Awareness and Use of 'Heat-not-burn' Tobacco Products in Great Britain

Leonie S. Brose, PhD
Erikas Simonavicius, MSc
Hazel Cheeseman, MSc

Objective: 'Heat-not-burn' tobacco products have recently come onto the market in several countries; existing research has been conducted mostly by the manufacturers. We aimed to estimate awareness and use in Great Britain. **Methods:** Data were derived from a national online survey of adults conducted in February–March 2017 (N = 12,696), weighted to be representative of the adult population in Great Britain. Awareness and use of heat-not-burn products were assessed using 2 question versions; combined figures were assessed by respondent characteristics using chi-square tests of independence and Cramer's V. **Results:** Combining the 2 question versions, 9.3% (95% CI: 8.8-9.8) reported awareness; this included 0.9% (95% CI: 0.8–1.1) who had tried or used the products in the past and 0.8% currently using (95% CI: 0.7–1.0). Use of heat-not-burn tobacco products differed ($p \leq .001$) with age, sex, socioeconomic status, smoking, and e-cigarette use; however, the only association with at least a small effect was e-cigarette users reporting higher prevalence than non-users [$\chi^2(9) = 674.1$, $p < .001$; $V = 0.133$]. **Conclusions:** About 9% of adults in this national Great Britain survey reported being aware of heat-not-burn products, but less than 2% had ever tried them.

Key words: awareness; heat-not-burn; tobacco products; population surveillance; prevalence; IQOS; Ploom
***Tob Regul Sci.*™ 2018;4(2):44-50**
DOI: https://doi.org/10.18001/TRS.4.2.4

Whereas cigarette smoking necessitates combustion of tobacco, and electronic cigarettes do not use tobacco and work by vaporizing nicotine suspended in liquids, so-called heat-not-burn products apply heat (reportedly up to 350°C) to vaporize but not combust processed or loose-leaf tobacco. Heat-not-burn systems include tobacco sticks, plugs, or capsules made from processed tobacco, a holder with an electronically controlled heating element, and a charger for recharging the holder after use. In comparison to cigarettes, which are made of finely cut tobacco leaves and additives, heat-not-burn contains processed tobacco powder, water, glycerine, and other additives.[1] Devices where vapor from non-tobacco sources passes over tobacco to be flavored also can be included in the product group.[2]

In 2014, Philip Morris' heat-not-burn device IQOS was launched in cities in Japan, Italy, and Switzerland as test markets, and in July 2017, it was available in 27 countries worldwide.[3] Other products, including glo by British American Tobacco and Ploom by Japan Tobacco International, have been marketed in several countries. In Great Britain, IQOS has been available from a dedicated shop in London since December 2016, and more recently, also online. The manufacturer has published a host of *in vitro*, animal and human studies reporting that use of the heat-not-burn product is associated with reduced health risks compared with smoking cigarettes.[4-6] Crucially, any interpretation of these studies is limited by the researchers' and funders' conflict of interest. In one of these studies, smokers switched to using the heat-not-burn product for 5 days and were compared with smokers continuing to smoke cigarettes. The study re-

Leonie S. Brose, Senior Lecturer, National Addiction Centre, Institute of Psychiatry, Psychology & Neuroscience (IoPPN), London, UK. Erikas Simonavicius, PhD candidate, National Addiction Centre, Institute of Psychiatry, Psychology & Neuroscience (IoPPN), London, UK. Hazel Cheeseman, Director of Policy, Action on Smoking and Health, London, UK.
Correspondence Dr Brose; leonie.brose@kcl.ac.uk

ported reduced levels of biomarkers of exposure to tobacco-related toxicants in those who switched, with similar absorption of nicotine and experience of urges to smoke as participants who continued smoking cigarettes.[5] The heat-not-burn users consumed more tobacco sticks than smokers had smoked cigarettes, and rated the product less enjoyable, less satisfying, and less rewarding.[5]

A handful of independent studies have been published. Compared with cigarettes, nicotine concentration in heat-not-burn tobacco sticks has been found to be slightly lower,[7] and lower levels of nicotine were detected in heat-not-burn aerosol compared with cigarette smoke.[8] Four studies, 3 independent[7,9,10] and one by a tobacco manufacturer,[11] compared emissions from a heat-not-burn product and cigarettes. Their findings suggest that although heat-not-burn products do not produce toxicants at the levels found in cigarette smoke, they still emit substantial levels of compounds that are harmful to users and bystanders.

