together with irritability, inability to concentrate, poor sleep, depression and so on, are common smoking withdrawal symptoms. If you are using a low-strength refill liquid and not absorbing as much nicotine as when you normally smoked, you can experience these withdrawal symptoms, which typically last only a few days to a week. Perhaps the use of a higher nic strength refill liquid might be a good idea temporarily, reducing the strength as needed. But: see V4

4. Coughing
Probably the most common symptom of tobacco smoking cessation, along with sputum / phlegm production. The severity and duration may depend on how heavy a smoker you were before switching, and how many cigarettes are smoked while transitioning to vaping.

5. Sputum, Phlegm

When quitting smoking, with or without using e-cigs, people find that they start coughing up all the junk they've been putting in - tars and other materials coating the surface of the lungs. This material is coughed up in the form of phlegm / sputum.

Some may find they start coughing up this junk within a week or two - some faster. The duration will vary, but most people find the morning cough went away in the first week and the rest of the junk came up within the first month. One of the most common symptoms of smoking cessation.

6. Heartburn, acid reflux

Some people have reported heartburn / acid reflux symptoms. This reported by those quitting who don't use an ecig, so it seems to be an occasional symptom of quitting. It is reported to go away eventually.

There is a possibility that swallowed nicotine may cause or worsen this condition.

Nicotine overdose is also implicated according to some reports - there is a hypothesis that nicotine causes the muscular valve at the top of the stomach to relax, in some people. NRT gum users are reported to see this issue more than others, so swallowed nicotine may be implicated.

One way to live with it is to use Gaviscon liquid, an OTC (over the counter) med that coats the gullet and stops the acid burning. It's far more effective than pills for some people. Or, see your doctor and discuss proton pump inhibitor (antacid) meds - probably the best course of action if symptoms persist.

7. Muscle Cramps and Aches

Some people report increased muscle pains. One theory is

that the PG in eliquid breaks down into lactic acid, which needs to be eliminated from the body.

Increasing water intake usually addresses this problem, whatever its cause. Not reported as much when using VG (vegetable glycerine) mixtures, but this is more than likely due to statistical probability since VG users are only a tiny number of total ecigarette users.

Admin note
The possibility of exacerbation due to ecig use is not proven. The problem with attributing muscle pains to lactic acid build-up caused in some way by ecigs is that all normal muscular lactic acid accumulation is topical, that is, if you work a muscle hard then that muscle alone accumulates lactic acid. Muscles are flushed out by natural processes and all lactic acid leaves via flushing, it is not possible for it to be introduced into a muscle even if that muscle is surrounded by others containing lactic acid - as any athlete will be able to confirm; this is especially clear from intense weight training, where several muscles can be intensely worked to produce subsequent lactic acid symptoms even though immediately adjacent muscles are completely unaffected. Thus, muscle aches are likely to be a tobacco withdrawal symptom.

8. Night Sweats
Some report night sweats, it is not known if this is a tobacco withdrawal symptom or not.

It has been reported that an intolerance to PG may be implicated but this is not proven. A change to VG only use and the immediate cessation of night sweats would confirm it but this is not reported.

9. Diarrhoea
Again, this may be a tobacco withdrawal symptom although it has been claimed that intolerance to PG might be the

cause. Once again, a switch to VG accompanied by the immediate cessation of diarrhoea would confirm it.

10. Hiccups

Hiccups are reported to be a symptom of nicotine OD, for some people. Because of this, and their common occurrence, they are also known as the 'niccups'. The idea that they may result from an alternative delivery path for the nicotine, via the mouth or gullet (i.e. swallowing it), is attractive to some people.

Hiccups are reported to be experienced by smokers and tobacco users, and are said to be more common among those who use chewing tobacco, Snus, or dissolvable tobacco tablets. It is further suggested that they swallow tobacco juice and hiccups may result. They are not common among pipe and cigar smokers, who are less likely to inhale or swallow smoke, or users of nasal snuff.

11. Bleeding gums

A period of time when the gums bleed has been reported as an occasional symptom of quitting tobacco. Anecdotally, dentists have confirmed this. It's also a symptom of vitamin C deficiency, which is not uncommon with a modern diet, so it may be wise to take vit C supplements in order to cover that possibility.

There is a modern trend to take aspirin daily for many years - decades, for some people; this is perceived as a risk-reducer for cardiac issues. If you habitually take aspirin then it may be worth asking your doctor if this might be implicated. A combination of tobacco cessation and chronic aspirin ingestion seems to occur in many reports of bleeding gums. A positive note is that the bleeding apparently ceases as the tobacco cessation event recedes into the past.

12. Sleepiness

Some quitters report sleepiness as a side effect of quitting.

Prof Molimard attributes this to hypoglycemia (low blood sugar) - see: Glycemia, Stimulation, and suggests that smokers self-titrate to increase their blood sugar, as smoking (probably due to nicotine) raises blood sugar levels (and therefore improves alertness). Cessation lowers blood sugar levels, which might be countered by glucose tablets and/or nicotine consumption.

13. Thyroid issues when quitting tobacco

There is discussion currently among the medical community about possible thyroid issues occurring after smoking cessation. It is not known how widespread this is or how serious. The appearance of thyroid problems soon after quitting is statistically higher than should occur, so there is a question whether smoking suppresses the symptoms of thyroid disease or whether quitting triggers it, or indeed if smoking causes or exacerbates it. Hashimoto's Thyroiditis is anecdotally linked to recent smoking cessation.

Some reported symptoms of a thyroid problem are: a choking feeling, scalloped tongue, and weight gain; treatment is apparently not difficult. Please consult your doctor if you experience such issues after smoking cessation.

Here are links for further research:
Does Quitting Smoking Trigger Thyroid Disease? - Thyroid Disease - 10/13/97
Smoking and Thyroid Disease: Exploration of the Connections / Thyroid Disease Information Source - Articles/FAQs

Some useful comments from thyroid patients who had been diagnosed before starting use of an e-cigarette:
Vaping and thyroid issues ? | E-Cigarette Forum

It is worth noting that thyroid meds such as Syntroid can cause a range of worrying symptoms if the dosage is wrong.

There is at least one case where these symptoms were attributed to vaping before it was realised the meds dosage was too high.

Also see: Aspartame, in Section 4 below.

Also see: Smoking cessation and autoimmune diseases, in Section 4 below.

Section 2: Vaping-related issues

V1. Dry Throat, Sore Throat

Tobacco withdrawal produces a sore throat in some people. It is unknown why this occurs but perhaps cigarette smoke ingredients have some sort of preventative or anaesthetic effect, and stop the throat becoming sore during cigarette use, which it is easy to see could cause it.

Some - but by no means all - suffer from a dry throat, or even a sore throat, when starting to use an e-cigarette due to the drying-out effect of PG.

If a person suffers from both conditions: the tobacco withdrawal sore throat, and the e-cigarette new-user sore throat, then in rare cases a fiercely sore throat can result.

