E-Cigarettes and Public Health: Policy Options for Washington State

Abstract

E-cigarette use has increased dramatically over the past several years. Often marketed as healthy alternatives to combustible cigarettes—even as smoking cessation devices—the brief existence of these products precludes the possibility of obtaining evidence of possible long-term health benefits. While some studies have shown promise for these products as tobacco cessation devices, there are still many questions around e-cigarettes. Given the known effects of nicotine addiction and the rising popularity of the products among youth, adherence to the public health precautionary principle is advised. Since e-cigarettes and other electronic nicotine delivery/vaping devices are not yet regulated at the federal level, states and other jurisdictions are scrambling to assemble appropriate public policy for e-cigarettes. Washington State legislators can leverage regulatory tools proven to work for conventional tobacco products for e-cigarette policymaking, including retailer licensure, excise taxes, product labeling and disclosure requirements, product flavoring restrictions, marketing and age of purchase restrictions, and restrictions on use in public places.

Background

Electronic cigarettes (e-cigarettes) are nicotine delivery devices that aerosolize nicotine and other chemicals to simulate the sensation of smoking a combustible cigarette (Kuschner, Reddy, Mehrotra, & Paintal, 2011). E-cigarettes were developed with the goal of mimicking the efficient nicotine delivery system of a conventional cigarette without the significant and harmful effects of tobacco smoke (Kuschner et al., 2011). The chemical composition of e-cigarettes can include metals, tobacco byproducts, volatile organic compounds, flavor agents and nicotine (Grana, Benowitz, & Glantz 2013). Some of the contents and inhaled byproducts of e-cigarettes and vaping product liquids are carcinogenic or contain other toxic substances (Callahan-Lyon, 2014). Nicotine is a highly addictive substance to which children, adolescents, and young adults are particularly vulnerable. Unlike combustible and smoke-
less tobacco products, the federal government does not currently regulate e-cigarettes (U.S. Department of Health & Human Services [U.S. HHS], 2012).

E-cigarette prices are low; the average daily e-cigarette user spends about $33 per month compared to $150-200 spent by a pack-a-day conventional cigarette smoker (Etter & Bullen, 2011). One recent study found that increasing e-cigarette prices would reduce consumption by youth and adults (Huang, Tauras, & Chaloupka, 2014). This mirrors findings of numerous economic studies published in peer-reviewed journals that demonstrate price increases, usually from taxes, reduce both adult and underage cigarette smoking. Results from these price elasticity studies show that every ten percent increase in the price of cigarettes reduces cigarette consumption overall by three to five percent (Frieden & Bloomberg, 2007).

A significant increase in e-cigarette use in the US has been spurred by marketing that promises a “safe” product, especially compared with other tobacco products (Grana & Ling, 2014). Perhaps as a result of this marketing, which includes product designs like candy flavored e-cigarettes that appeal to youth, e-cigarette use tripled among high school students between 2011 and 2013, and there is now evidence that e-cigarettes surpass conventional tobacco products in popularity among youth (Arrazola, Neff, Kennedy, Holder-Hayes, & Jones, 2013). Relative to combustible products, e-cigarettes are probably less dangerous, but there is little evidence to support the claim that there is no risk of harm (Grana et al., 2013).

Harm reduction in public health consists of a set of strategies to minimize the risk associated with certain behaviors or use of drugs. As a harm reduction tactic, e-cigarettes hold promise. However, while the inhaled compounds associated with e-cigarettes may be fewer and less toxic than conventional cigarettes, public health officials still advise caution. There is no evidence that e-cigarettes are a more effective cessation aid than the nicotine patch (McRobbie, Bullen, Hartmann-Boyce, & Hajek, 2014). Other research points to a potential role of e-cigarettes as an introduction to other, more harmful tobacco products, particularly when used by children, adolescents, and young adults. For example, in 2014, the Centers for Disease Control and Prevention (CDC) released a study that documented the surge in e-cigarette use among school-aged youth and highlighted the possibility that use of these products could serve as a “gateway” to combustible products (Bunnell, Agaku, Arrazola et al., 2014).