The use of heat-not-burn products is expected to expand considerably. For instance, the United Kingdom (UK) of Great Britain and Northern Ireland is the first country seeking to develop a specific taxation category for heat-not-burn products[2] and in the United States (US), Bonnie Herzog, Managing Director and senior tobacco industry analyst at Wells Fargo Securities, anticipates that in the next 8 years, Philip Morris' IQOS could displace up to 30% of the US combustible cigarettes industry and increase smoking prevalence[12] (presumably referring to the use of all tobacco products). This prediction is supported by manufacturer data from Japan, where less than 3 years after IQOS sales had started, IQOS occupied 10% of the national tobacco market with an increase of 7.8% in the year from July 2016 to June 2017 alone.[3] Rising prevalence of use is also evident in surveys. In the beginning of 2015, ie, 3 months after the launch of IQOS and about a year after the launch of Ploom, weighted responses to a national survey indicated a prevalence of ever use of 0.6% and 0.5% respectively in Japanese adults.[13] A follow-up in 2017[14] reported that last 30-day use of IQOS had increased from 0.3% in 2015 to 3.6% among participants in 2017. No further independent studies on awareness, use, or perceptions of the products in any other locations or countries have been published. Our aim in the current study was to provide the first estimates on awareness and use of the products in the adult population living in Great Britain.

METHODS

Design and Procedure

We conducted secondary analyses of data from a cross-sectional online survey carried out in Great Britain in February–March 2017. The survey is commissioned annually by the charity Action on Smoking and Health and includes questions relevant to tobacco and e-cigarette policy; selected findings have been published.[15-18] The 2017 survey used a panel of around 816,000 UK adults maintained by the market research company YouGov Plc which abides by British Polling Council and ESOMAR (World Association of Opinion and Marketing Research Professionals) guidelines. To represent the national profile of adults over 17 years old, YouGov Plc statistically weight data by respondents' age, sex, social class, region, level of education, votes at the previous election, and the EU referendum (2017 survey). Weights are validated by 4 key sources: 2011 Census; large scale probability surveys; results of the 2015 general election; and population estimates from the Office for National Statistics.[19] Panel members were emailed an invitation to participate without information on survey content. Panel members consent to completing surveys in return for a modest financial incentive, and additional ethical approval was not sought due to this pre-existing consent. Recodes and analyses for the present manuscript were run by the authors using data collected by YouGov.

Sample

A sample of 12,696 people completed the survey and responses were weighted to be representative of the population.

Measures

Socio-demographics. Socio-demographics included age (18-24; 25-34; 35-44; 45-54; 55 years and over), sex (men, women), and socioeconomic status recorded as ABC1 (managerial, professional and intermediate occupations) and C2DE (small employers and own account workers, lower supervisory and technical occupations, semi-routine and

Table 1
Awareness, Past Use, and Current Use of Heat-not-burn Tobacco Products in Great Britain by Socio-Demographics, Smoking Behavior, and E-cigarette Use

