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Master Lecture
Endgame for Tobacco Control: Biology to Policy

In an American Psychological Association presentation, a researcher is calling for the need to establish performance standards for nicotine and toxicants in tobacco products. With the passing of the Family Smoking Prevention and Tobacco Control Act, the Food and Drug Administration has the authority to regulate tobacco products. Currently, there are 443,000 deaths per a year in the U.S. attributed to tobacco use and 5 million per year worldwide. Substantial reductions in the number of these deaths will require new and powerful tobacco control measures. By far, the most toxic tobacco product is cigarettes. One measure that would substantially reduce the tobacco-related death toll would be to reduce nicotine in cigarettes to levels that render them non-addictive. This idea was proposed about 20 years ago and now there is mounting evidence to demonstrate the feasibility of this approach. The goal would be to minimize the development of physical dependence or addiction on cigarettes and to facilitate abstinence among already dependent smokers. Unlike the former light and ultralight cigarettes, which produced lower nicotine yields through filter ventilation but still contained the same amount of nicotine as regular cigarettes, the proposed cigarettes are actually reduced in nicotine content.

To date, the research shows that if smokers are switched to cigarettes that are lower than 1 mg in nicotine content per cigarette, they tend to smoke less of these cigarettes, report being less dependent on these cigarettes, experience less toxicant exposure, and find it easier to quit smoking altogether. While some smokers may experience withdrawal symptoms when they switch to these cigarettes, these withdrawal symptoms can be mitigated in one of two ways: a gradual reduction in the nicotine content of cigarettes or use of medicinal nicotine when smokers switch to these cigarettes. Thus, if there was a proposal to immediately reduce the nicotine content in cigarettes to very low levels, it would be imperative to have medicinal nicotine products available to help facilitate the transition. To further examine this approach, the Food and Drug Administration and National Institutes of Health have funded a center for examining nicotine standards. At the Center for the Evaluation of Nicotine (CENIC), Drs. Eric Donny and Dorothy Hatsukami are leading an effort to determine the:

- Optimal threshold dose for reducing nicotine addiction;
- Best approach for reducing the levels of nicotine (gradual or immediate nicotine reduction)
- Effects of reduced nicotine content cigarette on one of the most vulnerable population of smokers (smokers with a diagnosis of schizophrenia); and
- Identification of other constituents that are associated with the addictive effects of cigarettes.

This multimillion dollar center grant involves 10 other academic institutions.

If combusted tobacco products are reduced in nicotine, than consumers are left with noncombusted products that vary widely in levels of toxicity. There is no reason why these products should be allowed to exceed a certain level of toxicity. For example, in Sweden, a tobacco company has voluntarily established a specific level of toxicants that cannot be exceeded in the manufacture of their oral smokeless tobacco products. Similar or stricter requirements can be imposed on U.S. smokeless tobacco products. Electronic cigarettes or electronic nicotine delivery systems may have promise as a harm minimization tool if they meet quality control standards.

Eventually, the vision is to have a world where products only deliver nicotine and no other toxic constituents. While there is controversy among the public health community over whether long-term intermittent or chronic use of nicotine should be condoned, the relative health risk of nicotine delivery alone would be substantially less than that of cigarettes. By eliminating the appeal of combusted products, eventually it may be possible to shift the tobacco companies into manufacturing cleaner, affordable nicotine delivery devices that might also appeal to the consumer, and subsequently shift the consumer preferences. In fact, the current tobacco market has evolved tremendously with a plethora of nicotine-containing products, with various tobacco companies verbalizing the desire to market alternatives for the smoker that are less harmful. We are now at a juncture where either public health can benefit substantially with the availability of these tobacco products or the continuum of risk becomes merely a continuum of tobacco products.

As science becomes more sophisticated, it is possible that in the future we will see a time where specific nicotinic receptors are targeted to achieve a specific and beneficial effect, using sophisticated technology. However, in the present world, public health should be focused on ridding a product associated with millions of deaths per year.