The precautionary principle suggests that, in the absence of evidence assuring the safety of a product, policymakers should act conservatively in protecting consum-
ers. Fortunately, numerous tobacco control policies have already been tested on the national, state and local levels – resulting in an estimated 8 million lives saved (Public Health Service [PHS], 2014).

**Regulation and policy tools**

Since the first Surgeon General’s report in 1964, advocates and lawmakers have worked to formulate robust public policy in the U.S. to reduce the harms associated with combustible cigarettes, including passing smoke-free laws, levying taxes, and enacting restrictions on age of purchase and advertising. These measures are widely credited for the dramatic decline in tobacco use and related disease, disability and death (Frieden & Bloomberg, 2007). While many of the health risks associated with e-cigarettes are still being studied, a variety of jurisdictions are adopting proactive policies based on the precautionary principle (Saitta, Ferro, & Polosa, 2014).

The Family Smoking Prevention and Tobacco Control Act (FSPTCA), signed into law in 2009, grants the United States Food and Drug Administration (FDA) regulatory authority over the manufacture, distribution, and marketing of tobacco products (United States Food & Drug Administration [U.S. FDA]). The exact definition of “tobacco product” reads,

“…Any product made or derived from tobacco that is intended for human consumption, including any component, part, or accessory of a tobacco product (except for raw materials other than tobacco used in manufacturing a component, part or accessory of a tobacco product)” (United States Government Printing Office [U.S. GPO]).

The FDA thus governs both the manufacturing and marketing of tobacco. While nicotine occurs naturally in tobacco and the law recognizes nicotine as an addictive drug, the FSPTCA law only specifies cigarettes, cigarette tobacco, roll-your-own tobacco and smokeless tobacco (limited to “tobacco intended to be placed in the oral or nasal cavity”) as subject to regulation (U.S. FDA). Since e-cigarettes entered the market two years before the FSPTCA law was enacted, public awareness of the new product was low (Regan, Promoff, & Dube, 2013), and policymakers likely didn’t anticipate the need for regulation (King, Patel, Nguyen et al., 2014).

Amid increasing e-cigarette use, awareness, and pressure from the public health community, on April 24, 2014, the FDA issued a proposed rule deeming e-cigarettes (as well as dissolvable tobacco, tobacco gels, hookah tobacco, cigars, and...
pipe tobacco) and future nicotine products as tobacco products (U.S. GPO). Public comment on the proposed rule closed on August 8, 2014 with nearly 82,000 individual comments received, and the rule is not expected to be finalized until late 2015 or 2016 (Briant, 2014). If finalized, the proposed rule states that e-cigarette manufacturers would be required to:

- Register with the FDA
- Report product ingredient listings
- Delay marketing of new products and risk claims until FDA has reviewed them
- Stop distributing free samples (U.S. FDA)

Additionally, e-cigarettes and other deemed tobacco products would be subject to minimum age and identification restrictions, health warning requirements, and vending machine sales prohibition (U.S. FDA).

In the meantime, states and localities have unfettered ability to enact legislation related to e-cigarettes, and have scrambled to catch up. The proposed FDA “deeming rule” does not preempt most lower jurisdictions’ regulations that are already in place or those being considered for future adoption. However, in the case of combustible and smokeless tobacco products, many localities across the US are preempted from enacting legislation stricter than equivalent state legislation. Washington State law prevents local jurisdictions from enacting policies that restrict combustible tobacco marketing, smoke-free indoor air and youth access beyond state law (Washington State Department of Health [WA DOH], 2010).

Fortunately, numerous policy options in the conventional tobacco control realm have already been tested on the state and local levels, and evaluations of their efficacy can serve as a guide to regulating e-cigarettes.

