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REDUCING SMOKING: A GUIDE FOR STATE POLICY MAKERS

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ABSTRACT

A review of public health literature related to smoking cessation suggests smoking bans and efforts to stop minors from smoking can be very effective. They help in two ways: reducing smoking where banned and de-normalizing cigarette smoking. Tobacco taxes may be reaching the limits of their effectiveness as a public health measure in many jurisdictions. When a state's tobacco tax is much higher than neighboring jurisdictions, smuggling and cross-border purchasing become major issues. Warnings on tobacco packages raise awareness of hazards, but appear to have little or no effect on initiation of smoking by teens or on smoking cessation. Some initiatives may do more harm than good. Nicotine replacement and other pharmaceutical therapies are remarkably ineffective. They fail about 90 percent of smokers who use them as directed, when results are measured six to twelve months later. Tobacco harm reduction, defined as encouraging smokers to switch to lower-risk, smoke-free tobacco products or e-cigarettes, is a promising option, but one opposed by public health authorities unwilling to consider use of any non-pharmaceutical tobacco product in the context of a public health initiative. Supported abrupt cessation, defined as promotion of web-based educational materials or 1-6 hours of pre-cessation education or counseling and control of contraband tobacco products, deserves far more attention than it has gotten to date. These options are not supported by current tobacco-control programs because the definitive research to demonstrate their effectiveness on individual and population bases has not yet been done.

According to the Centers for Disease Control and Prevention (CDC), cigarette smoking causes 443,000 deaths per year; more than any other single, easily preventable cause of death.¹ An extensive review of the medical research conducted by the Office of the U.S. Surgeon General shows that dozens of potentially deadly diseases and other maladies result from smoking.² Despite decades of increasingly stern public health warnings, roughly 20 percent of American adults, about 46 million people, still smoke.³

Smokers smoke mainly for the nicotine. Nicotine, itself, is relatively innocuous: It's a mild stimulant that, like other stimulants, has the potential to cause long-term cardiovascular harm by increasing heart rate, but also has positive consequences on concentration, fine motor skills and memory.⁴ Although not everyone who uses nicotine becomes addicted to it, it is addictive by any commonly used definition of the term. Virtually all users enjoy the simultaneous feelings of both relaxation and increased mental sharpness that nicotine provides. For some, the nicotine appears to be extremely important to their ability to maintain functional mental and emotional balance. This is most likely to be the case for individuals suffering mental illnesses, such as depression, bipolar disorder and schizophrenia. Smokers who also take mental health medications currently account for about 44 percent of cigarettes smoked.⁵

1. Centers for Disease Control and Prevention (CDC). "Adult Cigarette Smoking in the United States: Current Estimate." http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm.

2. U.S. Department of Health and Human Services. *The Health Consequences of Smoking: A Report of the Surgeon General*, 2004.

3. CDC, *supra*.

4. See e.g. Brad Rodu. "The Proven Positive Effects of Nicotine and Tobacco." *Tobacco Truth*, May 5, 2010, <http://rodutobaccotruth.blogspot.com/2010/05/proven-positive-effects-of-nicotine-and.html>

5. Institute of Medicine of the National Academies. "Combating Smoking in People with Mental Illness," http://sites.nationalacademies.org/Tobacco/SmokingCessation/Tobacco_051287

Nicotine, however, is not the only addicting/habituating factor in cigarette smoking. The cigarette handling ritual is very habituating, as shown by studies that have demonstrated that no-nicotine e-cigarettes can satisfy the urge to smoke in about 30 percent of smokers. Other factors include marketing themes that promote cigarette smoking as a rite of passage from adolescence to adulthood or relate cigarette smoking to “coolness,” masculinity, femininity or other desirable traits.

Yet another factor is the common practice of many tobacco control professionals to use the terms “smoking” and “tobacco use” interchangeably. This custom leaves many people (including physicians and many tobacco-control professionals) with the incorrect impression that all tobacco products are equally hazardous. Available research shows that chewing tobacco, snus and the various other forms of snuff currently on the American market poses a risk of potentially fatal tobacco-attributable illness less than 2 percent the risk posed by cigarettes. Our understanding of the factors governing addiction to cigarettes suggests (but does not conclusively prove) that these other products are likely to be less addictive than cigarettes, and possibly easier to quit.

The chemicals in cigarette smoke other than nicotine, when inhaled deep into the lungs, are what cause all of the cancer, all of the lung disease and an overwhelming majority of the heart disease that are, and will continue to be, major public health concerns. Smoking kills. But while nicotine isn’t healthy, its use is not, *per se*, a major public health problem. Indeed, the number of deaths from tobacco and nicotine use other than smoking are so small and so difficult to trace that the CDC makes no attempt to track them.

Two possible exceptions to this rule relate to smoking during pregnancy and smoking during the few weeks before and after a surgical procedure. We do not know for sure whether it is the nicotine or other components of cigarette smoke that cause the birth defects, miscarriages and premature births associated with smoking during pregnancy or the impeded wound healing associated with smoking. Until these questions are more definitively addressed by future research, it would be best to continue to recommend that both pregnant women and persons scheduled for elective surgery discontinue all use of nicotine.

From a policy perspective, there are two major areas of concern. The first, and most substantial, is the need to reduce the illness, death and property damage from combustible tobacco products, the most prominent of which is cigarettes. The second is the issue of addiction. Addiction to any drug is not a good thing, and therefore should be avoided. Since persons who do not become addicted to nicotine products by the time they are young adults are unlikely ever to become addicted, prevention of tobacco use by teens has long been a cornerstone of tobacco control programming.

