



OCTOBER 10-13, 2019 | CHICAGO, IL

2019 SCIENTIFIC POSTER SESSION

P001**Assessing the Impact of Switching to the Tobacco Heating System on Cardiovascular Events: Translating Basic Science Into Clinical Benefit***Friday, October 11, 2019, 10:15 – 11:15 AM, 2:25 - 3:25 PM**Saturday, October 12, 2019, 10:00 – 11:00 AM, 2:15 - 3:15 PM*

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Philip Morris International

Purpose

Cigarette smoke (CS) is causally linked to the development of cardiovascular disease (CVD) through different pathophysiologic pathways, which include endothelial injury and dysfunction, oxidative stress, a procoagulatory status, inflammation, and an abnormal lipid profile, all contributing to development of atherosclerosis. Tobacco harm reduction, by substituting cigarettes with less harmful products, is a complementary approach to current strategies for smokers who would otherwise continue to smoke. The Tobacco Heating System (THS) 2.2 is a novel tobacco product that heats tobacco instead of burning it, never allowing the temperature to exceed 350°C, thereby preventing the combustion process from taking place and producing substantially lower levels of toxicants compared with CS.

Methods

Philip Morris International's (PMI) assessment program aims to demonstrate that switching to THS has the potential to reduce the risk of smoking-related diseases versus continued smoking. The program includes in vitro/in vivo toxicology testing methods that follow OECD guidelines and Good Laboratory Practice, a systems toxicology approach, and randomized, controlled clinical studies following the principles of Good Clinical Practice. In order to elucidate the effects of switching to THS on the risk of cardiovascular events, including myocardial infarction (MI) and ischemic stroke (IS), PMI also collects safety data at post-market levels based on principles of Good Pharmacovigilance Practice.

Results

The results of the THS translational assessment program demonstrated that cardiovascular toxicants are reduced by >92% in THS aerosol versus CS and that THS aerosol contains no solid carbon-based nanoparticles. The effects of THS aerosol on the adhesion of monocytic cells to human coronary endothelial cells in vitro are significantly reduced. Switching to THS halted the progression of CS-induced atherosclerotic changes in ApoE^{-/-} mice in vivo. Biomarkers linked to the development of smoking-related disease were analyzed following a six-month randomized, controlled clinical study with THS, which demonstrated a consistent improvement of biomarkers in different pathophysiologic pathways leading to atherosclerosis. Since the start of THS commercialization in November 2014 and cumulatively up to the end of 2018, 11 cases of MI and 5 cases of ischemic stroke were reported by users. In the MI and IS cases, the mean age of users was 49.6 and 50.3, respectively, when information was provided (8 out of 11 MI cases and 3 out of 5 IS cases). In most of these cases, no information was provided about



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the smoking history or the time of switching to THS, which makes it difficult to assess the causal relationship from a medical point of view.

Conclusions

The evidence available to date indicates that switching to THS has the potential to reduce the risk of smoking-related diseases, such as CVD. As a next step, PMI will complement its THS assessment program with cardiovascular outcome studies intended to further support the clinical benefits (e.g., reduction in the risk of cardiovascular death, MI, and stroke) of switching to THS as compared with continuous smoking and to help improve primary and secondary CVD prevention in clinical practice.