**Retailer licensing**

Tobacco retailer licensing laws require businesses that sell tobacco products to buy a license from the government. These licenses provide a way for jurisdictions to identify purveyors of tobacco, and to implement and ensure compliance with state tobacco control program regulations (Jason, Berk, Schnopp-Wyatt, & Talbot, 1999). Perhaps most importantly, local jurisdictions can use licensure laws to restrict the density and location of retail outlets in any given area. Easy access to tobacco retailers is associated with higher rates of teen smoking (McCarthy et al., 2009; Novak, Reardon, Raudenbush, & Buka, 2006). Living in close proximity to tobacco retail outlets also has a negative effect on cessation (Reitzel, Cromley, Li
et al., 2011). Because tobacco retailers are clustered in low-income neighborhoods inhabited disproportionately by people of color, licensure laws provide an opportunity for local governments to redress disparities in tobacco use and related health outcomes. Licensing requirements can be enacted by state governments (as they are in California) or cities (such as New York City), and 36 states had licensure laws on the books as of 2014 (McLaughlin, 2010; CDC, 2014). Some municipalities now require e-cigarette sellers to apply for restricted use permits, such as Buffalo, NY (Dudzik, 2014).

The Center for Tobacco Policy & Organizing at the American Lung Association of California defines a strong licensing law as one that (2009):

- Requires annual renewal of licensure
- Adequately funds, through fees, enforcement and administration of the licensing program (and perhaps other tobacco control endeavors)
- Recognizes the full landscape of relevant laws by making a violation of any regulation (federal, state or local) subject to penalty or revocation
- Sets fines for violations high enough to act as a deterrent

**Taxation**

Of all tools available to policymakers for curbing tobacco use, price increases are demonstrably the most effective (Frieden & Bloomberg, 2007). Although cigarette addiction might theoretically lead to price inelasticity, cigarette taxation has proven to be the most effective means for reducing cigarette consumption. Studies have demonstrated an inverse relationship between taxation and tobacco use (see Figure 1). As the price of tobacco increases, fewer people smoke (some quit, and some never initiate). This is true across the U.S. population as well as within subpopulations (i.e., youth, people of color and low-income smokers) (Campaign for Tobacco-free Kids, 2012). Results from price elasticity studies show that every ten percent increase in the real price of cigarettes reduces overall cigarette consumption by approximately three to five percent, the number of young adult smokers falls by 3.5 percent, and the number of children (under 18 years old) who smoke declines by six or seven percent (Boonn, 2012).

Tobacco excise taxes are traditionally considered regressive in that low-income tobacco users pay a larger share of their income in taxes than higher-income individuals, who are also less likely to smoke (Remler, 2004). However, the ultimate effect of tobacco taxation is progressive; because low-income users consume disproportionately more tobacco than wealthier populations and because consumption
declines with price increases, low-income users experience proportionately greater health benefits than their wealthier counterparts (Chaloupka, Yurekli, & Fong, 2012; Warner, 2000). Between 1990 and 2009, federal tobacco taxes rose from 16 cents to $1 per pack, while states increased their own taxes on cigarettes by a factor of four. These tax increases significantly contributed to the 125 percent average cigarette price increase in the U.S. between 1990 and 2009 (see Figure 1).

In drafting a new tobacco tax inclusive of e-cigarettes, policymakers will need to consider the following questions (ChangeLab Solutions, 2014; Warner & Pollack, 2014):

- Given the many component parts of e-cigarettes, what should be taxed (e.g., devices, e-liquids)?
- Should the tax be higher, lower or the same as other tobacco products? What are the considerations in light of current evidence regarding e-cigarettes’ usefulness as a smoking cessation aid? (Some have argued for a significant cost differential, with conventional tobacco products taxed more heavily, to encourage the purchase of e-cigarettes.)
- Should tax revenue be earmarked for tobacco control, prevention and/or cessation? If so, how can revenue be safeguarded for these purposes?