			Weighted % (95% Confidence Intervals)			
		Weighted total % (unw. N)	Not Aware unw. N = 11,553	Never User unw. N = 970	Past User unw. N = 100	Current User unw. N = 73
Total			**90.69 (90.18–91.20)**	**7.54 (7.08–8.00)**	**0.94 (0.77–1.11)**	**0.82 (0.66–0.98)**
Sex	Women	52.0 (6287)	**93.30 (92.70–93.90)**	**5.20 (4.66–5.74)**	**0.64 (0.45–0.83)**	0.86 (0.64–1.08)
	Men	48.0 (6409)	**87.87 (87.05–88.69)**	**10.08 (9.32–10.84)**	**1.26 (0.98–1.54)**	0.79 (0.57–1.01)
	Comparison			$\chi^2(3) = 123.9$, $p < .001$; $V = 0.099$		
Age	18–24	12.00 (1246)	**88.19 (86.57–89.81)**	8.53 (7.13–9.93)	1.38 (0.79–1.97)	**1.90 (1.21–2.59)**
	25–34	12.96 (995)	**85.91 (84.23–87.59)**	**10.81 (9.31–12.31)**	**2.07 (1.38–2.76)**	1.22 (0.69–1.75)
	35–44	19.94 (2018)	**88.43 (87.18–89.68)**	**9.36 (8.23–10.49)**	1.18 (0.76–1.60)	1.03 (0.64–1.42)
	45–54	20.09 (2911)	90.98 (89.87–92.09)	7.69 (6.66–8.72)	0.67 (0.35–0.99)	0.67 (0.35–0.99)
	55+	35.00 (5526)	**94.44 (93.77–95.11)**	**4.86 (4.23–5.49)**	**0.41 (0.22–0.60)**	**0.29 (0.13–0.45)**
	Comparison			$\chi^2(12) = 176.4$, $p < .001$; $V = 0.068$		
Social Grade	ABC1	56.19 (8026)	90.57 (89.89–91.25)	8.02 (7.39–8.65)	0.74 (0.54–0.94)	0.67 (0.48–0.86)
	C2DE	43.81 (4670)	90.85 (90.09–91.61)	6.92 (6.25–7.59)	1.20 (0.91–1.49)	1.02 (0.76–1.28)
	Comparison			$\chi^2(3) = 16.7$, $p = .001$; $V = 0.036$		
Smoking	Never smoker	53.47 (6626)	**92.08 (91.44–92.72)**	7.07 (6.46–7.68)	**0.31 (0.18–0.44)**	**0.54 (0.37–0.71)**
	Ex-smoker	32.03 (4438)	90.07 (89.15–90.99)	7.70 (6.88–8.52)	**1.45 (1.08–1.82)**	0.79 (0.52–1.06)
	Current smoker	14.49 (1632)	**86.96 (85.42–88.50)**	8.91 (7.61–10.21)	**2.17 (1.50–2.84)**	**1.96 (1.33–2.59)**
	Comparison			$\chi^2(6) = 115.6$, $p < .001$; $V = 0.067$		
E-cigarette Use	Never user	77.59 (10237)	**92.56 (92.04–93.08)**	**6.81 (6.31–7.31)**	**0.29 (0.18–0.40)**	**0.33 (0.22–0.44)**
	Past user	10.91 (1195)	**83.25 (81.28–85.22)**	**10.97 (9.32–12.62)**	**5.13 (3.97–6.29)**	0.65 (0.23–1.07)
	Current user	5.80 (669)	**81.82 (79.04–84.60)**	10.18 (8.00–12.36)	1.76 (0.81–2.71)	**6.24 (4.49–7.99)**
	Don't know / Unaware	5.69 (595)	88.52 (86.20–90.84)	8.30 (6.29–10.31)	0.83 (0.17–1.49)	**2.35 (1.25–3.45)**
	Comparison			$\chi^2(9) = 674.1$, $p < .001$; $V = 0.133$		

(continued on next page)

Table 1 (continued)
Awareness, Past Use, and Current Use of Heat-not-burn Tobacco Products in Great Britain by Socio-Demographics, Smoking Behavior, and E-cigarette Use

			Weighted % (95% Confidence Intervals)			
		Weighted total % (unw. N)	Not Aware unw. N = 11,553	Never User unw. N = 970	Past User unw. N = 100	Current User unw. N = 73
Location	London	12.80 (1240)	89.78 (88.31–91.25)	8.12 (6.79–9.45)	1.23 (0.69–1.77)	0.86 (0.41–1.31)
	England excl London	73.58 (9247)	90.64 (90.05–91.23)	7.58 (7.04–8.12)	0.91 (0.72–1.10)	0.87 (0.68–1.06)
	Wales	5.01 (1121)	93.87 (92.01–95.73)	4.72 (3.07–6.37)	0.79 (0.10–1.48)	0.63 (0.02–1.24)
	Scotland	8.61 (1088)	90.66 (88.93–92.39)	7.97 (6.36–9.58)	0.82 (0.29–1.35)	0.55 (0.11–0.99)
	Comparison			$\chi^2(9) = 12.0$, p = 0.21; V = 0.018		

Note.
Unweighted N = 12,696; Unw.: unweighted; V: Cramer's V; excl: excluding; Bolded proportions are associated with adjusted residuals greater than ± 3.00.

routine occupations, never workers and long-term unemployed).