PG is a humectant (attracts, ie 'sucks out' water) and when vaping the back of the throat gets coated. You can find that after sleeping, you wake up with a sore throat. Things that can help are drinking a glass of water before bed, gargling with a mouthwash to cut the PG coating before bed, drinking water throughout the day, using hard candies and drinking liquids with honey liquid through the day to keep your mouth moist - especially if you are a new user.

An alternative for those who experience more throat dryness than normal is to change to a VG-based e-liquid,

which normally solves the problem. It is thought that >1 in 100 but <1 in 10 suffer from PG-induced throat soreness after the initial period of acclimatisation. This is why asthma inhalers are gradually moving away from PG as the excipient, to glycerine. The availability of virtually pure synthetic glycerine has probably helped this move.

V2. Cottonmouth
Extra-dry mouth or xerostomia, commonly called cottonmouth, can be experienced by some. The obvious solution is to sip liquids, especially those that seem to assist the repair of dry buccal tissue such as blackcurrant juice (some acidic fruit juices may not be of much benefit). This may be problematic when travelling, so throat lozenges may help. Biotene mouthwash and sugar-free chewing gum are also suggested.

It appears that PG is more likely to cause this than the other two refill base materials (VG and PEG), so a change to all-VG liquid, or just a higher percentage of VG, may help.

V3. Light phlegm
It is not unusual for ecigarette users who ceased tobacco smoking several months previously to experience light phlegm, coughed up once a day or more. It may be more pronounced with VG e-liquids. This might be regarded as a beneficial effect since it allows the body to expel unwanted inhaled materials.

V4. Headache, racing pulse, inability to sleep
Also light-headedness, tinnitus (ringing in the ears), dizziness, slurred speech, hiccups, tingling of the extremities (fingertips, toes), jitters, teeth grinding - all these are reported as nicotine overdose symptoms.

Sometimes we overestimate just how much nicotine we were getting with regular cigarettes, and underestimate how much we are vaping, particularly at the beginning. Racing

pulse is the most common, slurred speech less so. Headache can be severe. Light-headedness plus tinnitus is described as the 'just come out of a loud rock concert' effect. Try cutting down the nic dosage in your cartridges or liquids or vaping less frequently. The nicotine strength can be easily reduced by adding some VG (Glycerine, USP - obtained from a pharmacy), although this will also reduce the flavor.

It is said that some people experience one or other of the above symptoms even with a low nicotine liquid and find that switching to VG solves their problems, although such symptoms of PG intolerance are not widely believed to exist never mind be proven. It is more likely that such a reduction of the symptom/s (while staying at the same nic level) would be due to an intolerance to flavorings, colorings or similar used in an eliquid, and changing to a VG liquid simply removed those particular ingredients - see footnote.

Tachycardia and insomnia
A racing pulse and inability to sleep are symptoms of nicotine OD that may be experienced by those who have never before had any symptom of excess nicotine consumption. It is not clear if these symptoms are due to a batch of e-liquid that was considerably stronger than labeled, or an eventual reaction to excess nicotine. The solution might be to reduce the nic strength to a minimum sufficient to produce the required results (removal of cravings, adequate life functionality, stress relief, etc.) and no more.

Note that there is a huge range of tolerance to nicotine: some people report that 12mg liquid causes these types of symptoms for them, while others consume fairly large quantities of 36mg (or even higher) with no effects whatsoever. There are cases of users with 6mg liquid who reported that over-consumption was problematic, compared with some users who vape 60mg with no effects. There are

many reports of people consuming 48mg in order to successfully convert to an e-cigarette. This appears to show that there is a factor-10 variance in nicotine tolerance between individuals - that is, some can tolerate a nicotine intake ten times higher than others; equally, low strength refill may be ten times too weak for some users (especially when in the process of switching).

As a general policy, it is probably best to reduce the nicotine strength to the minimum needed. It will often be impossible to equate this to the amount smoked as for some reason there is no direct relationship, for many/most people. Also, the nicotine strength of the liquid can be reduced over time, for most people. This is so common that it is regarded as routine: surveys have shown that 65% of vapers reduced their nic strength during the time period covered. Nicotine (that is to say, pure nicotine independent of tobacco) does not create tolerance: vapers easily reduce the strength, over time, for exactly the same effect.

Nicotine delivery efficiency

There are two factors that must be taken into account here:

1.a. The nicotine delivery efficiency of the hardware varies. The average efficiency is reported as 50% in multiple trials and this is no longer disputed: on average, only about half the nicotine in the refill liquid is transferred into the vapor. Efficiency varies between devices from a low of about 10% to a high of about 80%.

b. This must be taken into account when calculating actual nicotine delivery to the user. The only valid way of determining the actual result is by measuring the plasma nicotine level.

2.a. Again, by virtue of multiple trials over several decades, we know that pure nicotine delivery is far more efficient than nicotine delivered by tobacco smoke. That is to say: less is needed to do the same job.

b. We know this because of the very large number of plasma nicotine measurements of vapers compared to

smokers, and persons tested both vaping and smoking, that clearly shows that vapers' plasma nicotine level is about 33% to 40% lower for exactly the same effect as that achieved when smoking.
c. This was first demonstrated by the 'Favor' cigarette researchers decades ago, who noted that much less pure nicotine was needed, and described tobacco cigarettes as having a 'blunting' effect on the nicotine.

Therefore we see that - contrary to the popular opinion - nicotine delivered by a combusted cigarette is far less effective (c. 40%) than pure nicotine. Thus, we should be careful about consuming too much nicotine from a pure nicotine delivery system such as an ecig: it is 'stronger'. The likelihood of any harm is extremely low (see Prof Hajek's commentary on this topic, for example) - but the temporary effects may be unpleasant. This is probably one reason why vapers can reduce their nicotine strength to quite low values such as 6mg or 12mg, over time; the effect of pure nicotine is far more potent than within tobacco smoke.

This may be counter-intuitive but it has been well-demonstrated and is accepted by those with experience of administration of pure nicotine.

We can calculate the total amount consumed thus:
a. A vaper uses 6mg strength (0.6%) and consumes 3ml of refill liquid per day.
b. The total amount of nicotine in the refills is 6mg x 3 = 18mg.
c. The delivery efficiency of the hardware varies but is on average 50%.
d. The vaper receives 9mg of nicotine per day (although we don't know, with this calculation at any rate, if the bioavailability of vaped nicotine and smoked nicotine is equivalent).
e. If all other factors were equal (which they hardly ever

are), this equates to around 11 cigarettes per day @ 0.8mg per cigarette delivered.
d. Almost always, vapers need a much higher level to begin with (smoking creates tolerance to nicotine, which reduces in proportion to the time since cessation of smoking).

