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## Smokers' self-reported responses to the introduction of reduced ignition propensity (RIP) cigarettes

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### Abstract

**Background**—Changes in cigarette design to meet mandated fire safety standards may have unintended effects on smoker responses by diminishing the consumer's perceptions of product acceptability, smoking and increasing fire-risk behaviours. To address these concerns, population-level data are needed from a jurisdiction where reduced ignition propensity (RIP) cigarettes have been introduced.

**Methods**—A cohort of adult smokers was recruited in Massachusetts, USA using a random-digit-dialled telephone survey. The cohort was contacted prior to, and 8 months following, the state-mandated introduction of RIP cigarettes on 1 January 2008. Changes in self-reported subjective cigarette characteristics, smoking topography, fire-risk behaviours, fire events and quitting intentions were assessed.

**Results**—A total of 620 Massachusetts smokers completed the baseline survey conducted prior to implementation of the law, and 353 (57%) completed the follow-up survey conducted after implementation. No significant changes were found in self-reported fire-risk behaviour or quitting intentions. In addition, smokers were less likely to report smoking greater than 20 cigarettes per day and inhaling deeply into the chest after the law.

**Conclusions**—The introduction of RIP cigarettes in Massachusetts yielded little change, and no adverse effect, on self-reported smoker response, among a sample of mostly Caucasian smokers.

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## INTRODUCTION

Since 2004, a number of state and national jurisdictions, in countries including the US and Canada, have passed legislation that requires cigarettes to meet fire safety standards.<sup>12</sup> US states and Canada have adopted the American Society for Testing and Materials standard E2187-04, titled 'Standard Test Method for Measuring the Ignition Strength of Cigarettes',<sup>3</sup> and allow no more than 25% (out of 40 cigarettes) of cigarettes to demonstrate a full-length burn when tested in accordance to the standard's procedures. Cigarettes that meet this standard are referred to as reduced ignition propensity (RIP) cigarettes, as they are considered less likely than conventional cigarettes to ignite soft furnishings.<sup>4</sup> Conventional cigarettes do not meet new lowered ignition propensity standards and must be modified to make cigarettes fire standard compliant.<sup>5</sup> Industry-sponsored and government-sponsored research conducted over several decades has identified cigarette physical design features that can be modified to lower ignition propensity (for example, paper banding), and currently over 300 design patents exist for reducing cigarette ignition propensity.<sup>6</sup>

Cigarette design modifications that reduce ignition propensity are not intended to influence consumer response, and the acceptability of this important design modification may depend upon whether RIP cigarettes produce adverse responses among consumers. Consumer response has been defined as 'a set of subjective and behavioural responses which convey information, affect behaviour and likelihood of long-term product use by the consumer and his or her future intentions for product adoption'.<sup>7</sup> A growing body of evidence has shown that cigarette physical design features play an important role in modulating the subjective and sensory experiences of smokers. Manufacturers enhance cigarette appeal and ease of use, in part, by modifying sensory perceptions of the product.<sup>8-10</sup> It is therefore conceivable that cigarette design modifications that reduce ignition propensity may affect the cigarette's acceptability, and the way in which the cigarette is used by the smoker. Limited evidence suggests that RIP cigarettes remained acceptable to smokers after their introduction in New York State.<sup>11,12</sup> Other research has shown that the introduction of RIP cigarettes did not alter usual fire-risk ameliorating behaviours among a cohort of smokers in Ontario, Canada.<sup>13</sup> As more countries begin to consider adopting fire safety standards for cigarettes, prospective studies of cigarette acceptability and effects on fire safety behaviours, reported before and after the introduction of RIP cigarettes among a single cohort of smokers, are needed.

To assess the effect of RIP cigarette design on consumer responses, we investigated the experience of Massachusetts smokers before and after the introduction of RIP cigarettes in Massachusetts. Three general hypotheses were proposed: firstly, that the introduction of RIP cigarettes would not adversely affect consumers' perceptions of product acceptability; secondly, that self-reported smoking topography and fire-risk ameliorating behaviours would not change in a manner that adversely impact public safety; and thirdly, while acceptability of RIP-modified cigarettes may provide a public health advantage, this should not compromise the likelihood of a smoker quitting. Therefore, we also hypothesised that new RIP cigarettes would not undermine consumers' intentions to quit and quitting behaviours.