Smoking status. "Smoking in this survey refers to all burnt tobacco products. It does NOT include e-cigarettes. Which of the following statements BEST applies to you? I have never smoked; I used to smoke but I have given up now; I smoke but I don't smoke every day; I smoke every day." The last 2 options were combined as 'current smokers'.

E-cigarettes awareness and use. "Which of the following statements BEST applies to you? I have never heard of e-cigarettes and have never tried them; I have heard of e-cigarettes but have never tried them; I have tried e-cigarettes but do not use them (anymore); I have tried e-cigarettes and still use them; Don't know."

Awareness and use of heat-not-burn products. No existing measures for this new product group were available, and thus, a split-ballot question was used to test 2 different ways of question wording.[20] Two different preambles were used; for approximately one half of the sample this preamble was: "Heat-not-burn tobacco products use a technology whereby tobacco is being heated as opposed to being burnt." For the rest, this was followed by: "Some of the popular brands of heat-not-burn tobacco products include Ploom and iQos." Both halves were then asked: "Thinking about heat-not-burn tobacco products, which of the following statements BEST applies to you? I have never heard of heat-not-burn tobacco products and have never tried them; I have heard of heat-not-burn tobacco products but have never tried them; I have tried heat-not-burn tobacco products but do not use them (anymore); I have tried heat-not-burn tobacco products and still use them; Don't know." For analysis, "don't know" was treated as not having heard of the products.

Frequency of use. "How OFTEN did you use/ do you currently use heat-not-burn tobacco products? Every day; A few times a week; Once a week; Once or twice a month; Less than once a month; Don't know/ can't remember; Not applicable – I have only tried heat-not-burn tobacco products once or twice."

Data Analysis

Prevalence of awareness, past trial/use, and current use of heat-not-burn products was assessed using weighted percentages with 95% CIs for the total sample (unweighted N = 12,696) and split by heat-not-burn preamble (unweighted N*s*: 6387 and 6309). Chi-square tests of independence were used to compare respondents' sex, age, social grade, smoking, and e-cigarette use status by their awareness and use of heat-not-burn tobacco products in the weighted total sample. As chi-square tests are sensitive to large sample sizes, Cramer's V was re-

ported as a measure of the strength of association using traditional thresholds for effect sizes (small: V = 0.1, moderate: V = 0.3, large: V = 0.5).[21] A conservative threshold of adjusted residuals greater than ± 3.00 was used to identify cells contributing to differences between groups.[22] Frequency of use was reported for those who had tried or were trying/using the products using unweighted percentages.

RESULTS

Overall, 9.3% were aware of the products, including 1.7% who had tried or were trying/using them (Table 1). This differed substantially between the 2 preamble versions. When assessed without mentioning brand names, 10.8% (95% CI: 10.1-11.6) said they had heard of heat-not-burn products, including 2.2% (95% CI: 1.8-2.6) who had tried or were trying/using them. When including brand names, 7.8% (95% CI: 7.1-8.4) said they had heard of them, including 1.3% (95% CI: 1.0-1.6) who had tried or were trying/using them.

Awareness and use of heat-not-burn products statistically differed across all respondent characteristics (all $p \leq .001$) except location (Table 1); however, most of the associations showed less than a small effect size. Only the association between e-cigarette use status and awareness and use of heat-not-burn products had a small effect size association (Cramer's V = 0.133): never e-cigarette users were more likely to be unaware of heat-not-burn products, whereas current e-cigarette triers/users were more likely to be experimenting with heat-not-burn. None of those who had tried or were using heat-non-burn products and were using e-cigarettes were never smokers. Among those who had tried or were trying/using heat-non-burn (unweighted N = 173), 38.7% had tried once or twice, 23.7% had used or were using less than monthly to twice a month, 17.3% used at least weekly but less than daily, and 12.7% used daily.

DISCUSSION

In Great Britain, awareness and use of heat-not-burn products are low. Effect sizes are too small for confident statements about associations with sociodemographic characteristics, but current e-cigarette users appear to be more likely to have used heat-not-burn. About one-fourth of ever heat-not-burn triers/users reported weekly or more frequent use. As prevalence was low and no previous research exists, we restricted the analysis to an exploration of prevalence and did not run any more sophisticated analyses.

