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E-Cigarettes – It's Complicated

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By Thomas J. Glynn, PhD

Editor's note: This blog is the last one frequent contributor Dr. Glynn will write before his upcoming retirement. We wanted to thank him for his expertise and ability to break down a topic and offer insight, as well as his excellent writing. We offer him best wishes for a long, happy retirement.

In May 2011, I had the opportunity to write the first Expert Voices blog on what was then a new, but growing, public health concern - the [emergence of e-cigarettes](#).

At that time, I wrote that "e-cigarettes have been described both as a miracle answer to the devastating effects of cigarette smoking and as a grave danger to the public health;" that they "are a source of controversy;" and that we need "to put science to work (and) obtain, solid, independent data" regarding e-cigarettes.

Now, 3 years later, more than 1,000 research papers, commentaries, and opinion pieces have been published about e-cigarettes. There's been continuous public debate about and media attention paid to e-cigarettes, and there's a proposed [FDA rule regarding e-cigarette regulation](#).

Now, it is finally possible, at long last, to say that... e-cigarettes continue to be described both as a miracle answer to the devastating effects of cigarette smoking and as a grave danger to the public health; that they remain a source of controversy; and that more independent, objective data are needed.

Consensus remains elusive

Yes, the old French adage - *plus ca change, plus c'est la meme chose* (the more things change, the more they remain the same)-- is an apt description for the state of affairs regarding e-cigarettes in June 2014. Despite the considerable research, debate, media attention, Congressional hearings, and, yes, blogs, over the past 3 years, the public health, advocacy, scientific, and medical communities are little closer to a consensus regarding e-cigarettes than they were in May 2011.

This is not to say that there has not been, as noted above, an enormous amount of activity surrounding e-cigarettes over the past several years. According to a [recent study](#), awareness of e-cigarettes among the public - both cigarette smokers and non-smokers alike - has increased by more than 50%, with nearly 80% of Americans now reporting that they have heard of e-cigarettes. Tellingly, however, the public is split over whether they think that e-cigarettes are either safe or effective as a tool for quitting smoking, with just about 50% believing that they are safe and/or effective and an equal percentage believing the opposite.

Not surprisingly, the scientific community also remains split on the e-cigarette issue. A stark example of this divide occurred recently in reaction to a study regarding e-cigarette vapor and its effect on indoor air quality published in the *International Journal of Hygiene and Environmental Health*.

Dr. Stanton Glantz, a professor of medicine at the University of California at San Francisco and an e-cigarette opponent, highlighted the study on his [web site](#) with the headline "More Evidence That E-Cigarettes Cause Substantial Air Pollution. . .and Inflammatory Processes (in Users)." Several days later, Dr. Michael Siegel, a professor of medicine at Boston University and a proponent of e-cigarettes, highlighted the same study on his [web site](#), with the headline "New Study of (E-Cigarette Vapor) Shows No Evidence of a Significant Public Health Hazard." One study, 2 experienced researchers, and 2 sharply divided opinions of the same material.

As another example of this scientific divide, the World Health Organization (WHO) recently published a comprehensive review of the science surrounding e-cigarettes, concluding that the data do not support either their safety or their effectiveness as quitting devices. Shortly after this review was published, however, an international consortium of 53 prominent scientists wrote to the WHO, asking that they reconsider their stance, since their reading of the WHO report caused them to reach a different conclusion, i.e. that e-cigarettes may have a role in reducing the horrific toll of death and disease from traditional, burned, cigarettes. And then, following this letter and further revealing the serious rift in the scientific and medical communities over this issue, a different group of 129 scientists wrote to the WHO and argued that the first letter underplayed the potential negative effects of e-cigarettes and WHO should maintain its original stance.

This lack of scientific consensus has, of course, been a challenge for policymakers as they are faced with immediate questions regarding e-

cigarettes at the state and local levels, such as how to address e-cigarette use in public spaces, how to tax e-cigarettes, how to keep people from using both traditional combusted cigarettes and e-cigarettes, how to keep e-cigarettes out of the hands of children, etc.

E-cigarettes are evolving

Further complicating this landscape is the evolving nature of e-cigarettes themselves. Three years ago, the e-cigarette market was dominated by small manufacturers making devices that looked like cigarettes. Now, two major changes in this landscape are occurring.

First, the tobacco industry itself has seen an opportunity and begun to buy e-cigarette companies, as well as manufacture and market their own e-cigarettes. This entry of the tobacco industry into the e-cigarette space should raise all of the familiar warning signals in the public health community. And, second, new forms of e-cigarettes and related devices are emerging.

One such device is the so-called "vape tank," an inhaling device that allows consumers to customize their own nicotine delivery products. Another is the soon-to-be-released product from Philip Morris International called the Platform 1 device, which will heat, but not burn, tobacco (as opposed to most e-cigarettes, which heat nicotine alone). So when a ruling is made on one product, it may or may not apply to other or newer products.