## METHODS

### Study design

A pre/post study design was used to survey a cohort of smokers from Massachusetts, before and after the implementation of the Massachusetts RIP cigarette law in January 2008.<sup>14</sup> A baseline (pre-RIP) random digit dialled telephone interview was conducted between August and November 2007 among adult smokers living in Massachusetts. The same cohort of smokers was surveyed again after implementation of the RIP law (post-RIP) between August and October 2008. The survey was designed to have 80% power to examine changes over time in key measures based on interview responses, assuming a discordant ratio of 0.48, or a relative OR of 1.4 using McNemar's test.

### Participants

Eligible participants were persons aged 18 years and over who had smoked 100 cigarettes in their lifetime and were current smokers. Respondents were compensated US\$15 in appreciation for their time in participating in each 15–20 min survey. The protocol received ethics clearance from the Roswell Park Cancer Institute Institutional Review Board and the Harvard School of Public Health's Office of Human Research Administration.

### Survey

In baseline and follow-up surveys, smokers were asked about characteristics of their current brand, self-reported smoking topography (puffing style), fire-risk behaviours and events, and quitting intentions. Likert scales were used to assess participant responses. Demographical information was assessed at baseline.

### Analysis

Reported baseline descriptive statistics were weighted to reflect the characteristics (age, gender and race) of Massachusetts smokers based on data reported by Behavioural Risk Factor Survey.<sup>15</sup> Unweighted ORs generated from McNemar's test were generated to compare smokers' responses from the 2008 survey (after law) to responses in the 2007 survey (before law). All variables analysed by the McNemar's test were dichotomised by like categories. For instance, responses such as 'very unpleasant' and 'unpleasant' were combined. For questions using a five-point bipolar Likert scale (ie, taste), all negative responses were combined, while neutral and positive responses were combined. Data from participants responding to the baseline and follow-up interviews were used for the final analyses. Results were considered significant at  $p < 0.05$ . All analyses were performed using Stata/IC 10.0 (Stata, College Station, Texas, USA).

## RESULTS

A total of 620 respondents completed the baseline survey, and 352 (57%) completed the follow-up survey. Of those completing the follow-up survey, about one-eighth (13%) of respondents reported that they had quit smoking. The overall response rate to the baseline survey was 21% using the American Association for Public Opinion Research Response Rate 4 method.<sup>16</sup> Among persons completing both surveys, 56% were women, 91% were

Caucasian and almost half (49%) were 55 years of age or older. At baseline, 92% of these respondents reported smoking every day and 59% reported smoking their first cigarette within 30 min of awaking. About one-fifth (21%) of respondents reported smoking more than 20 cigarettes per day and the mean heavy smoking index<sup>17</sup> score was 2.6. Subjects lost to follow-up were found to be slightly younger compared with the analytic sample (47.8 vs 52.1 years;  $p<0.001$ ), and less likely to be Caucasian (percentage Caucasian for lost to follow-up and analytic sample: 84% and 91%, respectively;  $p=0.012$ ). No differences were found between those lost to follow-up and the analytic sample with regard to sex ( $p=0.555$ ), education ( $p=0.874$ ), or heavy smoking index ( $p=0.437$ ).

Participant responses before and after the introduction of RIP cigarettes in Massachusetts are presented in table 1. Most responses assessed did not differ at follow-up. A summary of the major outcomes is presented below.

### **Consumers' product perceptions**

Respondents reported no change in unpleasant cigarette taste ( $p=0.109$ ) or low cigarette satisfaction ( $p=0.243$ ) from pre-RIP to post-RIP interviews. In addition, no changes were found in smokers reporting that the lit end or live ash of their cigarettes was falling off ( $p=0.089$ ). By contrast, smokers were more likely to report that their cigarettes extinguished between puffs (OR 4.28, 95% CI 2.54 to 7.60), and that this occurred often (OR 2.71, 95% CI 1.44 to 5.42) after the introduction of RIP cigarettes. Smokers were also more likely to report noticing a change in their current cigarette brand after implementation of the law (OR 2.83, 95% CI 1.73 to 4.77). However, no significant change was observed in reports of purchasing cigarettes from a different source ( $p=0.262$ ).