V5. Intolerance to e-liquid ingredients

A small number of people find they are intolerant to an ingredient and need to change the refill liquid they use.
a) The most common source of minor intolerance issues is PG, the most common base or carrier liquid component. A large number of symptoms have been reported, from sore throat, dry skin, and itching - though since there has been no research of such topics, all statements are guesses/ opinions. If you find that you are experiencing some sort of issue then the first thing to try is a higher percentage of VG in the liquid (i.e. less PG), or an all-VG liquid, to see if the problem disappears.
b) A very small number or people report the reverse: an intolerance to VG. However, it should be carefully noted that not all glycerine can be used for e-liquid purposes. In particular it has been reported more than once that buying a cheap brand resulted in an adverse reaction. Note that only 'Glycerin, USP' bought from a pharmacy is recommended. VG can be made for industrial purposes and a cheap brand bought in a general store is unlikely to be of the best quality. If a reaction to VG is experienced, it would be worth trying another brand.
c) Some are intolerant to other ingredients, and these are most likely flavorings or colors. The answer is to change to a different liquid or even a different supplier, and see if the problem persists.
d) If you experience a strong reaction to a new liquid then don't use it any more - change to another liquid from another supplier. Some flavorings are obviously going to cause a reaction in a percentage of people because of the type of flavor and its known issues - cinnamon is an example. Some will have a reaction to it and this must be

expected.

Here is a post on PG vs VG issues:
Ecig VG health question | E-Cigarette Forum

V6. 'Menthol Mouth'
It is reported that the use of large amounts of menthol-containing e-liquids can result in the deadening of taste for a period, with the result that all refills become tasteless for a while or until menthol use is reduced or ceased. Cinnamon is also implicated.

'Vaper's Tongue'
Many vapers report that all e-liquids lose their flavor for a period. Another factor is the change in taste perception, mainly a loss of taste, caused by smoking, together with its return after tobacco cessation, followed by a period experienced by many when taste goes dead for a time during the first few months off cigarettes, even for those who have not used menthol. Vaper's Tongue soon passes. Some people give advice in how to speed up the return of taste, which can include methods such as vaping unflavored refills, using specific mouthwashes, and so on; but the sense of taste soon returns whatever is done or not done.

CAUTION: E-Cigarettes and Emphysema

Persons with emphysema are at increased risk of pneumonia, and there is a possibility that e-cigarette use may increase this risk further. At Q4 2013 there are only two cases where this may anecdotally have been a factor, after many millions of ex-smokers using e-cigarettes for 8 years, so it is clearly not a major issue.

Nevertheless, emphysema patients are at risk of pneumonia, so any increased risk is not advisable. Smokers

with emphysema (or stage 3, stage 4 COPD) should switch to Snus, not an e-cigarette, since inhalation of anything that might negatively affect an existing, serious lung disease is not advisable.

The pulmonary consultant MUST be informed of any decisions in this area. It is especially important that the consultant is fully aware of all lifestyle decisions, and the patient and family should ensure the consultant is aware of all possible issues. The directions of the consultant should be complied with.

Our advice is:
(a) Snus would seem a better choice, in the circumstances.
(b) You must consult your doctor about these issues because some patients with serious lung diseases caused by smoking are at risk of pneumonia.
(c) This is one of the very few areas where 100% VG e-liquid does not seem advisable. A percentage of PG seems preferable as it it has a bactericidal and virucidal action, which seems desirable here. The use of all-VG does not seem the optimum choice by persons with emphysema.

Conclusion
Snus is the best choice for smokers with emphysema who cannot give up tobacco/nicotine.
An all-VG e-liquid does not seem the best choice, some proportion of PG seems advisable.
Consult your doctor - there is an increased risk of pneumonia with emphysema, and it is not yet clear if e-cigarette use may, rarely, exacerbate this.

Note that pneumonia developing in an emphysema patient is common and *has absolutely nothing to do with* lipoid pneumonia. This has a completely different pathology. Inhalation of PG or even glycerine is not regarded as capable of causing or promoting lipoid pneumonia since (a) this is caused by oils, but PG and glycerine are alcohols (as

you can see by their common chemical names ending in '-ol': glycol and glycerol - their full chemical names are propane 1,2, diol and propane 2,3, triol), and (b) there is no evidence from the pathology that these materials are implicated (the cell pathology of lipoid pneumonia is easily identifiable). It is separate from other types, easily distinguishable, and has never been found present in any case of pneumonia in an emphysema patient who developed pneumonia while using an ecig (of which, as stated, there are only two cases).

Indeed, considering the elevated risk of pneumonia in late-stage COPD patients, and the very small number of cases found in smokers who switched to ecig use (n=2), e-cigarette use might even be considered to have a preventative effect. Since ecig refills are normally based on PG, and lung transplant patients' nebulisers and most asthma inhalers (certainly in the past, although many have now changed to glycerine) are based on PG, which has among the most powerful bactericidal and virucidal aerosols known,
this is not really a difficult concept.

Section 3: Beneficial effects of vaping vs smoking

Since we don't want to focus on just the negatives of tobacco cessation or e-cigarette use, here are some positive words from our experienced users.

First, most people adjust in the first week to symptoms. Dry throat and sore throat are easily remedied, and things like headaches tend to go away quickly.

Sinuses clearing up. A wonderful thing when it starts happening. Your sense of smell starts to come back,

stuffiness goes away, etc. You start noticing the smell of other people's smoke, or more subtle smells you've forgotten about as a smoker. The downside is you also start to smell the nastier smells too.

Smoker's morning cough going away. Most find that the annoying first thing in the morning coughing session goes away. Depending on how bad that was for you as a smoker, this is a definite milestone.

Deeper, clearer breathing. As your body clears all the toxins away, you start breathing deeper. Some report they get dizzy initially; perhaps due to taking in more oxygen and/or having no carbon monoxide intake. Many smokers actually breathe really shallow, especially if they've been smoking for a long while - so the change can be quite dramatic.

Smoke smell begone. No more stale smoke smell in your hair, your clothes, your home, your car. Downside is once your sense of smell comes back, you're prone to go on a massive cleaning spree - especially if you smoked in your home, you might find it smells unpleasant.

Section 4: Cravings during smoking cessation attempts

Cravings. For most people, cravings for a cigarette gradually reduce. There has been no specific research on this, so all opinions can be regarded as based on anecdotal evidence - but these points appear valid:
- A small percentage of smokers successfully switch completely within 1 week, and never smoke again. Any cravings are minimal and soon go.
- Most smokers switch gradually, as cravings gradually diminish. Most have either switched completely or reverted

to smoking, after about 4 months.
- Most long-term ecig users are no longer smokers.
- Some smokers continue with dual-use in the long term.
- Some smokers cannot switch successfully, and dual-use does not work for them, and they revert to smoking.

And we know that:
- A percentage of ecig users are no longer smokers.
- Although surveys report different results, the UK statistics are particularly well known due to multiple independent sources and especially Prof R West's work, and there it is accepted that of 2.1m vapers at Q1 2014, 700,000 were ex-smokers; thus in the UK it is known that 33% of vapers have quit smoking. The figures are not known accurately for other countries.
- No one knows what the averaged graph of time vs smoking status looks like. Smoking status is related to time: new vapers are mostly dual-users, long-term vapers (including of course total quitters) are mostly ex-smokers, and the time point is the critical factor.