Two states, Minnesota and North Carolina, have adopted a tax on e-cigarette products. In May 2014, North Carolina adopted an excise tax equal to five cents per milliliter of nicotine liquid (about the same amount of nicotine as in a pack of cigarettes) (Maguire, 2014). In Minnesota, a tax equal to 95 percent of the wholesale cost (the same tax as for regular cigarettes) went into effect on July 1, 2014 (Minnesota Department of Revenue).
Age of purchase restrictions

Children and young adults under the age of 26 are most vulnerable to tobacco addiction. In fact, 99 percent of adults who smoke started before 26 years of age; brain development largely prevents adults who initiate use past this age from becoming addicted (DiFranza, 2008). For this reason, policies that increase the legal age of purchase of tobacco products to 21 have gained support from prevention advocates. In 1984, Congress raised the age of alcohol purchase to 21, resulting in a sharp decline in drunk driving, alcohol consumption and motor vehicle accidents and fatalities among young adults (Winickoff, Gottlieb, & Mello, 2014). Youth smoking decreased by half in the first locality (Needham, MA) to enact “Tobacco 21” within five years of its implementation, a significantly greater decrease than in surrounding communities (Winickoff et al., 2014).

As of September 2014, at least 40 states have prohibited e-cigarette sales to minors (National Conference of State Legislatures [NCSL]). Washington State joined this group in 2013, specifically using the term “vapor product” to describe e-cigarettes (Washington State Legislature). At least five states—Colorado, Rhode Island, South Dakota, Tennessee, and Wyoming—added e-cigarettes to their definition of tobacco products (NCSL). Idaho is also in this majority, further restricting electronic cigarette sales through vending machines accessible to minors (State of Idaho Legislature), as have several other states. These policies are possible because the federal government has not passed a law pre-empting the ability of states and localities to enact stricter legislation.

In Washington State, King (King County), Pierce (Tacoma-Pierce County Health Department [TPCHD]), Grant (Izenman, 2014), and Clark (Clark County, Washington) counties ban the sale of e-cigarettes to minors under age 18. Similarly, in May 2014, the City of Pasco revised its municipal code to include e-cigarettes in its citywide smoking regulations (Hoops, 2014). These include a ban on sales to minors (including sales through vending machines accessible to minors), penalties for minors who attempt to purchase e-cigarettes, and clear signage about these regulations (City of Pasco). Several cities in Spokane County have also prohibited sales to minors (Municipal Research and Service Center of Washington [MRSCW], 2014).

Labeling and disclosure requirements

The size and nature of tobacco product warning labels is associated with consumer understanding of the risks of use, with more detailed and graphic labels related to
greater knowledge of health harms (Hammond, 2006). Tobacco users are exposed to these messages as many as 7,000 times each year, making labeling an essential tool to promote prevention and cessation (Hammond, 2008). While graphic warning labels are now required in 77 countries/jurisdictions worldwide, the FDA proposed more substantive warning labels in 2012. These were subsequently ruled unconstitutional in federal appellate court on grounds that they violated the First Amendment (Almasy, 2013).

The Oregon Department of Justice (OR DOJ) has settled three lawsuits with an e-cigarette manufacturer and brought suit against another on the grounds that, without scientific evidence, marketing claims made by these companies were misleading and fraudulent. OR DOJ is the only state agency in the United States to pursue such legal action (2009). Meanwhile, several studies have found e-cigarette labeling to be inadequate or inaccurate relative to required labeling for other products (Almasy, 2013).

**Restrictions on product flavorings**

Tobacco industry documents reveal manufacturers have intentionally configured flavors of their products to appeal to young people (Carpenter, Wayne, Pauly, Koh, & Connolly, 2005). Flavored tobacco products are primarily aimed at and used by youth. One study found 20 percent of smokers aged 17 to 19 used flavored tobacco, compared with 6 percent of older adults (Klein et al., 2008). As part of the 2009 FSPTCA law, the FDA banned flavored tobacco products (with the exception of cigars and products with menthol flavoring) and required tobacco companies to discontinue the use of misleading marketing terms like “light” and “low tar” to describe cigarettes (U.S. GPO).