Therefore, policymakers need to address the very different

needs of two sub-populations. One is current smokers, with a goal of getting them either to quit or switch to a lower-risk product to eliminate most or all of the smoking-attributable illness and death. The second is teens and young adults, for whom addiction is the major issue. The most effective possible tobacco control programming would be one that encourages smokers who are unable or unwilling to quit to switch to lower-risk, smoke-free products or e-cigarettes, without encouraging greater numbers of teens and young adults to initiate tobacco/nicotine use.

Finally, it is important to note that “low-risk” is not “no-risk.” While e-cigarettes and the smoke-free tobacco products currently on the American market are “low-risk,” they are not risk free. They still contain significant quantities of carcinogens and other toxic substances that would not be allowed in other consumer products.

Stated another way, cigarettes kill 30 percent to 50 percent of the people who use them consistently. Reducing the risk by 98 percent means that the smoke-free options and e-cigarettes would kill up to 1 percent of users. This is still unacceptable from a public health perspective, except when compared to the risk posed by cigarettes.

Thus, for policymakers and, indeed, anyone interested in public health, reducing the number of people that smoke is, and will continue to be, a high priority. R Street—as an organization devoted to “free markets and real solutions”—wants to help policymakers determine practical ways to reduce and even eliminate this harm. Millions of American adults smoke. But as with many other dangerous behaviors—driving fast, eating fatty foods, participating in extreme sports—it’s not practical to believe the behavior can be stopped altogether in absolutely all cases.

Taking action to reduce the harms from smoking is particularly important because, while concerted public health efforts have reduced smoking over time, progress has stalled in recent years. Between the 1940s (when the Gallup organization began compiling its self-report data series) and the early 1970s, the percentage of adults who smoked consistently measured in the 39 to 45 percent range.⁶ As medical evidence for the deleterious effects of smoking became clearer and public health campaigns strengthened, the percentage of smokers in the adult population plummeted. By 2001, less than a quarter of Americans smoked.⁷

However, the most recent data, collected in the summer of 2012, appears to indicate the decline has stalled. The percentage of adults who smoke rose between 2009 and 2011 and then fell in 2012. Since 2004, the percentage of American adults who smoke has moved entirely in a four-point range

6. Gallup Organization. “One in Five U.S. Adults Smoke, Tied for All Time Low,” August 22, 2012, http://www.gallup.com/poll/156833/one-five-adults-smoke-tied-time-low.aspx?utm_source=google&utm_medium=rss&utm_campaign=syndication

7. Ibid.

between 20 and 24 percent with little evidence of sustained downward or upward progress.⁸

This suggests current anti-smoking campaigns may have reached the limits of their utility. Further reducing smoking's enormous death toll will require significant new efforts, thus behooving public health officials to consider a wide range of potential strategies. This paper reviews the research on multiple current and proposed public health strategies that have the potential to reduce tobacco-related addiction, illness and death. It divides these strategies into two groups: current strategies and potential new strategies. Current strategies are those that are widely used and promoted at the present time. New strategies are those that are either untried or used only in very narrow cases. Each setting is briefly described and then followed by an assessment of its demonstrated or expected effectiveness, as well as potential disadvantages. Based on our literature review, we considered five current strategies. They are:

1. Smoking bans in public places
2. Nicotine replacement therapy and smoking cessation drugs
3. Prohibition of sale of tobacco products to minors and health education for minors.
4. Taxation
5. Warnings on tobacco products

In addition, we consider three strategies that are not currently tried on a large-scale basis:

1. Harm reduction
2. Promotion of assisted abrupt cessation
3. Enhanced control of contraband cigarettes

The paper concludes with steps that policymakers should support and a discussion of potential changes to Food and Drug Administration policies that would also help to reduce smoking and improve public health.

STRATEGY: SMOKING BANS IN PUBLIC PLACES

Smoking bans in public places are prohibitions on smoking in workplaces, bars, restaurants, public transportation and other areas where people congregate. They seek to achieve

two purposes: to protect non-smokers from environmental tobacco smoke and to make smoking less socially acceptable.

Effectiveness: In addition to the positive public health benefits that stem from reduced exposure to environmental tobacco smoke (second hand smoke), smoking bans in public places appear effective in reducing the numbers of cigarettes smoked. One major study in New York City found that workplace smoking bans alone caused roughly 18,000 individuals to quit smoking.⁹ A major meta-analysis of research published in BMJ likewise found that "reduced prevalence and lower consumption per continuing smoker yields a mean reduction of 1.3 cigarettes per day, per employee, which corresponds to a relative reduction of 29 percent."¹⁰ Two more recent studies—conducted in Minnesota and Scotland—show that indoor smoking bans result in significant declines in heart attack rates.¹¹ A similar study conducted in Canada indicated sizeable reductions in both smoking and exposure to second hand smoke when smoking bans are implemented.¹² The most recent study that attempts to quantify the financial gains from smoking bans found a benefit of about \$1.76 million (roughly \$600,000 a year) in a town of about 45,000 people during the first three years of a smoking ban.¹³ Even those studies and meta-analysis that suggest smoking bans are not strongly correlated with rising quit rates still find reduced consumption of cigarettes in general.¹⁴

Downsides: Smoking bans in public places *per se* have only minimal direct financial costs, but do impinge on private

9. Thomas H. Frieden, et al., "Adult Tobacco Use Levels After Intensive Tobacco Control Measures: New York City, 2002–2003," *American Journal of Public Health*, Vol. 95, No. 6, June 2005, page 1016

10. Caroline M Fichtenberg and Stanton A Glantz. "Effect of smoke-free workplaces on smoking behaviour: systematic review," *BMJ*. 2002 July 27; 325(7357): 188.