It seems likely that:
- Most new ecig users are still smokers.
- Most long-term ecig users are non-smokers.
- At any given timepoint in their ecig usage history, a percentage of vapers have transitioned to become non-smokers.
- An average time-to-nonsmoking status could be calculated, eventually, with sufficient data.
- A full choice of hardware and reflls, and access to expert mentoring, is likely to be critical to non-smoking status. Smokers with poor access to products or mentoring appear far more likely to fail and revert to smoking.
- There must be numerous components to the chemical dependency factor, and these components have never been investigated. It is obvious that nicotine is just one of several agents responsible for the chemical aspect of dependency: if cravings are still experienced (and probably by the

majority, especially initially), when all routines are well-replicated and sufficient nicotine is supplied to even cause symptoms of over-consumption, then nicotine must be just one of the chemical factors involved in smoking dependence.

The use of WTA-inclusive liquids or Snus is reported to solve the cravings problem for many. This leads to the belief that the other active alkaloids in tobacco are responsible for some, but not all, chemical dependence issues.

Section 5: Areas of interest

A section for medical issues where there are unanswered questions, insufficient research, or debate regarding effects of medical conditions on e-cigarette users.

Cardiac dysrhythmia
- aka arrhythmia, irregular heartbeat, palpitations. These types of symptoms are a more serious version of the issues mentioned in para V4 above. They are a rare occurrence and have been noted in cases of extreme long-term nicotine overuse, especially with dual use of NRTs and smoking - for example in persons who smoked and also used nicotine skin patches excessively, or who chewed large quantities of nicotine gum. This type of symptom can also occur for some people as a result of nicotine overdose.

Some cardiac dysrhythmias may be serious, such as atrial fibrillation ('a-fib'). It would be wise to avoid behaviors that might lead to such conditions.

Because it is easy to over-use an e-cigarette since there are no immediate adverse effects, unlike smoking which produces sore lungs and throat, it may be possible for people to consume too much nicotine over an extended

time period of months or years. It may be wise to consider this, and cut down on the nic strength if possible.

There is a group of people who show no signs whatsoever of nicotine overdose, no matter how much they consume and for how long. Perhaps such people are more at risk than others, because they receive no warnings of over-use; equally, they may be at less risk since nicotine clearly has less effect on them.

It is probably a good policy to gradually reduce the amount of nicotine consumed until the lowest level of acceptable efficacy is reached, instead of consuming high-strength nic without regard for the fact it may be far more than is needed for the desired results, and that it is a toxic substance when over-consumed and that perhaps cannot be taken in large quantities over time without issues. Most people experience some sort of warning that excess nicotine has been consumed, in exactly the same way excess coffee (or alcohol) affects them - the effect is not pleasant. However for some people there are no warnings at all that enough nicotine has been consumed. For this group, additional caution may be in order.

Vaping and diabetes

Diabetes is one of the medical conditions that generates questions regarding its relationship to e-cigarette use. There simply is not enough data over a sufficiently-long time period to resolve such questions. There are various anecdotal reports, such as:

Blood test results for vaping and diabetes

There seems to be no negative effect; some report improvements after switching but it is too early to comment. Perhaps an improvement in overall health might be beneficial (some research indicates that a 1PAD smoker is 60% more likely to be diabetic).

Blepharospasm

In its simplest form, this is an involuntary twitch of the eyelid. In its minor and temporary form it is linked to stress; increased eyestrain; (anecdotally) reports of elevated caffeine and nicotine levels; and (anecdotally) a nutritional deficiency. ECF members report that they fixed a blepharospasm issue that occurred after starting vaping by:
- Resolving a vitamin D3 or zinc deficiency
- Avoiding elevated combined stimulant levels (cutting down on coffee and vaped nicotine, especially when combined)
- Fixing an eyestrain or stress issue

We don't have real confirmation of any of the listed resolutions but this is what has been reported by our members. Interestingly, this is one symptom that may even be caused by ECF: a person who had not used a computer extensively before, reported that after excess research on ECF they experienced blepharospasm, which was resolved by less internet use.

Aspartame
In the item above, at Section 1 #12, about thyroid issues, it was mentioned that over-prescription of the thyroid med Syntroid can produce alarming symptoms; these appeared to an e-cigarette user taking this med as being related to their ecig use. This proved incorrect, as it was an over-prescription issue.

Recently we have seen similar concerns regarding aspartame, the artificial sweetener. Perhaps it may be expedient, if you are a diet cola drinker and experiencing unusual symptoms that may appear to be related to smoking cessation or e-cigarette use, to try a reduction or cessation of consumption of sodas / fizzy drinks / colas that include artificial sweeteners instead of sugar. 'Diet colas' and 'diet sodas' seem to be the issue here. Although there appear to be concerns that these artificial sweeteners can in rare cases contribute to symptoms variously diagnosed as Multiple Sclerosis or Lupus, what we are concerned with

here are unexplainable symptoms that may be attributed to e-cigarette use when in fact the cause is elsewhere.

Smoking cessation and autoimmune diseases
There is a statistical correlation between smoking cessation and onset of some autoimmune diseases (see list here).

Two classes of conditions implicated are thyroid and bowel disease. There may be some connection between smoking / non-smoking, or smoking cessation, and endocrine issues or onset of inflammatory diseases.

Thyroid conditions are more prevalent among those who have quit smoking than the norm. See the section on this above.

Ulcerative Colitis is sometimes classed as a 'non-smoker's disease' as it is more prevalent among non-smokers; presenting with UC also has a statistical correlation with a smoking cessation event. Since it is a disease with a strong genetic connection (it is often found to run in families), there is a school of thought that says that if your family appears to have a strong genetic predisposition to UC, then you should consider smoking as a preventative measure; or, don't quit smoking; or, if the condition has already presented, then smoke one or two cigarettes a day as a treatment. There are doctors who have suggested all of these measures; others suggest using NRT products such as nicotine skin patches.

There is some research that demonstrates that nicotine is the beneficial agent here; we also know that another of the tobacco alkaloids, anatabine, has a powerful anti-inflammatory action. Therefore if someone decides to use an e-cigarette for nicotine consumption as a preventive measure against UC, or as a treatment after the condition presents (which would appear to be a better option than smoking), then consideration might be given to using a WTA

refill as against a plain nicotine one (WTA or whole tobacco alkaloid refills include the other active alkaloids such as nornicotine, anatabine, anabasine and myosmine - this approach reduces cravings for those who still experience them even when receiving sufficient nicotine substitution). Currently there are two vendors of WTA refills. Another alternative is Swedish Snus, an oral tobacco popular in Sweden that is specially processed to remove most carcinogens and has an excellent safety record (it is not associated with oropharyngeal cancer [mouth cancers]). Note: only the Swedish-made version should be used as we only have solid risk data for this product.

It is known that being a non-smoker, or smoking cessation, has a statistical connection with some of these conditions. Nicotine is assumed to be the preventative factor (or the main one) but there does not appear to be really solid evidence for this, so a WTA-inclusive refill approach seems a better option.