Areas of potential agreement

Yet, despite the continuing controversy, legitimate scientific disagreements, and changes in the e-cigarette market, 3 additional years of data have allowed some principles or areas of general agreement (not necessarily consensus) to emerge within the public health community. These include:

- E-cigarettes in any form should not be marketed to, sold to, or used by children and youth.
- It is not possible to characterize e-cigarettes as a single entity, since more than 250 types are now sold in the U.S. and engineering changes are further blurring our ability to describe e-cigarettes in any one way.
- E-cigarettes are less harmful than combusted cigarettes, at least for short-term use (They haven't been around long enough to know about the effects of long-term use). The secondhand vapor, or aerosol, from e-cigarettes is, in general, less harmful than secondhand cigarette smoke.
- E-cigarettes are able to help an as-yet limited segment of regular cigarette smokers to stop, at a rate comparable to rates achieved by users of nicotine replacement medications. For this reason, e-cigarettes may have a role to play in reducing the use of combusted cigarettes, which are, by far, the primary source of death and disease from tobacco use.
- The marketing of e-cigarettes and similar products must be carefully monitored and, where appropriate, regulated to eliminate unsubstantiated claims and advertising to children and youth.
- Objective, independent scientific data regarding all aspects of e-cigarettes, including the emerging products, must continue to be collected and objectively evaluated.
- The long-delayed proposed regulations from the FDA, issued in April, 2014, which would address e-cigarettes, among other products, are a step forward in providing objective advice to consumers, but need to be adjusted, pending comments from a wide range of constituent communities, including individuals, the public health community, and tobacco companies, and then implemented as soon as possible.

Of course, even the statements/principles above will be sources of controversy to many, which goes to show the breadth of disagreement regarding e-cigarettes in the public health field. Indeed, it's the most serious source of disagreement in the 50 years that public health has come together around the profound need to end cigarette smoking and the death and disease that tobacco causes.

The debate over 'harm reduction'

Controversies surrounding e-cigarettes will not be going away any time soon. This is especially true as the entire e-cigarette industry, which is only 10 years old, continues to morph into an even broader industry with a wider variety of products, and as the tobacco industry itself begins to play a much larger role in determining what e-cigarettes will look like and how they will be used and marketed.

Also, while considerable progress in tobacco control has been made in the 50 years since the first [Surgeon General's Report on Tobacco](#) was published in 1964 - reducing cigarette smoking from 42% of the population in 1965 to 18% today - more than **42 million Americans continue to smoke and nearly 500,000 will die this year alone** from the effects of cigarette smoke. Globally, the toll is even greater - **1.3 billion people smoke and more than 6 million people will die as a result this year**.

The continued use of combusted cigarettes by such a large number of Americans and global citizens will continue to exert pressure on the public health, advocacy, scientific, and medical communities to go beyond "business as usual" and what [we know works to help people quit smoking](#) and explore new solutions to the challenge of cigarette smoking. In this vein, the 2014 U.S. Surgeon General's Report on Smoking and Health raises the issue of whether ending the use of the most harmful tobacco product (i.e. combusted cigarettes), while reducing the potential harm from newer, innovative products such as e-cigarettes, may be a reasonable national goal.

This concept of "harm reduction," is an approach to risky behavior that looks to lessen the damage rather than stopping the behavior. It has been used in other areas of public health such as providing clean needles to intravenous drug users to avoid HIV rather than attempting the more herculean task of ending drug abuse altogether, or substituting methadone for heroin use.

In tobacco control, however, "harm reduction" has traditionally been viewed as controversial, often pitting committed public health practitioners against one another. One side argues that the only path to eliminating the scourge of cigarette smoking is abstinence from all forms of tobacco, while another side argues that ". . . it is nonsensical to dismiss a (less harmful) alternative by demanding absolute safety."

Certainly, there is reason for concern on both sides of this issue - questions such as whether e-cigarettes could lead to the 'renormalization' of combusted cigarette use - that is, making such behavior a regular part of life, when smoking cigarettes no longer is; whether youth who might never have used nicotine might begin to do so through e-cigarette use; whether current cigarette smokers might continue smoking

AND use e-cigarettes (rather than quitting altogether); and others remain unresolved.

This is the controversial context in which e-cigarettes - however broadly or narrowly defined - may play a larger role as tobacco control advocates continue to grapple with the need to consider additional measures to end the grip that the combusted cigarette has exerted on this country, and the world, for too many years. If we do not step forward and consider bold actions such as embracing the *potential* of e-cigarettes and other harm reduction agents then we, and the next generations, may have to confront the challenge laid down by former World Health Organization Director-General Dr. Gro Harlem Brundtland when she said:

"If we do not act decisively today, 100 years from now our grandchildren and their children will look back and seriously question how people claiming to be committed to public health and social justice allowed the tobacco epidemic to unfold unchecked."

Dr. Glynn is director of cancer science and trends and director of international cancer control for the American Cancer Society.

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