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Presentation preference: Either

Emerging evidence of behavior change associated with fully-remote delivery of a genetically-informed smoking cessation intervention

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Genetic variation in nicotinic receptor subunits explains differences in smoking behaviors and risk of smoking-related diseases. Despite promising findings in recent proof-of-concept testing, it remains unknown whether genetic risk results can motivate smoking cessation and personalize treatment. The potential mechanisms of behavior change, as well as the optimal delivery approach in an increasingly virtual healthcare landscape, also warrant investigation.

To date, we have enrolled 81 adult participants who smoke in a fully-remote randomized controlled trial including genetic testing via 23andMe, Zoom-based delivery of a genetically-informed risk feedback tool (RiskProfile) or active comparator (brief cessation advice), and 30-day and 6-month follow-ups. Average turnaround from remote-based DNA sampling to finalized RiskProfile intervention is 18 days.

As hypothesized, interim analyses (n=61 with completed 30-day follow-up) with repeated-measures ANOVA controlling for baseline cigarettes per day (CPD) yield promising effect size estimations (e.g., partial eta-squared=.032, small-to-medium effect size), indicating clinically meaningful behavior change characterized by reductions in average CPD of 2.6 in the RiskProfile intervention group versus 1.1 in the active comparator group. Importantly, 42% in the intervention group versus 17% in the comparator group sought medication treatment for smoking. Increases in perceived importance of tobacco treatment, and decreases in perceived self-stigma, appear to be particularly promising mechanisms of behavior change.

In this ongoing fully-remote trial, we have (1) significantly reduced access-related barriers to participation, (2) protected the health and safety of participants and research staff by avoiding potential COVID exposures, and (3) generated emerging evidence of behavior change mechanisms leading to reduced cigarette smoking.