Nicotine and neurodegenerative disease

There is a strong connection between lack of nicotine and neurodegenerative conditions. Nicotine is an active component of the normal diet, everyone consumes it, and everyone tests positive for it as several vegetables contain nicotine and its sister compound nicotinic acid (vitamin B3). All large-scale clinical studies of this issue report that every subject tests positive for nicotine, one being of 800 people carried out by the US CDC. It is reported that a background level of nicotine at 2ng to 3ng/ml blood plasma can be measured in any person with a good, nutrient-rich diet. It appears that some people may have poor diets or need nicotine supplementation, because:

- There is a very strong correlation between smoking and less risk for Parkinson's disease: more than 40 clinical studies report that smokers suffer less Parkinson's occurrence than non-smokers (until the age point at which the harm from smoking eliminates any benefit).

- This prophylactic effect can be seen across a range of neurodegenerative, auto-immune and inflammatory diseases.
- Nicotine therapy is beneficial for many patients who have presented with such diseases, and also for some types of cognitive dysfunction.

At this point it looks as if pure nicotine as taken in vaping may benefit people with a family predisposition to early-onset neurological, cognitive or auto-immune conditions. Research on these topics does not receive the publicity it deserves, due to the false conflation of nicotine with smoking instead of its recognition as, in all probability, an active nutrient in the normal diet that some may require supplementation of. There is a confounder here in the form of one of the tobacco alkaloids, anatabine, which is known to be a powerful natural anti-inflammatory and is used in rheumatism meds for this purpose. At this time we don't know if nicotine is the only compound in tobacco with a beneficial effect on these serious conditions; perhaps a WTA approach might be useful.

PG and tinnitus

A very small number of people with pre-existing tinnitus report that vaping of PG-based refills negatively affects their condition: the tinnitus worsens. It is extremely hard to put any kind of hard number on such an effect but it must be in the region of 1 in 10,000 persons or less. This effect is believed to be due to an ototoxic effect of PG for some people and the likelihood that vapour will permeate the ENT region including the inner ear. The solution would be to change to an all-glycerine refill, which at 2015 are becoming easier to find.

Nickel intolerance

A 'nickel allergy' is reported by some vapers. This effect is one of the ultra-low number reports made visible now by millions of health reports on the effects of vaping in the online forums, so is not considered a significant issue at this

time. The number affected is less than 1 in 10,000. It is not agreed if the term 'allergy' is correct as some regard this term as specific to organic sources or proteins; but the effect might be considered similar as the exposure is microscopic and of the order of a few molecules per day or possibly 1 ng (one nanogramme) per week or similar. The exposure is said to be the result of nickel molecules being shed from the atomiser coil and inhaled with the vapour. The vast majority of ecig atomiser coils are currently nichrome, although kanthal (which has no Ni component) is gaining ground as it is by far the most common choice in the RBA market area.

It would seem likely that sufferers would know of this problem due to contact dermatitis caused by the multiplicity of nickel items in the environment. Handling coins, wearing jewellery and so on would be an exposure route. The symptoms are said to include skin rash, itching and eczema; rarely, erythema multiforme and vasculitis. Those extremely sensitive to nickel would need to avoid foods such as fish and chocolate that may have a measurable nickel content. A useful resource on this issue appears to be here.

It is worth noting that TC, temperature control, devices need Ni200 or pure nickel atomiser coils in order to work. Since these are increasing in popularity, and these atomizers are driven hard (right to the edge of the performance envelope, in fact), we might expect to see an increase in nickel intolerance reports. This is probably why titanium wire for RBA coils on TC devices is apparently becoming more popular.

Section 6: Drug interactions and contra-indications

NSAID cardiac issues

It has been found that consumption of certain (but not all) NSAIDs such as ibuprofen (Nurofen) and diclofenac can, in some circumstances, lead to cardiac events including dysrhythmias. There is one clinical trial that shows a relatively high dose can produce such an effect within one week, for vulnerable subjects, so this is not necessarily a long-term consumption issue. The dosage needed to produce effects reliably was 1600mg per day, which is relatively high. However consumers should consider whether long-term regular use of e.g. ibuprofen with nicotine might be desirable in those with a family history of cardiac issues.

Antidepressant medicines and e-cigarettes
There are questions about taking antidepressants in conjunction with sources of nicotine such as NRTs and e-cigarettes. The issue is thought to be the possibility that some antidepressants may block nicotine receptors in the brain, causing the person to take more nicotine than advisable. Presumably the same problem is not apparent with smoking since the effects of over-consumption are more visible and unpleasant. Snus consumption is an interesting question here because there is good evidence from comparative blood plasma nicotine tests that some Snus products can provide more nicotine than many other sources (including cigarettes, e-cigarettes and NRTs), leading to the possibility that this issue would have more impact with Snus consumers than others.

Persons taking antidepressants are advised to consult their doctor and ask about this issue, and investigate antidepressants that don't have the problem.

The reasoning behind this is simple: there are many antidepressants, but only one proven safe and effective way to avoid the significant risk of disease and death from smoking, which is Snus; and one method with a large amount of anecdotal evidence to suggest it is potentially at least as good as Snus - electronic cigarettes. There are no

other proven safe and effective ways to avoid the risks of smoking*; so it is probably better to seek an alternative antidepressant.

* Pharmaceutical interventions for smoking cessation have a well-demonstrated 9 out of 10 failure rate in the real world as against clinical trials, and in independent clinical studies as against those paid for by the manufacturer. The safest option, NRTs, typically perform at the least-effective end of the scale, with a 2% success rate commonly reported; psychoactive drugs may perform at the top end of the scale, with a success rate approaching of 1 in 10 or even slightly better, but have well-documented risks. Since the failure rate is at least 90%, and therefore 9 out of 10 patients will return to smoking; and since continued smoking has a 50% risk of death (we are told); then it follows that patients receiving pharmaceutical interventions for smoking cessation are at considerable risk. Thus, it is incorrect for multiple reasons to describe pharmaceutical interventions as 'safe and effective', as can be seen from the above.

Also keep in mind that mentoring, that is to say constant expert support, makes a very great difference to results and this applies whatever approach is used.

Seroquel
Some anxiety meds and similar such as Seroquel, Risperdal, and Zyprexa may interact with nicotine. It is far from clear yet whether dosages need reduction or elevation and *care needs to be taken* in this area. Several cases of interactions have now been reported here but the exact solution is *unclear*.

A quote taken from an ECF post by a psych nurse states: "Anti-psychotic medications like Seroquel, Risperdal, Zyprexa, etc., all work on the same CYP 450 pathway in the liver that nicotine does. When a patient smokes and takes

these medications, we actually have to give them a higher dose to compensate for the metabolic differences. This adds a treatment difficulty component for keeping Schizophrenia and Bipolar disorder asymptomatic and in remission."

Patients on anxiety meds and similar, who smoke or use an ecig, would appear to benefit from consulting a psychopharmacology specialist in the event of unwanted symptoms, since primary care personnel (doctors, GPs) may not have the specialist knowledge of psych meds and interactions that may be needed. In addition, it is not yet clear in which direction dosages should be adjusted.

Prednisolone
There may be an interaction between one of the WTAs (whole tobacco alkaloids) and prednisone / prednisolone, the anti-inflammatory steroid. More information is needed.