### **Self-reported smoking topography**

Smokers were significantly less likely after the law to report smoking more than 20 cigarettes per day (OR 0.25, 95% CI 0.08 to 0.63) or inhaling deeply into their chest (OR 0.53, 95% CI 0.32 to 0.86). No statistically significant change was found in smoker's reports of taking only a few puffs on each cigarette ( $p=0.099$ ) or letting their cigarette burn for 30 s or less between puffs ( $p=0.081$ ), after the introduction of RIP cigarettes.

### **Fire-risk behaviours and events**

Overall, most fire-risk behaviours and fire events were found to be rare and statistical analysis could not be performed for the following outcomes: dozed off while smoking, fallen asleep while smoking, and scorching or burning clothing. For instance, only 1, 5 and 16 individuals reported a home fire, falling asleep while smoking, or scorching or burning clothing, respectively, within the previous 6 months from baseline. These same outcomes were reported by 0, 5 and 19 individuals at follow-up. Of those outcomes with an adequate number of cases, no significant changes were found reports of leaving a cigarette unattended ( $p=0.567$ ), smoking in bed ( $p=1.000$ ), or burning clothing ( $p=0.312$ ). Smokers were also no more or less likely to report extinguishing cigarettes in water or sand after the implementation of the law ( $p=0.912$ ).

## Quitting intentions

Of those continuing to smoke, no statistically significant changes were observed in interest in quitting ( $p=0.201$ ), setting a quit date ( $p=0.144$ ), planning to quit within the next 6 months ( $p=0.919$ ), or confidence in ability to quit in the next 6 months ( $p=0.913$ ). However, smokers were more likely after the RIP law to report that quitting permanently would be somewhat or very hard (OR 2.45, CI 1.18 to 5.48).

Smokers expressing an interest in quitting were asked about factors that led them to think about quitting within the past 6 months. These smokers reported no change in motivations to quit, price of cigarettes ( $p=0.073$ ), changes in usual brand ( $p=0.262$ ), or not enjoying smoking as much ( $p=0.366$ ).

## DISCUSSION

Smokers in Massachusetts reported few changes in their perceptions of product after the introduction of RIP cigarette design modifications in January 2008. Respondents reported no change in unpleasant taste or low cigarette satisfaction, suggesting that product appeal was not diminished. However, a lowered likelihood of smoking more than 20 cigarettes per day and deep inhalation was observed, which suggested that smoking intensity was reduced. It is important to note that basic fire safety behaviours were not diminished among smokers using RIP cigarettes, as shown by the continued low occurrence of fire events. Finally, reported quit intentions were not adversely affected by adoption of RIP cigarettes. These results add to a growing body of evidence suggesting that the introduction of RIP technology in cigarettes yields little or no adverse effect on consumer responses.<sup>11–13</sup>

While smokers reported that their cigarettes were extinguishing between puffs, no evidence of compensatory smoking topography that would prevent extinguishment was found. For instance, reports of taking a few puffs or allowing 30 s or less between each puff did not change after implementation of the RIP law. Also, smokers were less likely to report inhaling deeply after the law. While limitations to assessing puffing topography using self-report methods are recognised,<sup>18</sup> the present data support O'Connor *et al*, who found no change in smoking topography measured using a validated device among a sample of smokers who switched from conventional to RIP cigarettes.<sup>19</sup>

These results are consistent with those reported from a cohort of smokers in Canada and underscore the fact that RIP cigarettes have not been found to adversely affect fire-risk behaviour.<sup>13</sup> While the present study found low occurrence of recent fire events, more comprehensive data gathered over a longer time period are needed to ascertain the effect of RIP cigarette legislation on fire incidence, death, injuries and economic costs. The Massachusetts Department of Fire Services, for example, reports annually on fire incidence, fire deaths and known fire causes across the state. However, at least several years of data collection will be required in order to obtain data sufficient to determine statistically significant changes.

