Smoking is a leading cause of numerous human disorders including pulmonary disease, cardiovascular disease and cancer. The risk of smoking-related disease is principally due to long-term exposure to a number of smoke toxicants transferred via the combustion of tobacco into cigarette smoke.

The glo tobacco heating product (THP) electronically heats tobacco rather than combusts it. Pre-clinical assessments of glo revealed that its yields of machine-measured toxicants and environmental emissions are greatly reduced compared with those from cigarettes, and that it showed little or no activity relative to cigarettes in both in vitro toxicological and contemporary screening assays.

Here we present the findings from a clinical study conducted in Japan in which we examined biomarkers of exposure to cigarette smoke toxicants in volunteer participants who switched to using glo for 5 days.

EXPERIMENTAL STUDY DESIGN
This study was carried out in clinical confinement at two sites in Fukuoka, Japan. The study was approved by an Institutional Review Board, ran according to the principles of Good Clinical Practice, and registered on clinical trial registries (ISRCTN14301360/UMIN000024988). 180 healthy Japanese smokers smoked combustible cigarettes during a two-day baseline period. Following this period, they were randomised to either continue smoking, switch to using the glo THP, or quit tobacco and nicotine use completely, for 5 days. 24-h urine samples were collected throughout for biomarker analysis, and carbon monoxide was measured in exhaled breath each day.

RESULTS IN BRIEF
For both groups of 30 smokers who switched to glo, levels of biomarkers on Day 5 post-switch were significantly reduced compared with levels of the same biomarkers in these smokers when they were smoking cigarettes. Compared to baseline, levels of biomarkers were also significantly reduced on Day 5 in the 30 smokers who quit tobacco and nicotine use completely. A statistical comparison between groups showed that the extent of the reductions in the glo groups were the same as the reductions in the quitting group for many of the biomarkers assessed.

This clinical study demonstrated that when smokers switched from smoking combustible cigarettes to using the glo THP, their exposure to smoke toxicants was significantly decreased. In many cases, this was to the same extent as that seen when subjects quit smoking completely. These results suggest that glo has the potential to be a reduced exposure and/or reduced risk tobacco product when used by smokers who replace their cigarette smoking completely. A longer term, ambulatory clinical study will examine whether this reduction in exposure translates to meaningful changes in health effect indicators.