11. Jill P. Pell et al. "Smoke-free Legislation and Hospitalizations for Acute Coronary Syndrome," in *The New England Journal of Medicine* 2008, 359:482-491 and Susan Perry. "Workplace smoking bans have powerful health effects, Mayo study finds," <http://www.minnpost.com/second-opinion/2011/11/workplace-smoking-bans-have-powerful-health-effects-mayo-study-finds>

12. Alisa B. Naiman et al. "Is there an impact of public smoking bans on self-reported smoking status and exposure to secondhand smoke?," *BMC Public Health*, 11:146, 2006. <http://www.biomedcentral.com/1471-2458/11/146> and Bartecchi et al. "Reduction in the incidence of acute myocardial infarction associated with a citywide smoking ordinance" in *Circulation*; 114:1490-6, 2006.

13. Robert McMillen et al. "The Starkville & Hattiesburg Heart Attack Studies," Tobacco Technical Assistance Consortium, http://www.ttac.org/resources/pdfs/120810_Miss_Heart_Attack_Report.pdf

14. Andrew M. Jones et al. "A model of the impact of smoking bans on smoking with evidence from bans in England and Scotland," Health, Econometrics and Data Group (University of York), May, 2011, http://www.york.ac.uk/res/herc/documents/wp/11_05.pdf

8. Ibid.

property rights. Enforcement of these bans, although not free, is quite cost effective considering their apparent benefits. For example, the State of Ohio (population 11.5 million) spent about \$1 million a year in enforcing its smoking ban in the first two years of its existence and realized a simultaneous 10 percent reduction in the number of smokers in the state.¹⁶

Nonetheless, some consider these bans an affront to individual liberty and property rights and suggest they may negatively impact some bars and restaurants. The liberty argument seems most compelling. As one scholar puts it, “There is no need for government to force establishments to go nonsmoking; the market will provide an optimal number of nonsmoking choices.”¹⁷ Since more than 85 percent of the total population (adults and children) *does not* smoke, and non-smoking areas are common in places that do not ban smoking, there’s little reason or evidence that smoking bans are necessary to protect most people from environmental tobacco smoke. This argument avers that government has no business interfering in the uses of private property, absent compelling public safety arguments that smoking bans do not reach. Second, some evidence appears to indicate that some private businesses, bars in particular, may suffer ill economic consequences from smoking bans.¹⁸

Finally, the smoking-ban strategy has already been implemented on a wide scale: 38 states have some form of indoor smoking ban in effect, as do almost all large municipalities in states that do *not* have their own bans.¹⁹ Most large national hotel, restaurant, and retail chains also have chain-wide smoking bans of their own. Even in the absence of a national law, it’s *de facto* nearly impossible to smoke in indoor public places. Outdoor smoking bans that exist in some parks, hospital campuses, and a small number of towns – while they do not significantly limit exposure to environmental tobacco smoke – are likewise usually justified on the basis of “de-normalizing” cigarette smoking. Thus, while smoking bans are an effective public health measure where the public health benefits outweigh concerns, it appears likely that the easy gains associated with them have already been realized.

STRATEGY: NICOTINE REPLACEMENT THERAPY AND SMOKING CESSATION DRUGS

Nicotine replacement therapies involve lozenges, gums, patches and pharmaceuticals intended to wean individuals off of nicotine addiction. A public health strategy would involve subsidized distribution of nicotine replacement (either directly or through insurance coverage mandates) and public education campaigns about them.

Effectiveness: Nicotine replacement therapies offer up the prospect of the best possible public health outcome: total cessation of all tobacco use. If they worked well, they would certainly be the best alternative. Currently, three categories of over-the-counter drugs—skin patches, lozenges, and tablets—are widely available, while two non-nicotine drugs (one of which is based on the same active ingredient as an existing anti-depressant) are available by prescription.²⁰ Doctors can also write prescriptions for a nasal spray and oral inhaler that contain nicotine.²¹ With one exception (Bupropion, also marketed as the anti-depressant Welbutrin, which aids in smoking cessation by an unknown mechanism), all of these substances either deliver small doses of nicotine or mimic the effects of nicotine on the brain.

In clinical settings, all of them are shown to have some consequences for reducing smoking, although they have very high failure rates. Early, very large meta-analysis of nicotine patch use—the most widely used of the cessation aids—showed that they roughly doubled to tripled the chances of individuals quitting smoking successfully in the short term (although failure rates were quite high).²² Subsequent studies and real world tests, however, paint a different and more discouraging picture. In the aggregate, the failure rate is over 90 percent, even for the best of the available products. Recently, a major study published in the journal *Tobacco Control* concluded that, in the aggregate, nicotine replacement therapies simply do not work. The authors write:

[P]ersons who have quit smoking relapsed at equivalent rates, whether or not they used [Nicotine Replacement Therapy] to help them in their quit attempts. Cessation medication policy should be made in the larger context of public health, and increasing individual treatment coverage should not be at the expense of population evidence-based programmes and policies.²³

15. James Nash. “State smoking ban has cost \$2 million,” in *The Columbus Dispatch*, February 22, 2010.

16. Thomas A. Lambert. “The Case Against Smoking Bans,” in *Regulation*, Winter 2006-2007, <http://www.cato.org/pubs/regulation/regv29n4/v29n4-4.pdf>.