We believe the present findings are likely to be overestimates for several reasons. It is not yet known how best to measure awareness of the products, and for self-reported data such as from the present survey, any ambiguity can lead to misunderstandings and affect reporting. The questions about heat-not-burn appeared before questions about e-cigarettes, increasing the risk of respondents thinking about e-cigarettes instead. Adding brand names substantially reduced the proportion reporting awareness or use, likely because it reduced confusion with e-cigarettes and other tobacco products. Future surveillance will benefit from testing and development of items prior to any survey work.[23] This needs to include testing of the understanding of the difference between different product types (ie, use of think aloud technique in pilot interviews or product images in online surveys), particularly when products can be expected to be known only to a minority. As responses to the split-ballot question indicated, mentioning brand names of a specific product type is likely to improve the accuracy of assessment. The growing number of different products on the market makes accurate surveying increasingly difficult and this is likely to continue.

IMPLICATIONS FOR TOBACCO REGULATION

The existing research on heat-not-burn products has been conducted and published mostly by the manufacturers that inevitably have conflicting interests.[24] Manufacturers promote heat-not-burn as reduced-risk tobacco products. To compare relative harm profiles of heat-not-burn use to cigarette and e-cigarette use, independent evidence of heat-not-burn effects to the user and others is pivotal. Alongside this, evidence on the effect of heat-not-burn use on individual and population smoking behavior is needed to underpin regulation that supports a reduction in smoking prevalence, including smoking cessation and, where needed, displacement of cigarettes with the least harmful alternative available. To our knowledge, this study was the first to assess awareness and use of heat-not-burn products in Great Britain and further data are sought

for triangulation. The association between experimentation or use of e-cigarettes and heat-not-burn indicates a need for future surveillance to examine transitions between use of different types of products (eg, combustible tobacco, heat-not-burn products and e-cigarettes) with their respective different profiles of harm.

In conclusion, a representative survey of the adult population in Great Britain found about 9% awareness of heat-not-burn tobacco products which included less than 2% ever trial or use; these figures are likely to be overestimations.

Conflict of Interest Statement

All authors of this article declare they have no conflicts of interest.

Acknowledgements

This work was supported by a Cancer Research UK (CRUK)/BUPA Foundation Cancer Prevention Fellowship (grant number C52999/A19748) awarded to LB. LB is a member of the UK Centre for Tobacco and Alcohol Studies, a UK Clinical Research Collaboration Public Health Research: Centre of Excellence with funding from the Medical Research Council, British Heart Foundation, Cancer Research UK, Economic and Social Research Council and the National Institute for Health Research under the auspices of the UK Clinical Research Collaboration (MR/K023195/1). HC is employed by Action on Smoking & Health which receives funding from CRUK, British Heart Foundation and Department of Health.

This study uses data that YouGov collected and shared with the authors who conducted the analyses reported here.