This would only be of interest to those using WTA refill liquids or Snus (or smoking).

Section 7: Interesting reports

Here, we'll list interesting information / reactions received that are not widely reported.

1. *Violent mood swings when using cleaning materials*
There have been several reports that after quitting tobacco, the use of large amounts of strong cleaners such as floor cleaner that flood a room with vapor can cause sudden mood changes, always for the worse, including depression and hostility. One theory is that ammonia vapor is the culprit, for unknown reasons. This is not reported in the general press but since ECF is probably the largest smoking cessation forum in the world (in effect), with tens of thousands of visitors per day and over 300,000 posts per

month, it seems reasonable to expect that newly-reported symptoms of tobacco cessation might be seen here first.

Section 8: Assorted notes

1. Medical reports of illness

The lack of official medical reports of illness linked to e-cigarettes is extraordinary. After global use by millions of people for many years, there is not one single confirmed report of mortality linked positively to e-cigarette use; morbidities are minimal and not recognised as serious. Prof Rodu examined the 47 serious adverse event reports received by the FDA for e-cigarettes (compared with >10,000 for Chantix over the almost identical period following their near-simultaneous introduction), and reported on the extraordinarily low number of credible adverse events. Even common medications such as aspirin could not achieve this record. It indicates that e-cigarettes are best thought of as a food product like coffee, since no medication can replicate this accomplishment.
Note: there are rare cases of issues with long-term abuse of NRTs but such cases are so uncommon they are not considered clinically significant (they are not even identifiable statistically); and ecigs do not even have this level of issue.

Be very careful indeed in ascribing this to a lack of monitoring of some form: *e-cigarettes are far more closely and carefully observed than any pharmaceutical*.

2. Tendency to assign all new symptoms to e-cigarette use

There is a strong compulsion in many people to assume that

all/any new medical symptoms must be related to their new electronic cigarette usage. In 99% of cases these are found to be normal symptoms of tobacco withdrawal which they were unaware of - such symptoms are very wide-ranging and can occur for up to six months. In some cases, a full check-up reveals there is an unrelated medical issue. Finally, some symptoms are due to intolerance to a particular brand of e-liquid or type of ingredient.

3. Minor specific e-liquid issues

In some cases, people are intolerant to ingredients in a range of liquids from one vendor. The answer is to try some from other vendors.

It should be *carefully noted* that it is *extremely unlikely* that all materials offered by all vendors can be consumed by all users with no adverse consequences - somebody, somewhere, will be intolerant to one or more ingredients. One answer would be to try to exclude e-cigarettes or identify the e-liquid or the ingredient causing the problem, by doing the following, in order:

1. Reduce the strength of nicotine, since some symptoms may be nicotine OD.
2. Stop using flavorings that are known to have implications. Cinnamon, vanilla/vanillin, capsaicin (chilli extract), and dark food colorings (e.g. coffee) are likely to cause problems for some (or even many) people - and this is not a complete list. Diacetyl (butter popcorn flavor) is highly toxic and should never be inhaled as it can cause a degenerative lung disease, bronchiolitis obliterans.
3. Cease using e-liquids with long ingredient lists. For sensitive people, the less ingredients the better.
4. Stop using any e-liquid except a type known not to cause problems, such as a low nicotine strength VG liquid with a good reputation for purity. For example, genuine Ecopure at 12mg would be a good choice. All the flavors in this range are *very* mild, and little has been added to the basic liquid.

But: note the caution on emphysema and VG-based liquid.
5. Try a different cartridge filler material or cartomizer type, to eliminate the possibility of inhaling burnt filler/batting.
6. Change to Swedish Snus temporarily (instead of going back to smoking) and see the effect.

One or more of these actions should help you find out if the culprit is e-cigarette use, and if so, exactly which factor is the problem. More than nine out of ten problems result from tobacco withdrawal or other medical issues; the remainder are normally intolerance to an ingredient or ingredients used by a particular vendor.

4. Allergic Reaction to E-liquid Ingredients

There have been a small number of cases reported where some of the symptoms were similar to #V4 but in addition there were one or more of the following: chest pains, dizziness, severe skin tingling, a feeling of electric tingling on the scalp, a general feeling of being very unwell, insomnia, headache. These symptoms may or may not be related to use of a new e-liquid. They are also the exact symptoms of over-prescription of the thyroid med Syntroid.

If you think you may have experienced a reaction to an e-liquid ingredient then do not use that liquid. This is one reason to buy small, sampler pack bottles first, before buying larger amounts.

5. Specific brand VG intolerance

There are cases now being noted of severe intolerance to specific brands of VG. This may be because there are several different ways to manufacture VG, and some products may not be suitable for inhalation as a result. Or, it may be an issue with an additive of some kind.

The symptoms are shortness of breath, wheezing, congestion, bronchitis-like effects. This indicates that another brand should be used immediately. The symptoms

quickly clear up after changing to another brand.

Jatropha plant toxins

This is a potentially serious issue and needs consideration. Glycerine produced as a by-product of biodiesel production **must not be used** for inhalation as it may contain toxic contaminants. The phorbol esters of the Jatropha plant, increasingly used in biodiesel production, are toxic; and apparently hard to isolate in analysis. Neither the FDA nor the pharmaceutical industry are currently said to be in a position to be able to identify these toxins reliably. There may be a problem at Q3 2012 in that there may be a possibility that biodiesel by-product glycerine may find its way into retail glycerine products in some circumstances (google 'fda jatropha').

6. Pre-existing lung disease: the issues

As more smokers switch to electronic cigarettes, it will be found that more persons with pre-existing lung disease caused by smoking will take up vaping. There are a multitude of issues here and it is very likely that some high publicity incidents will occur. People will die from these diseases as many are terminal, and if they have started to use an e-cigarette in the late stages, it may be blamed on the e-cig.

If a person already has diagnosed COPD, emphysema, severe bronchitis, a history of pneumonia, or similar, then the sensible thing to do would be to use Snus and not an e-cigarette. Inhaling more materials into damaged lungs is not going to improve things.

It should be noted that emphysema sufferers have an increased risk of pneumonia, and a percentage of emphysema patients will develop pneumonia and subsequently die. If they happen to be using an e-cigarette then this may unjustifiably be implicated (and this has already occurred). It is unjust to blame the e-cigarette since

(a) pneumonia is commonly seen in emphysema sufferers, and (b) nothing further should be inhaled into seriously damaged lungs in what may be a terminal illness situation. It is quite possible that e-cigarette use will exacerbate the condition and this is simply logical, and not something that, in fairness, is entirely unexpected. Emphysema patients should not inhale anything further since it is unlikely to be beneficial.

The sensible advice is that if you have a lung disease then don't inhale anything more. If you are diagnosed with a lung disease, then stop smoking, vaping, or any other type of inhalation of foreign materials - switch to Snus instead. Smoking damages the lungs, sometimes beyond repair, and continuing to inhale anything after diagnosis is not going to help anyone - either the person involved, or the vaping community, when patients eventually die as a result of smoking-related diseases and where an e-cigarette was being used.