17. Michael L. Marlowe. “The Economic Losers from Smoking Bans,” in *Regulation*, Summer 2010, <http://www.cato.org/pubs/regulation/regv33n2/regv33n2-4.pdf>

18. Americans for Non-Smokers Rights. “The Power of Local Control: Smoking Control Laws, 7/1/2012,” <http://www.no-smoke.org/pdf/USOrdMap.pdf>

19. Food and Drug Administration. “FDA 101: Smoking Cessation Products,” <http://www.fda.gov/forconsumers/consumerupdates/ucm198176.htm>

20. Ibid.

21. Michael C. Fiore et al. “The Effectiveness of the Nicotine Patch for Smoking Cessation,” *Journal of the American Medical Association* 1994, 271(24):1940-1947.

22. Hillel Alpert et al. “A Prospective Cohort Study Challenging the Effectiveness of Population-based Medical Intervention for Smoking Cessation,” *Tobacco Control*, doi:10.1136/tobaccocontrol-2011-050129, online January 9, 2012.

While certain aspects of its methodology could be questioned, the study does appear to be a significant blow to the idea that nicotine replacement therapy is an effective public health intervention.²⁴

Drugs used as smoking cessation aids do seem to have slightly better established efficacy. The one drug approved only as an anti-smoking drug—Varenicline, marketed as Chantix—shows that it has a failure rate of about 85 percent after six months.²⁵

Downsides: In addition to their limited effectiveness, nicotine replacement therapies are expensive. Purchased at retail pharmacies, Chantix lists for between \$2.38–\$4.02 per pill (users take one or two pills per day) although insurance may shield individuals from some out-of-pocket costs, while Zyban/Welbutrin (the anti-depressant) costs about the same.²⁶ Chantix, furthermore, has a number of serious potential side effects, including increased suicide risk. Zyban has fewer serious side effects for most people, although it can exacerbate seizure disorders for those who have them already.

Over-the-counter nicotine replacement therapies, many of which are available in generic forms but only rarely covered by insurance plans, cost between \$2 and \$8 per day. Efforts to heavily subsidize nicotine replacement therapies or distribute them for free do not appear to be cost-effective, given the cost of the therapies and their extremely limited long-term efficacy.²⁷

STRATEGY: PROHIBITIONS ON SALES OF TOBACCO PRODUCTS TO MINORS AND HEALTH EDUCATION

Prohibitions on sales of tobacco products to minors—typically 18—are universal.²⁸ This is typically enhanced with health education to inform minors of the dangers of smoking and insulate them from the supposedly predatory marketing of cigarettes.

Effectiveness: Since cigarette smoking is certainly dangerous, limiting children's ability to smoke is similar in intent

and design to other “adults only” activities like driving, drinking alcohol and possessing professional licenses. For decades, scientists have known people are unlikely to become addicted to nicotine if they have not done so by their late teens or early 20s.²⁹ Thus, prohibiting sales to minors, banning minors' possession of cigarettes, and educating them about the risks of smoking reduces the number of people who become addicted to nicotine and, eventually, the number of adults who die from cigarette-attributable illness.

Downsides: Despite decades of effort and near-universal bans on sales to minors, an estimated 4,000 teens and young adults initiate tobacco/nicotine use every day. For some adolescents and young adults, it is often a ritual to signify “coming of age.” For others, it has to do with peer pressure and the psychological attractions of cigarette advertising. (Although significant restrictions on the latter—now banned or voluntarily limited on television, radio, the Internet, billboards, and most magazines—mean that it's not as likely to be a factor today as it was in the past.) Thus, while limiting sales to minors is effective, there are substantial gaps that enable teens to easily obtain cigarettes. More stringent rules banning cigarette possession by teens and young adults remain relatively uncommon, and could be one area for further policymaking and research.

STRATEGY: TAXATION

Tax increases are efforts to make smoking more costly for smokers in order to reduce smoking, while also raising revenue for other purposes.

Effectiveness: Raising the price of almost anything will result in less consumption, and cigarettes are no different. As such, price increases on cigarettes have positive public health effects by reducing cigarette consumption. Furthermore, there is a clear and well-documented relationship between cost and teen or young adult consumption. One of the nation's leading tobacco-control organizations, the Campaign for Tobacco Free Kids, paints them as a “win-win solution” that works to improve public health and increase revenues.³⁰ Other evidence shows increases in taxes do reduce smoking: one city-wide study found a significant reduction in smoking as a result of large tax increases.³¹

Downsides: Cigarette taxes have limits as an effective strategy. The optimal level of tobacco taxation appears to be one

23. For a variety of questions raised concerning the study see: “Responses to this Article,” <http://tobaccocontrol.bmj.com/content/early/2012/01/10/tobaccocontrol-2011-050129.abstract>

24. John R. Hughes et al. “Efficacy of Varenicline to Prompt Quit Attempts in Smokers Not Currently Trying to Quit: A Randomized Placebo-Controlled Trial,” *Nicotine and Tobacco Research*, April 21, 2011.

25. Authors' research using cvs.com, walgreens.com, and walmart.com.

26. K. Michael Cummings et al. “Costs of giving out free nicotine patches through a telephone quit line,” *Journal of Public Health Management Practice*, 2011 May-Jun;17(3):E16-23.