References

1. Smith MR, Clark B, Lüdicke F, et al. Evaluation of the Tobacco Heating System 2.2. Part 1: description of the system and the scientific assessment program. *Regul Toxicol Pharmacol*. 2016;81:S17-S26.
2. Government HM. Open consultation: tax treatment of heated tobacco products. Available at: https://www.gov.uk/government/consultations/tax-treatment-of-heated-tobacco-products/tax-treatment-of-heated-tobacco-products. Accessed July 28, 2017.
3. Philip Morris International. 2017 Second-quarter results. 2017. Available at: http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9Njc1NjE3fENoaWxkSUQ9MzgzNzY5fFR5cGU9MQ==&t=1. Accessed December 28, 2017.
4. Schaller J-P, Pijnenburg JPM, Ajithkumar A, Tricker AR. Evaluation of the Tobacco Heating System 2.2. Part 3: influence of the tobacco blend on the formation of harmful and potentially harmful constituents of the Tobacco Heating System 2.2 aerosol. *Regul Toxicol Pharmacol*. 2016;81:S48-S58.
5. Haziza C, de La Bourdonnaye G, Skiada D, et al. Evaluation of the Tobacco Heating System 2.2. Part 8: 5-day randomized reduced exposure clinical study in Poland. *Regul Toxicol Pharmacol*. 2016;81:S139-S150.
6. Wong ET, Kogel U, Veljkovic E, et al. Evaluation of the Tobacco Heating System 2.2. Part 4: 90-day OECD 413 rat inhalation study with systems toxicology endpoints demonstrates reduced exposure effects compared with cigarette smoke. *Regul Toxicol Pharmacol*. 2016;81:S59-S81.
7. Auer R, Concha-Lozano N, Jacot-Sadowski I, et al. Heat-not-burn tobacco cigarettes: smoke by any other name. *JAMA Intern Med*. 177(7):1050-1052.
8. Farsalinos KE, Yannovits N, Sarri T, et al. Nicotine delivery to the aerosol of a heat-not-burn tobacco product: comparison with a tobacco cigarette and e-cigarettes. *Nicotine Tob Res*. 2017 Jun 16. doi: 10.1093/ntr/ntx138. [Epub ahead of print]
9. Ruprecht AA, De Marco C, Saffari A, et al. Environmental pollution and emission factors of electronic cigarettes, heat-not-burn tobacco products, and conventional cigarettes. *The Aerosol Science and Technology*. 2017;51(6):674-684. Available at: http://www.tandfonline.com/doi/full/10.1080/02786826.2017.1300231. Accessed Janury 4, 2018.
10. Protano C, Manigrasso M, Avino P, et al. Second-hand smoke exposure generated by new electronic devices (IQOS(R) and e-cigs) and traditional cigarettes: submicron particle behaviour in human respiratory system. *Ann Ig*. 2016;28(2):109-112.
11. O'Connell G, Wilkinson P, Burseg KM, et al. Heated tobacco products create side-stream emissions: implications for regulation. *J Environ Anal Chem*. 2015;2(5):2-4.
12. Herzog B, Kanada P, Scott A. Equity research: good for the goose, less for the gander. Available at: http://vaportechnology.org/wp-content/uploads/2016/08/8.8.16_Wells-Fargo-August-8-Analysis-Good-For-the-Goose-Less-For-the-Gander-copy.pdf. Accessed December 28, 2017.
13. Tabuchi T, Kiyohara K, Hoshino T, et al. Awareness and use of electronic cigarettes and heat-not-burn tobacco products in Japan. *Addiction*. 2016;111(4):706-713.
14. Tabuchi T, Gallus S, Shinozaki T, et al. Heat-not-burn tobacco product use in Japan: its prevalence, predictors, and perceived symptoms from exposure to secondhand heat-not-burn-tobacco aerosol. *Tob Control*. 2017 Dec 16. pii: tobaccocontrol-2017-053947. doi: 10.1136/tobaccocontrol-2017-053947. [Epub ahead of print]
15. Dockrell M, Morrison R, Bauld L, McNeill A. E-cigarettes: prevalence and attitudes in Great Britain. *Nicotine Tob Res*. 2013;15(10):1737-1744.
16. Grant A, Morrison R, Dockrell MJ. Prevalence of waterpipe (shisha, narghille, hookah) use among adults in Great Britain and factors associated with waterpipe use: data from cross-sectional online surveys in 2012 and

2013. *Nicotine Tob Res*. 2014;16(7):931-938.
17. McNeill A, Brose LS, Calder R, et al. E-cigarettes : an evidence update: a report commissioned by Public Health England. *Public Health England*. 2015:111. Available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/454516/Ecigarettes_an_evidence_update_A_report_commissioned_by_Public_Health_England.pdf. Accessed December 28, 2017.
18. Simonavicius E, McNeill A, Arnott D, Brose LS. What factors are associated with current smokers using or stopping e-cigarette use? *Drug Alcohol Depend*. 2017;173:139-143.
19. YouGov. YouGov | Panel Methodology. Available at: https://yougov.co.uk/about/panel-methodology/. Accessed November 23, 2017.
20. Donsbach W, Traugott MW, eds. *The SAGE Handbook of Public Opinion Research*. London, UK: Sage; 2007.
21. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. New York, NY: Psychology Press; 1988.
22. Agresti A. *An Introduction to Categorical Data Analysis*. 2nd ed. Hoboken, NJ: Wiley; 2007.
23. Pearson JL, Hitchman SC, Brose LS, et al. Recommended core items to assess e-cigarette use in population-based surveys. *Tob Control*. 2017 Jun 17. pii: tobaccocontrol-2016-053541. doi: 10.1136/tobaccocontrol-2016-053541. [Epub ahead of print]
24. World Health Organisation. Tobacco industry interference with tobacco control. 2009. Available at: http://escholarship.org/uc/item/98w687x5#page-2. Accessed December 28, 2017.