The e-cigarette in cigar mode

One thing worth mentioning here is that an e-cigarette can be used in 'cigar' or 'pipe' mode: with a sufficiently strong refill liquid, it may not be necessary to inhale the vapor. If the nicotine level in the e-liquid is of sufficient strength then some - perhaps enough - absorption will occur in the mouth (and nose). The highest retail strength of e-liquid currently available is 45mg (45mg/ml or 4.5%). Some persons cannot tolerate 6mg in excess, others can tolerate 60mg ad lib without symptoms, so there is a factor-10 difference in tolerance. Some experimentation with nicotine strength would be needed, in order to provide a satisfactory experience when using the ecig in cigar mode.

Section 9: The purpose of e-cigarettes

At ECF we don't support the use of e-cigarettes as a

smoking cessation method since it is more logical to view ecigs as a low-risk alternative to smoking for long-term use, in the same way that Snus is; although unlike Snus, ecigs are not a tobacco product since they don't contain any tobacco. The nicotine, if used, could come from any source. This consumer-driven process is called 'substitution' or 'Harm Reduction'. A consumer decision is made to purchase a consumer product to substitute for one seen as having higher risk (cf. low-fat foods, low-alcohol beer, decaff coffee). In this particular area it is also known as Tobacco Harm Reduction or THR.

No doubt some e-cigarette users will transition to zero-nicotine use or totally quit, but this is regarded as an ancillary effect and of no immediate interest, since if the risk profile is similar to that shown for Snus, statistically and certainly clinically there is no practical difference between continuing use and total cessation. There is no significant statistical difference in health outcomes between those who totally quit smoking and all tobacco use, and those who switch to Snus. A slight increase in risk for stroke was shown by one meta analysis (but not others), but is not statistically measurable; let alone any clinical significance, the numbers needing to be considerably higher than minimal statistical evidence to qualify as clinically relevant. Some expect the same to be shown eventually for e-cigarettes, although no one knows at this time.

Because there are no facts (i.e. national morbidity/mortality statistics, that is to say epidemiological data), no statement regarding the safety of e-cigarettes can be made at this time. Clinical trials, no matter how many there are, cannot provide proof of anything, simply evidence to support a theory; proof is provided by facts such as national health (mortality) statistics.

Polls show that 7% of ecig users at any time are zero nicotine consumers. We don't know how many quit totally

as that is not of interest to the community: we use PVs in order to continue consumption but without harm, or with significantly reduced harm (the precise answer is not known at this time). E-cigarettes are not a cessation method. If the Snus results are replicated by ecigs, and indications are that they will be, then there is no clinically-significant difference for smokers between switching to e-cigarette use or total cessation. Therefore there is no demonstrable need to quit.

Individuals however must take note of their specific circumstances: in particular, it would not be wise to support switching to e-cigarette use in the case of smokers with severely compromised lungs. Those with a family history of stroke would do well to closely control their nicotine consumption. There may be other similar factors; risks for individuals are going to be mostly related to existing medical conditions or family health tendencies, otherwise known as a genetic predisposition.

One of the principal values of THR (substitution) is that it is the only proven way of reducing smoking well past the 20% prevalence point for countries where it was originally much higher. Where smoking has been reduced to around one-fifth of the adult population and was originally over 40%, as is the case for many developed countries, then no further significant progress can be made by the continued use of the same methods used to reduce it thus far (e.g. education, high cigarette taxes). This is called the 20% Prevalence Rule (although it is currently disputed and the correct classification is not agreed: whether a rule, law, principle or simply an empirical fact). Of countries to which this rule can be applied, only Sweden has progressed past it to any significant degree - by allowing unrestricted substitution via purchase of Snus, the local smokeless tobacco. Indeed, male smoking prevalence falls at 1% per year, has done so since 2003, and will be at the phenomenally low level of 5% by 2016. This explains why

Sweden has the lowest 'tobacco-related mortality' (actually the smoking-related death rate of course) of any developed country, and by a wide margin. It also explains why Snus and ecigs are so strongly resisted: there is a real threat to cigarette sales and pharmaceutical sales created by smoking, which together have a total value of $billions.

Section 10: Smoking cessation methods and issues

Highest proven success

1. Snus has the highest proven success rate at population level: a >50% success rate, as shown in Sweden. Only about 11% to 12% of Swedes smoke (the figure, as usual, is different according to the source of the statistics), averaged across male/female smokers, compared with the usual 20%+ in comparable countries. For all practical purposes this is also equivalent to a 50% reduction in smoking-related mortality as Snus does not have any statistically identifiable elevation of risk for any disease.

The success rate for males in particular is exceptionally high, with a reduction in smoking prevalence among Swedish men of 64% in comparison with UK males, with only around 8% of Swedish men now smoking. The male smoking prevalence rate appears likely to be just 5% at 2016, since it falls by 1% per year (2003: 17%, 2012: 8%).

These very high success rates depend to a certain extent on cultural tradition and a fairly long timescale, as Snus has been available in Sweden for a very long time, although only recently were dramatic falls in smoking prevalence seen.

2. According to all surveys of successful quitters - ex-smokers who reported successfully quitting - in countries other than Sweden, the most successful method of all is

unassisted cessation aka 'cold turkey': stopping by motivation only and with no assistance of any kind. All such surveys consistently show that the single largest group of ex-smokers is the cold turkey quit group at about 70% of successful cessation attempts; and that the other successful quitters were split between assorted methods such as hypnotherapy, acupuncture, motivational sessions, pharmacotherapies, and more. Pharmaceutically-assisted quitters are a small group, at a fraction of the size of the unassisted group. Self-motivation is thus shown as by far the most successful method in the real world, which you might note is in direct contrast to the marketing publicity for pharmaceutical interventions. There is no real-world evidence for any assertion that pharmacotherapies (NRTs and psychoactive drugs) are more than marginally effective; they are certainly of clinical significance because there is a measurable group who succeeded with pharmaceutical interventions, but they are proven far less effective than self-motivation.

The consistent >70% of successful smoking cessation attempts attributable to self-motivated unassisted quitting reported in all surveys could be taken as proof since it is factual by reason of real-world existence, volume, and independent collection; rather than just a product of paid-for research trials. Snus is the most successful method proven by national statistics together with observation of the process; unassisted quitting is strongly demonstrated as the most successful method outside of Sweden, in terms of multiple surveys and studies.

Highest demonstrated success

1.The Allen Carr organisation has the highest clinically-demonstrated success rate for smoking cessation at 12 months of 53%, demonstrated in one trial. However, access to this option is limited by geographical constraints as it is a mentored attendance programme.

2. Pharmaceutical interventions are proven beyond doubt not to be safe and effective for smoking cessation. The only factual basis for statements in this area is to measure the proportion of successful quitters who used pharmacotherapies. Every survey that has ever been carried out reported that the number of successful respondents using pharmaceutical interventions was small; in particular, the unassisted method ('cold turkey') was dramatically more successful than pharmaceutical interventions. Most clinical trial results for NRTs and associated drugs do show clinically significant success rates, but have been demonstrated to be the single largest group of trials with manipulated results in existence. Independent clinical trials (those not funded by the manufacturer) show a completely different success rate of between 0% and 2% for NRTs at 20 months - which aligns with the facts, i.e. all surveys of ex-smokers. It is generally accepted now (outside of the pharmaceutical industry and their agents) that pharmacotherapies are best described as having a 9 out of 10 failure rate. No factual evidence to support any other interpretation can be found in the real world.