27. Four states, Utah, Alabama, New Jersey and Utah have a smoking age of 19.

28. National Institutes of Health. “Drugfacts: Cigarettes and Other Tobacco Products,” August, 2010, <http://www.drugabuse.gov/publications/drugfacts/cigarettes-other-tobacco-products>

29. Campaign for Tobacco Free Kids. “State Tobacco Taxes: A Win-Win Solution,” http://www.tobaccofreekids.org/what_we_do/state_local/taxes/

30. McMillen et al. *supra*.

that equals the social costs that smokers impose on society. This will assure that smoking, at minimum, does no additional harm beyond that which smokers impose on themselves. The most comprehensive estimate available for these costs comes out to slightly less than \$3 per pack of cigarettes consumed.³² It's plausible to suggest that public health policy might best be advanced by, at the very least, making smokers pay the full costs of their decision to smoke. After this point, any other taxes on cigarettes are essentially an extra tax on the right to smoke and a way to punish smokers. At some point, taxes would be a *de facto* ban on cigarettes: a \$100 tax per pack might well reduce smoking but, for all intents and purposes, would be the same as a ban.

Cigarette taxes are highly regressive. Cigarette taxes are most costly to the people who can least afford to pay them. In fact, people earning less than \$10,000 a year pay more in cigarette taxes than those who earn incomes around the national average.³³ A major poll from the Gallup organization likewise found that more than 60 percent of smokers have incomes below \$36,000, while only 15 percent earned more than \$90,000.³⁴ Based on Census Bureau data, this means that smokers are roughly twice as likely to be low-income than the population as a whole. In this context, raising taxes—whatever its public health benefits—ought to be looked on with some skepticism.

Black and “gray” markets also can emerge as cigarette taxes rise. The Bureau of Alcohol, Tobacco, Firearms and Explosives puts it simply: “There is no doubt that there’s a direct relationship between the increase in a state’s tax and an increase in illegal trafficking.”³⁵

And this can drive a significant amount of crime.³⁶ Even when outright criminal enterprises do not run cigarette

sales, run-of-the-mill gray market tax avoidance—buying cigarettes across state lines or, until recently, on Indian reservations—will almost certainly increase.³⁷

In some cases, in some places, raising cigarette taxes may be a good, worthwhile public health measure. But above a certain level, which many states have already surpassed, they may not be the most effective public health measure.

STRATEGY: WARNINGS ON TOBACCO PRODUCTS

Warnings on tobacco products—universally required in the United States and all other developed countries—are textual and/or visual reminders about the dangers of tobacco use. They range from simple statements that the government has found that smoking is hazardous to health (required in the United States since the 1960s) to large-scale graphic warnings.

Effectiveness: Some limited indirect evidence—such as increases in calls to so-called smokers’ “quit lines”—indicates that warning labels may increase quit attempts.³⁸ There’s no direct evidence as to whether or not warning labels *per se* lead anybody to quit smoking. Because labels are often rolled out all at once, it’s difficult to find a “control group” for testing various labels. Since warnings are ubiquitous around the world and people still smoke, it’s self-evident that warnings alone are not sufficient to cause people to quit. Nobody who advocates warnings, however, has argued that they are sufficient by themselves.

Downsides: Current warning label laws in the United States and most other developed countries are essentially accurate about the risks associated with cigarettes but often misleading (at best) about the harms associated with other tobacco products. While no tobacco product is safe, some are much safer to use than others. Warning labels on smoke-free products and other products often warn of addiction (which is a real risk) and cancer, tooth, and gum disease (which are not conclusively linked to the smoke-free products currently available on the American market). This leads more than 80 percent of smokers to believe that there is little or no health benefit in switching when, as this paper discusses below, the health benefits can be enormous.³⁹

31. Rajeev Cherukupalli, “A Behavioral Economics Perspective on Tobacco Taxation,” *American Journal of Public Health*, April 2010, Vol. 100, No. 4. Cherukupalli’s calculations are based largely on sums as of 2000, and his paper actually concludes the cost is \$2.20 in 2000 dollars. According to the Bureau of Labor Statistics’ Inflation Calculator, this is equivalent to \$2.93 in 2012 (see http://www.bls.gov/data/inflation_calculator.htm). Because different components of the calculation have changed at different rates—life insurance has generally become less expensive when adjusted for inflation while medical care has generally become more expensive—an inflation adjustment is necessarily an approximation.

32. Kip Viscusi. *Smoke Filled Rooms*, University of Chicago Press, 2002, 68.

33. Gallup Organization, “Cigarette Tax Will Affect Low-Income Americans Most,” Gallup Health and Well-Being Index, <http://www.gallup.com/poll/117214/cigarette-tax-affect-low-income-americans.aspx>34.

34. Government Accountability Office, “Cigarette Smuggling: Federal Law Enforcement Efforts and Seizures Increasing,” 2004, <http://www.gao.gov/new.items/d04641.pdf>.

35. For a comprehensive report on how cigarette smuggling drives crime, see Patrick Fleener, “Cigarette Taxes, Black Markets, and Crime Lessons from New York’s 50-Year Losing Battle,” Policy Analysis, Cato Institute, February 6, 2003, <http://www.cato.org/pubs/pas/pa468.pdf>.

36. Mark Stehr. “Cigarette tax avoidance and evasion.” *Journal of Health Economics*, Mar;24(2):277-97, 2005.

37. Li, J & Grigg M, “New Zealand: new graphic warnings encourage registrations with the quitline,” *Tobacco Control* 18(1):72, February 2009 And Wilson, N, et al., “Long-term benefit of increasing the prominence of a quitline number on cigarette packaging: 3 years of Quitline call data,” *N Z Med J* 123(1321), August 27, 2010 as cited in Meg Riordan. “Tobacco Warning Labels: Evidence of Effectiveness,” Campaign for Tobacco Free Kids, 2009, <http://www.tobaccofreekids.org/research/factsheets/pdf/0325.pdf>

38. Brad Rodu and Carl Phillips. “Switching to smokeless tobacco as a smoking cessation method: evidence from the 2000 National Health Interview Survey.” *Harm Reduction Journal*, May 23; 5:18, 2008.

