

Integrated Health, Behavioral and Economic Research on Current and Emerging Tobacco Products

Institution: University of California, San Francisco

9-U54-HL147127-06

PROJECT 3: CARDIOVASCULAR HEALTH EFFECTS OF EMERGING HEAT-NOT-BURN TOBACCO PRODUCTS

PI: Springer, Matthew L.; University of California, San Francisco

Project 3 Abstract:

Heat-not-burn (HNB) products, which heat a mixture of tobacco and other compounds to temperatures below those at which combustion occurs, deliver an inhalable aerosol containing nicotine and other chemicals. Although previous attempts by the tobacco industry to introduce such products have been largely unsuccessful, Philip Morris International's iQOS is successfully being test marketed in several countries. In addition, Philip Morris Products S.A. has submitted modified risk tobacco product applications to the FDA to permit marketing iQOS in the United States. ***Despite harm reduction claims, the health effects of HNB products are poorly understood.*** This project will inform the FDA about this emerging product class before it reaches widespread use, in contrast to e-cigarettes, which won a substantial market share before the research community could mobilize to study their effects on health. The proposed studies will evaluate the cardiovascular effects of HNB products, beginning with iQOS, including effects on cardiac and peripheral vascular function, and cardiac tissue preservation after acute myocardial infarction, relative to tobacco smoke and e-cigarette aerosol. These goals will be accomplished with the following ***specific aims***: (1) Understand chemical properties of HNB aerosol and chemical changes during its generation; (2) Evaluate and understand cardiovascular health effects of both acute and repeated exposure to HNB aerosol in rats; and (3) Determine if acute and chronic exposure to HNB aerosol prior to acute myocardial infarction increase the extent of the resulting cardiac tissue death. The use of validated rat models that reflect human physiology to evaluate functional and biochemical consequences of exposure will enable evaluation of the potential adverse ***health effects*** of these products. The proposed research addresses the TCORS theme that "understanding combined ***health effects, behavior, and impact analysis*** will provide actionable information for regulation of and public communications about current and emerging tobacco products" by being relevant not only to the other biologically-oriented projects (Projects 1 and 2 that study health effects of e-cigarette and/or HNB aerosol), but also the assessment of cardiovascular risks associated with HNB products will inform the comparison of risk perceptions in Project 4 with empirically determined harmful effects in this project. The results will also provide data for the assessments of economic impact of use of these emerging products in Project 5. This integrated approach will enable the TCORS to provide timely information about this emerging product category that would have been difficult to obtain otherwise. ***In particular, by integrating between this project and Project 2, which is studying cardiovascular effects of iQOS use relative to e-cigarette use in humans, this TCORS will supply the FDA with information about HNB products as they are entering the market, rather than several years after the fact.***