3. The most effective pharmacotherapies for smoking cessation are not NRTs but psychotropic drugs. These have a poor success rate of around 8% - 10% at 20 months (an estimate, since this figure has never been published as far as we are aware), which is clinically significant* although very poor compared with other solutions (Snus has a proven 50% success rate and no elevation of risk for any disease). However such pharmacotherapies cannot be described as safe, since there are significant risks. Chantix for example has a 1 in 30 risk for cardiac events ('heart attack') shown by two separate clinical trials, and has been responsible for hundreds of deaths including those from severe psychotic events leading to murder and suicide. The FDA have confirmed 272 deaths at Q4 2012, which indicates that the problem is significant, and some have suggested that the total is likely to be much higher (the true figure may be as

much as four or five times higher). At Q4 2013 the death toll from Chantix is recognised to be above 500 deaths.
* 'Clinically significant' is generally taken to mean repeated demonstration of a 3% effect or greater.

4. E-Cigarettes are not used for smoking cessation as they are a harm-reduction solution, and in effect a way to keep smoking but without the elevated risks of smoking (some may eventually progress to total cessation via ecig use).

In terms of the success rates for switching to an e-cigarette (which may or may not be described as quitting, since inhalation of extraneous materials still takes place and nicotine consumption by inhalation still takes place), there is a 31% success rate at 6 months shown by one published clinical survey (under the worst possible set of circumstances), and an anecdotal 80% success rate at 12 months claimed when all factors are optimal. This refers to all options and influences, such as: persistent expert mentoring; unhindered access to a full range of hardware; unhindered access to a full range of refill liquid types, flavors and strengths; and unhindered, correct use for an ecig as opposed to a tobacco cigarette. Prevention of access to expert support, or access to incorrect inexpert advice, or prevention of access to a full range of equipment options, or incorrect use regimes will all dramatically reduce the efficacy of e-cigarettes.

This is why clinical trials of the efficacy of ecigs are irrelevant: real-world results are at least three times better. Clinical trials restrict product choice and isolate users from mentoring: the opposite of the actual requirements for success. There is no worse way to measure the effectiveness of ecigs than a clinical trial; a concept quite difficult to grasp for researchers.

The role of e-cigarettes
E-cigarettes, introduced at about the same time as Chantix,

have caused no deaths despite millions of user-years (probably approaching 50 million user-years at Q2 2014), and the lowest success rate in smoking avoidance reported by surveys is 31%, with no mentoring, management, advice or help at all, while using the least-efficient equipment available (note that a clinical trial of efficacy is an impossible quest - see above). Use of an optimally-managed program would probably at least double this rate, together with the fact that no disease vectors are apparent (absent the risk to ex-smokers with severely compromised lungs).

The first 12 month clinical trial of e-cigarettes has just completed at Q2 2013, and reports that 10% of smokers who had no intention of quitting had quit at 12 months when given an e-cigarette, and were constricted by suboptimal usage restrictions that in effect meant a placebo was used and without mentoring (no support was provided; mini ecigs were used; the refill strength was 7mg, when we know that 45mg is needed for some persons using a mini). We think that a proper trial would replicate real-world effects: smokers motivated to quit; a normal mid-size ecig used*; a full range of hardware to choose from; a full range of refill types to choose from; a full range of refill strengths to choose from (up to 45mg is shown to be needed by multiple clinical trials); a full range of flavours to choose from; solid mentoring available. Such a trial would replicate the real-world results and probably show a 60% conversion rate. However, it is reported that correctly-managed clinical trials of this nature are not allowed, as the products must be restricted; therefore clinical trials are doomed to fail from the start (as most potentially successful subjects will fail).
* The mini ecig (aka 'cigalike' or 'look-alike') is now obsolete and the benchmark model is now the mid-size model (aka 'eGo' type); minis are 1st-generation technology and we are now on 3rd and 4th-generation equipment. All tests and trials need to be conducted with the benchmark model not an obsolete model.

A Harm Reduction approach - that is to say a consumer-managed process dependent on unobstructed purchase decisions - is shown as the only method to successfully reduce population smoking prevalence significantly beyond the 20% mark in countries where smoking was originally widespread (see The 20% Prevalence Rule), as evidenced by the Swedish experience. E-cigarettes appear to be more popular than Snus and to have approximately the same health profile, and therefore it is tempting to think that ecigs will eventually outpace Snus in terms of smoking reduction and lives saved, at least in localities where unobstructed purchase of e-cigarettes is possible. In essence what this means is that many more lives are saved by consumer purchase decisions than by medical interventions, and the difference is likely, in time, to exceed an order of magnitude. If the overall success rate of pharmacotherapies is around 5%, which is what it appears to be when adjusted for user-number weighting [many more use the less-effective NRTs than the more-effective psychoactive drugs], and it appears that at least 50% of smokers will eventually switch to ecigs since they are clearly more attractive to smokers than Snus and 50% have switched to Snus in Sweden, then ecigs will eventually outperform pharmacotherapies by a factor of greater than 10.

Even so, it remains to be seen whether anything can eventually equal the success of basic self-motivated unassisted quitting in countries other than Sweden, as according to the actual end results in these countries (all the surveys of ex-smokers), this is by far the most successful approach. There is certainly no real-world proof that pharmaceutical interventions approach anywhere near the effectiveness of Snus or self-motivated quitting; the 'cold turkey' method clearly outperforms any other, at a repeated 70% measured percentage of successful quitters; and substitution (replacement of cigarettes by other consumer products, as a Harm Reduction strategy) is the

next most successful generally available method, with a proven halving of smoking prevalence where fully legal and unrestricted.

Note that in Sweden, tobacco use is slightly more prevalent than in similar countries with low smoking prevalence, understandable since there are far lower risks from consumption of low-risk products - indeed, there is no measurable effect on public health from Snus consumption: Snus consumers in effect become non-smokers in terms of health outcomes. There is, on first glance, an argument that since tobacco use increases, this is a bad thing; but since it has no measurable effect on health, it might perhaps be considered equivalent to tea drinking or similar. Perhaps we might expect the same effect, eventually, from e-cigarette use: the number of nicotine consumers overall will increase. Since exclusive ecig users will most likely be equivalent to non-smokers in terms of average health outcomes, as is the case for Snus consumers in Sweden, it is hard to see this as a bad result (as smoking-related - or if you prefer 'tobacco-related' - mortality and morbidity rates will likely drop at the same rate that smokers switch to ecigs).

For a more detailed explanation of the economics of THR, please refer to CV Phillips' work, such as:
Predicting the black market in e-cigarettes | Anti-THR Lies and related topics

https://antithrlies.com/2014/07/04/predicting-the-black-market-in-e-cigarettes/