OTHER STRATEGIES

The discussion shifts now to strategies that currently are not widely used or used at all. In the next few pages, we outline each strategy, describe why it has not gotten wider use, and then discuss its likely effectiveness as well as its downsides.

STRATEGY: HARM REDUCTION

Tobacco harm reduction, for purposes of this paper, is defined as advising current smokers who are unable or unwilling to quit of the differences in risk posed by different tobacco products, thus enabling and encouraging them to switch to a lower-risk product. Although harm reduction strategies typically emphasize that no form of tobacco is altogether safe, unlike nicotine replacement therapies, they do not typically insist upon total abstinence from nicotine. A harm reduction public health strategy would involve advertising and education efforts to promote harm reduction. It would best be done on a collaborative basis with coordination of communications from manufacturers, vendors and public health authorities.

Why it hasn't been tried: While all of the strategies noted above have been in place throughout the nation for decades, tobacco harm reduction has never been formally implemented as a matter of public health policy, for at least two major reasons. First, many public health experts have a legitimate and plausible – although difficult to substantiate – fear that such communications might encourage more teens and young adults to initiate tobacco/nicotine use. The other reason is that the inherent risk of any tobacco/nicotine product is greater than total abstention. The best current estimates are that smoke-free tobacco/nicotine options pose a risk of potentially fatal tobacco-attributable illness of less than 2 percent the risk posed by cigarettes.

Some other less important factors that may impact the reluctance to try harm reduction are that some forms of smokeless tobacco (mostly used outside of the United States) are conclusively linked with a very significant risk of mouth cancer. Finally, such a strategy, implemented widely, would also necessarily result in modification of certain warnings now found in smokeless tobacco products. It would also serve to increase sales of tobacco companies (most of which market some smokeless products) while likely decreasing those of companies involved with the sales of nicotine replacement therapies.

Effectiveness: All tobacco products cause harm and total smoking cessation is certainly the safest and best way to promote public health. That said, harm reduction strategies that encourage smokers to switch to smoke-free products appear to have practical merit. One large meta-analysis of smokers found that switching from smoked to smokeless tobacco was

the most effective, widely available way to quit. Not only did most people stop using cigarettes, but many stopped using tobacco altogether.⁴⁰ Evidence exists that using smokeless products are a moderately effective aid overall (more so than any given nicotine replacement therapy) for people seeking to quit.⁴¹ Finally, since they still get their nicotine fixes, people who switch to smokeless tobacco products are much less likely to relapse into smoking.⁴²

In addition, evidence from Sweden—where one form of smokeless tobacco, *snus*, which is held under the lip rather than being chewed, has become the leading form of tobacco—indicates that, on a population-wide level, widespread use of smokeless tobacco can have positive overall health consequences by reducing cancer mortality rates.⁴³ These health outcomes are possible because many smoke-free products are *much* safer than cigarettes: while smoking typically costs about eight years of life, using smokeless products costs about two weeks of life.⁴⁴ In all, smokeless products are at least 98 percent safer than smoked ones.⁴⁵

Harm reduction strategies are also relatively inexpensive. They don't require significant public resources, although some communities have given them official attention. In most cases, smoke-free tobacco products cost less than nicotine replacement products and, in many cases, less expensive than cigarettes.

Downsides: Harm reduction is a “half step” with a number of downsides. Most prominently, it does not *eliminate* the risks that come from using tobacco; it simply involves switching individuals from one type of harmful behavior to another less harmful one. The safest method—and the only entirely safe method of tobacco control—is to encourage individuals to abstain from use of all tobacco products. All forms of tobacco present at least a theoretical increase in risk of disease and death.⁴⁶ Many, although not all, formulations of smokeless tobacco also contain a *higher* concentration of nicotine than cigarettes. Whether or not this makes some of them more addictive than cigarettes is open to question. This difference

39. Ibid.

40. Brad Rodu and Philip Cole. “Evidence against a gateway from smokeless tobacco use to smoking.” in *Nicotine & Tobacco Research*, 530-534, 2010.

41. Ken Tilashalski et al. “Seven Year Follow-up of Smoking Cessation with Smokeless Tobacco.” *Journal of Psychoactive Drugs*, 37, 105-108, 2005.

42. Brad Rodu and Carl Phillips. “Lung cancer mortality: comparing Sweden with other countries in the European Union.” *Scandinavian Journal of Public Health* 37, 481-486, 2009

43. Brad Rodu and Philip Cole. “Counterpoint: Would a Switch from Cigarettes to Smokeless Tobacco Benefit Public Health? Yes.” *American Council on Science and Health*, 1995. http://www.acsh.org/healthissues/newsID.744/healthissue_detail.asp

44. Ibid.

45. Mayo Clinic. “Chewing Tobacco: Not a Safe Alternative to Cigarettes,” <http://www.mayoclinic.com/health/chewing-tobacco/CA00019>

in concentration, however, does mean that they likely deliver nicotine with less exposure to other toxic chemicals. The available Swedish data are based on snus. The data available from the United States is based on the pooled experience with all available smoke-free products on the American market. Both sets of data support the impression that these smokeless products present a risk of tobacco-attributable illness and death less than 2 percent the risk posed by cigarettes. Based on their chemical composition, the Food and Drug Administration's Tobacco Products Scientific Advisory Committee passed a reasonably positive initial verdict on the relative safety of dissolvable tobacco products that have been on the market for only about five years. There's obviously no data of the health consequences of their long-term use.⁴⁷ Although one experiment is underway, no community-wide harm reduction effort has ever been attempted in the United States and thus, the results are not yet available.⁴⁸ Since there is a delay of 15 to 30 years between the initiation of cigarette use and development of potentially fatal tobacco-attributable illness, controlled field trials to determine the precise relative safety of alternative tobacco/nicotine products remain essentially impossible.

