

PERSPECTIVE

# FDA in the 21st Century

## Focus on Tobacco Policies and Heart Failure Prevention



Mona Fiuzat, PHARM D, Tamar S. Nordenberg, JD, Mitchell Zeller, JD, Matthew G. Hillebrenner, MSE, Norman Stockbridge, MD, PH D, Bram Zuckerman, MD, Robert M. Califf, MD

### THE FDA AND TOBACCO

Cigarette smoking ranks among the most devastating, but modifiable, risk factors for cardiovascular disease. Of the more than 20 million premature deaths caused by smoking and secondhand smoke since the first *Surgeon General's Report on Smoking and Health* was published in 1964, nearly 7.8 million deaths were due to cardiovascular and metabolic diseases (1). Since that time, tobacco prevention and control efforts have achieved substantial gains, and the prevalence of cigarette smoking among adults declined from 42% in 1965 (1) to 17% by 2014 (2). However, much work remains to be done. The Centers for Disease Control and Prevention (CDC) estimate that approximately 40 million U.S. adults were current smokers in 2014 (2). Despite declining rates of smoking among the general U.S. adult population, data from a large registry show that approximately 16% of patients with heart failure are current smokers, and that the prevalence is greater in those with reduced ejection fraction than in those with preserved ejection fraction, perhaps because of the greater likelihood of comorbid pulmonary issues among the latter (3).

### STRENGTHENING FDA AUTHORITY THROUGH THE DEEMING RULE

The U.S. Food and Drug Administration (FDA) has regulated the manufacture, distribution, and marketing of cigarettes, cigarette tobacco, roll-your-own

tobacco, and smokeless tobacco since 2009 under the authority of the Family Smoking Prevention and Tobacco Control Act (TCA) (4). In May of 2016, the FDA's ability to protect Americans from tobacco-associated disease and death was strengthened by finalization of the deeming rule (5), which extended the agency's authority to all products that meet the legal definition of a tobacco product, including e-cigarettes, hookahs (waterpipes) and pipe tobacco and cigars.

Although cigarette use has declined in the United States, the use of certain newly regulated tobacco products has skyrocketed, particularly among youth. For example, from 2011 to 2015, the rate of e-cigarette use among high school students ballooned from 1.5% to 16%, a growth rate of 900%. Hookah use among this group also rose significantly during this time (6). The deeming rule, which took effect on August 8, 2016, aims to reverse this troubling trajectory. The regulation prohibits the sale of products such as e-cigarettes, hookah tobacco, and cigars to those younger than 18 years of age; it also forbids the sale of such products in vending machines, except in adult-only venues.

Other provisions of the rule focus on preventing misleading claims and mandate health warnings on product packages and advertisements. Newly deemed products that are considered "new tobacco products" are prohibited from being marketed without authorization from the FDA based on a case-by-case review. Moreover, manufacturers of newly deemed products are required to submit information about a product's ingredients and harmful or potentially harmful constituents.

### THE CONTINUING NEED FOR EVIDENCE TO GUIDE TOBACCO PRODUCT REGULATION

Tobacco products come with inherent risks. Nicotine is addictive and present alongside other chemicals in

From the U.S. Food and Drug Administration, Silver Spring, Maryland. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Manuscript received November 2, 2016; accepted November 14, 2016.

these products. Some studies have revealed the existence of toxicants in both the e-cigarette liquid and exhaled aerosol of certain e-cigarettes. Hookahs present a significant risk of smoking-related diseases. In addition, associations have been found between cigar smoking and increased risk of all-cause mortality, the incidence of several types of cancers, coronary heart disease, and aortic aneurysm (5).

Nonetheless, more evidence on the health effects of tobacco products such as e-cigarettes is needed. Although adverse experiences such as chest pain, rapid heartbeat, and heart failure have been reported to the FDA in association with e-cigarette use, more study is required to evaluate whether any causal relationships exist (7). In addition, more research is needed on the question of whether e-cigarettes have been clinically proven to help smokers quit using “traditional” cigarettes. For now, the U.S. Preventive Services Task Force has concluded that “the current evidence is insufficient to recommend electronic nicotine delivery systems (ENDS) for tobacco cessation in adults, including pregnant women” (8).

Scientific evidence is essential for the FDA to maintain a reasonable and balanced approach to regulating tobacco products. The agency is therefore investing in research to examine risks associated with the use of these products, as well as potential

benefits. Among other things, this research will enable the FDA to assess the population-level health impact of e-cigarette use. Important factors that the FDA is studying include how these products, whether used alone or concurrently with traditional tobacco products, affect initiation, cessation, and health outcomes among tobacco users. Despite reduced cigarette use, the prevalence of smoking in heart failure patients remains high and modifiable.

## SUMMARY

The deeming rule lays the foundation for applying the results of crucial scientific research to protect Americans, especially youth, from the dangers of tobacco use. It fills a gap in tobacco control, putting in place reasonable regulations that keep pace with the evolving tobacco marketplace. These recent advances represent significant steps forward in protecting Americans from cardiovascular disease, particularly through prevention of heart failure.

**REPRINT REQUESTS AND CORRESPONDENCE:** Dr. Mona Fiuzat, U.S. Food and Drug Administration, 10903 New Hampshire Avenue, Silver Spring, Maryland 20993. E-mail: [Mona.fiuzat@fda.hhs.gov](mailto:Mona.fiuzat@fda.hhs.gov).

## REFERENCES

1. U.S. Department of Health and Human Services. The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014. Printed with corrections, January 2014.
2. Jamal A, Homa DM, O'Connor E, et al. Current cigarette smoking among adults—United States, 2005–2014. *MMWR Morb Mortal Wkly Rep* 2015; 64:1233–40.
3. Kapoor JR, Kapoor R, Ju C, et al. Precipitating clinical factors, heart failure characterization, and outcomes in patients hospitalized with heart failure with reduced, borderline, and preserved ejection fraction. *J Am Coll Cardiol HF* 2016;4:464–72.
4. Public Law 111-31, H.R. 1256. Family Smoking Prevention and Tobacco Control Act. Available at: <http://www.gpo.gov/fdsys/pkg/PLAW-111publ31/pdf/PLAW-111publ31.pdf>. Accessed August 22, 2016.
5. U.S. Food and Drug Administration. 21 CFR Parts 1100, 1140, and 1143. Deeming tobacco products to be subject to the Federal Food, Drug, and Cosmetic Act, as amended by the Family Smoking Prevention and Tobacco Control Act; restrictions on the sale and distribution of tobacco products and required warning statements for tobacco products. *Federal Register* 2015;81(90):28974–9106. Available at: <https://www.gpo.gov/fdsys/pkg/FR-2016-05-10/pdf/2016-10685.pdf>. Accessed November 1, 2016.
6. Singh T, Arrazola RA, Corey CG, et al. Tobacco use among middle and high school students—United States, 2011–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:361–7.
7. Chen I. FDA summary of adverse events on electronic cigarettes. *Nicotine Tob Res* 2013;15:615–6.
8. U.S. Preventive Services Task Force. Tobacco use in adults and pregnant women: Counseling and interventions. April 2009 [archived version]. Available at: <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/tobacco-use-in-adults-and-pregnant-women-counseling-and-interventions>. Accessed November 1, 2016.

**KEY WORDS** drug evaluation, FDA, stroke