Smokers were no more likely to report making special efforts to purchase cigarettes from a different source after the introduction of RIP cigarettes. This was found despite a US\$1.00

increase in state excise tax on cigarettes that went into effect on 1 July 2008.<sup>20</sup> The tax increase occurred after implementation of the Massachusetts RIP cigarette law (1 January 2008) and before the dates that the post-law survey was conducted (August–October 2008). Cigarette tax increases are associated with reduction in smoking,<sup>21</sup> and therefore the Massachusetts tax increase had the potential to influence self-reported purchasing and quitting behaviour of study participants. Among our sample, 13% of respondents that were followed-up reported quitting smoking sometime after the baseline interview. Annually, an estimated 3% of smokers succeed in quitting.<sup>22</sup> However, given that both policies were introduced during the study period the relative contributions of the tax increase and RIP cigarette requirement on such a large increase in smoking cessation cannot be determined. In addition, while the Massachusetts RIP law was implemented on 1 January 2008, it is not known if retailers began selling RIP cigarettes before this date, or if smokers were obtaining RIP cigarettes from other sources. For instance, RIP cigarettes were introduced into the neighbouring states of New York, Vermont and New Hampshire before Massachusetts in June of 2004, May of 2006 and October of 2007, respectively.<sup>12324</sup> The use of RIP products prior to participating in the baseline interview may have contaminated the responses of such participants. Moreover, the potential presence of other external factors, such as exposure to RIP cigarettes via media sources, may have influenced smokers' post-RIP responses.

The findings of this study should be interpreted within the context of a substantial proportion of respondents having been either lost to follow-up or quit smoking. Respondents lost to follow-up were more likely to be of non-Caucasian race and younger, potentially limiting the capacity of the study sample to draw conclusions that fully represent the broader population.

The present data show that the introduction of RIP cigarettes in Massachusetts did not significantly influence self-reported smoking topography, fire safety behaviour or fire events. RIP cigarettes have the potential to reduce cigarette-caused fires significantly and thus reduce fire death throughout the world.<sup>4</sup> Currently, RIP cigarettes are mandated in four countries,<sup>122526</sup> demonstrating that RIP cigarette technology can be readily incorporated into the manufacturing process of cigarettes. Further research is needed to establish the influence of RIP cigarettes on reduction of fire incidence. In the meantime, the present data suggest that RIP design modifications do not generally adversely affect consumer responses from a public health perspective. Thus, a potential obstacle to the widespread adoption and acceptance of RIP cigarettes may be removed.

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## REFERENCES

1. New York State Office of Fire Prevention and Control. [11 Aug 2010] Fire Safety Standards for Cigarettes. <http://www.dos.state.ny.us/fire/amendedcigaretterule.htm>