As noted above, a possibility exists that promoting "safer" alternatives to smoking cigarettes could result in higher overall levels of nicotine addiction and more children using nicotine products. As such, while there is enormous promise in harm reduction, further research is needed to validate its worth as a public health strategy. With these caveats in mind, harm reduction seems like a viable, pragmatic approach to reduce smoking.

STRATEGY: PROMOTION OF SUPPORTED "ABRUPT CESSATION"

Promotion involves efforts to encourage individuals to cease using all nicotine products altogether using self-help materials or health education approaches. These approaches may include web-based educational materials or 1-6 hours of pre-cessation education or counseling. Such approaches promote a nicotine-free lifestyle by means other than trying to scare the smoker with tales of impending death if they fail to quit.

Why it hasn't been tried: While nearly all public health efforts do pay some lip-service to abrupt cessation, they generally do so with a "quit or die" approach that has proven to be remarkably ineffective. Education and counseling has usually been limited to a few minutes at a time or calls to

quit-lines when the smoker feels the urge to smoke. Such approaches rarely show long-term benefit. Most smokers who successfully quit do so "cold turkey" without the use of pharmaceutical products. While difficult for most smokers, the withdrawal period is, in fact, manageable for many, if they are given accurate information as to what to expect and how best to address the discomfort. Unfortunately, promotion of pharmaceutical aids may have the adverse impact of convincing smokers that abrupt cessation is much more difficult than it is. Almost by definition, there is no opportunity for anybody in particular to profit from people who quit abruptly, since doing it involves ceasing a consumer behavior and replacing it with no consumption.

Effectiveness: Pharmaceutical aids, on a short-term basis, can double to triple quit rates, compared to unassisted or minimally assisted abrupt cessation. The problem is relapse in the months following the quit attempt, which results in six to twelve months in a failure rate in the range of 85 percent to about 93 percent.⁴⁹ Research suggests abrupt cessation assisted with a structured health education program, positive in tone, and with self-help materials left in the hands of the participants, results in a one-to-three year success rate of about 40 percent.⁵⁰ One longitudinal three-year study of 515 employees of a steel plant who participated in a single six-hour session of intensive group counseling found that 51.4% of responding persons showed continuing abstinence, with self-reported results confirmed by testing cotinine concentrations in urine of 61 randomly selected respondents.⁵¹

It seems reasonable to conclude that such an approach on a large scale basis is likely to be as successful, if not more successful as most nicotine replacement therapies. Some studies, surprisingly, show that *unaided* quit attempts that involve no nicotine replacement or even professional counseling, succeed more often than quit attempts that involve professional help of various kinds.⁵¹ One leading public health advocate, indeed, has argued that large-scale public efforts could "motivate cessation in far more smokers than the best evidence shows are interested in attending clinics, let alone benefiting from them."⁵² People who quit on their own may be more motivated and perhaps less addicted than those who seek professional help. Nonetheless, promoting aided abrupt cessation deserves broader use.

cessation methods: results from a population survey of recent quitters," *BMC Public Health* 2011, <http://www.biomedcentral.com/1471-2458/11/592>

49. Ibid.

50. Su-Hong Zhu et al. "Smoking cessation with and without assistance: A population-based analysis." *American Journal of Preventative Medicine*, 2000, 18(4):305-311.

51. H. Moshammer, M. Neuberger "Long term success of short smoking cessation seminars supported by occupational health care." *Addictive Behaviors* 2007 32(7) 1486-93.

52. Simon Chapman. "The Inverse Impact Law of Smoking Cessation," in *The Lancet*, Volume 373, Issue 9665, 701 – 70

46. Food and Drug Administration. "Summary: TPSAC Report on Dissolvable Tobacco Products," 2012, <http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/TobaccoProductsScientificAdvisoryCommittee/UCM295842.pdf>

47. The effort is Switch and Quit Owensboro conducted in Owensboro, Kentucky. See e.g. "Switch and Quit Owensboro," <http://switchandquitowensboro.org/about-the-campaign/>

48. See e.g. Wei T Hung et al. "Use and perceived helpfulness of smoking

Downsides: The only likely downside to enhanced promotion of abrupt cessation is loss of sales and profits for the pharmaceutical firms making and selling smoking cessation products.

STRATEGY: ENHANCED CONTROL OF CONTRABAND CIGARETTES AND OTHER TOBACCO/NICOTINE PRODUCTS

All states and the federal government place taxes on cigarettes. Both state and federal law prohibit the sale of cigarettes to those under 18 and make it illegal to sell cigarettes without collecting the taxes due. In more than a few cases, criminal gangs and “gray” market operators (Indian tribes, Internet retailers, and importers) acting within the letter of the law have managed to evade taxes and other government mandates. Ending these violations and evasions of the law could potentially bring in more revenue and assure that fewer children smoke or begin smoking. Control of such contraband would also better assure the quality of the tobacco products under FDA oversight.

Why it hasn’t been tried: All states and the federal government *do* of course make some effort to interdict contraband cigarettes, but not as effectively as they might. Several states have only loose and poorly enforced bans on use, purchase and possession of tobacco by minors, a step that potentially leads to greater distribution of contraband cigarettes.⁵³ Efforts to assure that proper taxes are collected on cigarettes, also, are not consistent throughout the nation.⁵⁴

Effectiveness: People in their late teens who might otherwise begin smoking legally can often be deterred by high prices. Black and gray markets, by evading both taxes and restrictions on sales, make it easier for them to secure cigarettes.⁵⁵ Cracking down on tax evasion through use of better-designed tax stamps can also increase cigarette tax revenue by limiting the number of contraband cigarettes in circulation.