2. [3 Jan 2011] Cigarette Ignition Propensity Regulations. <http://www.laws.justice.gc.ca/PDF/Regulation/S/SOR-2005-178.pdf>
3. ASTM International. Standard Test Method for Measuring the Ignition Strength of Cigarettes, E2187–02. ASTM International; West Conshohocken, PA: 2002.
4. Ohlemiller, TJ.; Villa, KM.; Braun, E., et al. Test Methods for Quantifying the Propensity of Cigarettes to Ignite Soft Furnishings. National Institute of Standards and Technology, US Department of Commerce; Washington, DC: 1993. NIST Special Publication 851
5. Seidenberg AB, Rees VW, Alpert HR, et al. Ignition strength of 25 international cigarette brands. *Tob Control*. 2011; 20:77–80. [PubMed: 20974622]
6. Alpert HR, O'Connor RJ, Spalletta R, et al. Recent advances in cigarette ignition propensity research and development. *Fire Technol*. 2010; 46:275–89. [PubMed: 20495669]
7. Rees VW, Kreslake JM, Cummings KM, et al. Assessing consumer responses to potential reduced-exposure tobacco products: a review of tobacco industry and independent research methods. *Cancer Epidemiol Biomarkers Prev*. 2009; 18:3225–40. [PubMed: 19959675]
8. Carpenter CM, Wayne GF, Connolly GN. The role of sensory perception in the development and targeting of tobacco products. *Addiction*. 2007; 102:136–47. [PubMed: 17207131]
9. Rose JE. Nicotine and non-nicotine factors in cigarette addiction. *Psychopharmacology (Berl)*. 2006; 184:274–85. [PubMed: 16362402]
10. Wayne GF, Connolly GN, Henningfield JE. Assessing internal tobacco industry knowledge of the neurobiology of tobacco dependence. *Nicotine Tob Res*. 2005; 7:711–12.
11. O'Connor RJ, Giovino GA, Fix BV, et al. Smokers' reactions to reduced ignition propensity cigarettes. *Tob Control*. 2006; 15:45–9. [PubMed: 16436405]
12. Connolly GN, Alpert HR, Rees V, et al. Effect of the New York State cigarette fire safety standard on ignition propensity, smoke constituents, and the consumer market. *Tob Control*. 2005; 14:321–7. [PubMed: 16183983]
13. O'Connor RJ, Fix BV, Hammond D, et al. The impact of reduced ignition propensity cigarette regulation on smoking behavior in a cohort of Ontario smokers. *Inj Prev*. 2010; 16:420–2. [PubMed: 20643872]
14. Commonwealth of Massachusetts. [13 Jan 2011] Testing, Certification, Marking, and Enforcement of Massachusetts' Fire Standard Compliant Cigarettes. 501 CMR 14. [http://www.mass.gov/Eeops/docs/dfs/news/press/final\\_unofficial\\_copy\\_12\\_10\\_07\\_cigarette\\_regulations.pdf](http://www.mass.gov/Eeops/docs/dfs/news/press/final_unofficial_copy_12_10_07_cigarette_regulations.pdf)
15. Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; Atlanta, GA: 2008.
16. The American Association for Public Opinion Research. Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 5th edn.. AAPOR; Lenexa, KS: 2008.
17. Heatherton TF, Kozlowski LT, Frecker RC, et al. Measuring the heaviness of smoking using self-reported time to first cigarette of the day and number of cigarettes smoked per day. *Br J Addict*. 1989; 84:791–9. [PubMed: 2758152]
18. Shahab L, Hammond D, O'Connor RJ, et al. The reliability and validity of self-reported puffing behaviour: evidence from a cross-national study. *Nicotine Tob Res*. 2008; 10:867–74. [PubMed: 18569761]
19. O'Connor RJ, Rees VW, Norton KJ, et al. Does switching to reduced ignition propensity cigarettes alter smoking behavior or exposure to tobacco smoke constituents? *Nicotine Tob Res*. 2010; 12:1011–18. [PubMed: 20805292]
20. Commonwealth of Massachusetts House of Representatives. [13 Jan 2011] An Act Relative to the Cigarette Excise and Health Care Funding. House No. 4899. <http://www.mass.gov/legis/bills/house/185/ht04pdf/ht04899.pdf>
21. Institute of Medicine. Ending the Tobacco Problem: A Blueprint for the Nation. The National Academies Press; Washington, DC: 2007.
22. Benowitz NL. Nicotine addiction. *N Engl J Med*. 2010; 362:2295–303. [PubMed: 20554984]
23. General Assembly of the State of Vermont. [13 Jan 2011] An Act Relating to Reducing Fires Resulting From Careless Use of Cigarettes and Other Tobacco-Related Issues. Sec. 1. 20 V.S.A.

chapter 173, subchapter 2A. <http://www.leg.state.vt.us/docs/legdoc.cfm?URL=\docs/2006/acts/ACT068.HTM>

24. New Hampshire State Legislature. [13 Jan 2011] Reduced Cigarette Ignition Propensity. Chapter 339-F. <http://www.gencourt.state.nh.us/rsa/html/XXXI/339-F/339-F-mrg.htm>
25. Australia. [11 Aug 2010] Trade Practices (Consumer Product Safety Standard) (Reduced Fire Risk Cigarettes) Regulations. 2008. [http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrument1.nsf/0/3FE64581813B093ECA2574C900006E8A/\\$file/0817073A080829Z.pdf](http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrument1.nsf/0/3FE64581813B093ECA2574C900006E8A/$file/0817073A080829Z.pdf)
26. [12 Aug 2010] Fire Safety of Cigarettes Improved in Finland. <http://www.government.fi/ajankohtaista/tiedotteet/tiedote/en.jsp?oid=\290909>