Downsides: It’s impossible to end all distribution of contraband cigarettes. Some laws relating to contraband cigarettes—for example, those that forbid individuals from buying cigarettes in one state and consuming them in another—are nearly impossible to enforce in practice. Even if they were practical to enforce, it’s doubtful that the resources needed to enforce them would be well spent. Raising taxes

and taking other steps that increase the price of cigarettes will also, necessarily, raise the economic incentives that invite evasion of those same taxes.

CONCLUSIONS

This paper has reviewed the research on policy options for dealing with tobacco-related addiction, illness and death. Based on this research, it is possible to make the following fundamental policy recommendations.

First, many currently ongoing policies should be maintained and, if feasible, expanded. In particular, smoking bans work well and have only small costs. Where they do not exist—and the overwhelming majority of indoor public places have them—the cause of public health is well served by implementing them. Although they do raise significant questions about individual autonomy and private property, it is plausible to argue that their public health benefits outweigh their downsides. Likewise, prohibition of tobacco/nicotine product sales to minors is clearly an effective strategy that deserves additional expansion, which should include enhanced efforts to interdict the sale of banned cigarettes.

Some other current policies, however, ought to be questioned. While taxing cigarettes does, indeed, reduce smoking, it may not always and everywhere be the most effective way to discourage or decrease smoking. High taxes on cigarettes are unfair to the poor and result in the growth of black and gray markets. Although nicotine replacement therapy may work well for some individuals in some cases, these strategies fail at an extremely high rate. While they deserve the opportunity to prove their potential and be included in the mix of possible public policy responses, pharmaceutical nicotine replacement therapies are neither effective nor cost-efficient on a population-wide basis.

A few current policies need serious revision. While it is accurate to say that no form of tobacco is *safe*, the current warning label regime—which treats cigarettes (which causes death in a very large portion of its users) almost exactly the same as smokeless tobacco (which is far less harmful)—needs serious revision. Inaccurate and misleading warning labels need to change. For example, the smokeless tobacco products that have been on the American market since the 1980s do not increase the risk of mouth cancer. Smoking and “tobacco use” are not synonymous. Smoking kills 30 to 50 percent of consistent long-term smokers. While efforts to prevent children from beginning use of smokeless tobacco deserve continuation and even enhancement as smokeless tobacco use continues to rise, anti-smokeless tobacco programing directed at current adult smokers should be discontinued.

Enhanced abrupt cessation has little direct cost and does not require use of expensive pharmaceutical products.

53. Melanie Wakefield and Gary Giovino. “Teen penalties for tobacco possession, use, and purchase: evidence and issues.” in *Tobacco Control* 12 i6-i13, 2003. http://tobaccocontrol.bmj.com/content/12/suppl_1/i6.full

54. Campaign for Tobacco Free Kids. “The Case for High-Tech Cigarette Tax Stamps,” <http://www.tobaccofreekids.org/research/factsheets/pdf/0310.pdf>

55. U.S. Centers for Disease Control and Prevention (CDC). “Responses to Cigarette Prices by Race/Ethnicity, Income, and Age Groups—United States 1976-1993.” *Morbidity and Mortality Weekly Report* 47(29), <http://www.cdc.gov/mmwr/preview/mmwrhtml/00054047.htm>

Likewise, tobacco harm reduction to inform smokers of the risk differential between cigarettes and smokeless tobacco/nicotine products deserves serious consideration. Although they are *never* preferable to smoking cessation altogether, low-risk tobacco/nicotine products may well save lives at a cost far lower than ineffective nicotine replacement and counseling strategies.

The Food and Drug Administration, which has recently secured new authority to regulate the manufacture and marketing of tobacco products, has a major role to play. It should first carefully review research already completed as it relates to required warnings on smokeless tobacco products; how youth initiate tobacco use; and the conditions under which low-risk tobacco/nicotine products could be promoted to current smokers without increasing youth initiation of tobacco/nicotine use. Additional research by the FDA, CDC and others is also needed to monitor tobacco use and tobacco-related health outcomes as new marketing and manufacturing requirements are put into place.

In other words, public health policy, at both the federal and state levels, should actively consider whether new approaches might substantially reduce tobacco-related illness and death among current smokers while reducing the numbers of future smokers.

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In 2007, while serving as co-chair of the Tobacco Control Task Force of the American Association of Public Health Physicians, Joel played a lead role in exploring policy options for reducing tobacco-attributable illness, death and property damage in the United States. It was this effort that focused his attention on tobacco harm reduction as a potential life-saving measure and on other problematic aspects of current American tobacco control policy. Over the next four years, Joel worked with and through the AAPHP, at his own expense, to advocate for consideration of THR within the public health community and to secure positive action on what he perceived to be related problematic issues. Finding these efforts to be extremely frustrating, Joel subsequently partnered with R Street as organizations independent of government, major pharmaceutical firms and the tobacco industry, yet interested in THR as a scientifically sound and market-oriented alternative to selected aspects of current American tobacco control policy.

In 2012, serving as a volunteer with a modicum of support to offset travel and other costs, Joel has made presentations on THR and related issues to a variety of tobacco industry, medical, public health and state legislative audiences. He has also taken action to place THR on the agenda of the House of Delegates of the American Medical Association.