#### What this paper adds

- ▶ Reduced ignition propensity (RIP) cigarettes are mandated by law in several countries to help reduce cigarette fire incidence. Assessment of the subjective and behavioural responses of smokers to RIP cigarette design changes is needed to understand the public health implications of their introduction in the consumer market.
- ▶ The current investigation found no changes in fire-risk behaviours and quitting intentions among a sample of mostly Caucasian adult smokers. In addition, self-reported smoking topography was not negatively impacted. The present data suggest that RIP design modifications, in general, do not affect consumer responses in a manner that might enhance personal risk. Thus, the widespread adoption and acceptance of RIP cigarettes is unlikely to have an adverse influence on the public health.

**Table 1**

Participant response and OR of change, following introduction of reduced ignition propensity (RIP) cigarettes

Response	n	No. of baseline cases	No. of follow-up cases	Before, % *	After, % *	OR †	95% CI	p Value
Consumers' product perceptions								
Cigarettes taste very or somewhat unpleasant	298	45	59	14.8	20.1	1.54	0.92 to 2.63	0.109
Cigarettes not at all or only a little satisfying	300	33	24	12.7	7.7	0.68	0.36 to 1.26	0.243
Cigarettes go out between puffs	304	157	216	51.6	70.1	4.28	2.54 to 7.60	<0.001
Cigarettes go out between puffs often	139	41	65	29.3	44.2	2.71	1.44 to 5.42	0.001
Lit end or live ash fall off the end of cigarette on its own	300	119	101	43.2	33.7	0.69	0.45 to 1.05	0.089
Noticed changes in brand	268	67	109	26.7	41.7	2.83	1.73 to 4.77	<0.001
Purchasing patterns								
Purchase cigarettes from difference source	305	28	37	9.4	13.0	1.43	0.79 to 2.63	0.262
Self-reported smoking behaviour								
Smoke >20 cigarettes per day	304	67	49	21.5	15.6	0.25	0.08 to 0.63	0.001
0–5 min to first cigarette	295	68	66	23.5	22.3	0.94	0.57 to 1.55	0.905
Inhale deeply into chest or as deeply as possible	297	157	133	56.1	46.7	0.53	0.32 to 0.86	0.009
Take few puffs on each cigarette	285	18	29	6.3	9.3	1.85	0.90 to 3.95	0.099
Let cigarette burn for 30 s or less between puffs	273	211	195	77.1	72.2	0.64	0.39 to 1.05	0.081
Fire-risk behaviours								
Left burning cigarette unattended	303	77	83	26.5	28.1	1.17	0.73 to 1.89	0.567
Smoked in bed	306	60	59	19.2	19.6	1.10	0.42 to 2.89	1.000
Extinguish cigarette in sand or water	307	140	142	48.5	45.9	1.05	0.66 to 1.66	0.912
Scorched or burned clothes	301	42	50	16.0	18.0	1.40	0.76 to 2.62	0.312
Quitting intentions								
Sure you would succeed in quitting in next 6 months	289	143	141	51.5	51.2	0.95	0.61 to 1.50	0.913
Want to quit	302	250	258	83.6	86.4	1.73	0.78 to 4.02	0.201
Plan to quit in next 6 months	288	123	125	42.8	45.6	1.04	0.68 to 1.59	0.919
Set a quit date	181	37	26	21.3	15.6	0.62	0.32 to 1.16	0.144
Quitting permanently somewhat or very hard	301	245	261	79.6	87.3	2.45	1.18 to 5.48	0.014
Think about quitting due to cigarette price	191	155	167	80.5	88.1	1.92	0.95 to 4.09	0.073
Think about quitting due to changes in cigarette brand	191	34	43	19.0	23.5	1.43	0.79 to 2.63	0.262
Think about quitting due to not enjoying smoking as much	190	124	116	64.4	60.7	0.76	0.44 to 1.31	0.366

\* Weighted

† Unweighted