E-cigarettes are available in more than 7,000 flavors, with 250 new flavors coming out each month (Richtel, 2014). While only one municipality in the United States currently regulates flavored e-cigarettes (Chicago), a New York City councilman recently introduced a bill that would restrict the sale of flavored e-cigarettes to tobacco bars (Bonazzo, 2014).

**Requirements for child-resistant packaging**

Packaging of potentially harmful consumer products became subject to government regulation in 1970, when Congress passed the Poison Prevention Packaging Act. Child-safety packaging requirements for oral prescription medications are credited with the prevention of hundreds of child deaths from the mid-seventies onward (Rodgers, 1996).
In an effort to protect people—children in particular—from liquid nicotine, legislators in the U.S. House and Senate introduced a bill in 2014 requiring the Consumer Product Safety Commission to “promulgate a rule to require child safety packaging for liquid nicotine containers…” The bills have since moved out of committee (United States Senate).

So far, three states—Minnesota, New York, and Vermont—have enacted a requirement for e-cigarette-related nicotine liquid containers to be sold in “child-resistant” packaging (Tobacco Control Legal Consortium, 2014).

Limitations on Internet sales

Congress passed the Prevent All Cigarette Trafficking Act (PACT Act) in 2010 to address tax evasion in online cigarette sales and prevent Internet sales to youth. Prior to the PACT Act, an estimated 20 percent of online cigarette sellers did not have any age-related purchase requirements, and among those that did, most allowed age to be self-reported (Ribisil, Kim, & Williams, 2002). Online e-cigarette sales are booming; Google defines “e-cigarettes” as a “breakout search term,” or a phrase that has exploded in use to the magnitude of more than 5000 percent (Yamin, Bitton, & Bates, 2010). As of 2009, Washington State prohibits the sale of many tobacco products online directly to consumers. However, e-cigarettes are not included in the definition of “tobacco product” under this law (Washington State Attorney General, 2008).

The lack of age verification mechanisms used in online purchasing of e-cigarettes and other tobacco products has led some lawmakers to take action. In January 2014, a California lawmaker introduced Assembly Bill 1500 to regulate online sales, but was ultimately unsuccessful (Mason, 2014). On August 8, 2014, attorneys general from 29 states (including Bob Ferguson of Washington) submitted a comment to the FDA in response to the “deeming rule” proposal in an attempt to sway the agency toward prohibiting all “non-face-to-face” tobacco sales—including sale of e-cigarettes. The comment argues that since the PACT Act addresses only non-face-to-face sales of cigarettes and smokeless tobacco, the FDA needs to use its regulatory authority, as outlined in the FSPTCA law, to effectively extend this ban to e-cigarettes and all other “tobacco products” (Esterl, 2014). Although no state or local government has successfully curbed online e-cigarette sales, private online retailers like Amazon.com have instituted policies that prohibit product listings of this sort (Amazon.com, 2014).
**School-based policies and programs**

Middle and high school-based tobacco prevention programs include a range of interventions, but generally focus on imparting skills to resist tobacco use initiation and knowledge of its harms via educational curricula. School districts have been among the first jurisdictions to respond to the advent and popularity of e-cigarettes. As of July 2014, 11 of the 18 King County school districts have enacted e-cigarette bans on their campuses (Public Health Seattle & King County). Evidence is mixed as to whether educational programs are effective in preventing long-term initiation or increasing cessation, and a thorough search was unable to locate a single study of 100 percent smoke- and tobacco-free policies in elementary, middle and high schools (Glantz & Mandel, 2005). At the college and university level, a number of studies have documented the positive effects of smoke-free campus policies on prevalence of tobacco use (Wechsler, Kelley, Seibring, Kuo, & Rigotti, 2001), littering (Lee, Ranney, & Goldstein, 2013), and overall policy compliance (Harris, Stearns, Kovach, & Harrar, 2009).

**Regulation of marketing practices**

With current bans on tobacco advertisements on television and in youth-focused magazines, the tobacco industry has sought new avenues to promote cigarettes and other tobacco products, especially to vulnerable youth. Between 1999 and 2008, tobacco companies spent 92 percent of their marketing dollars in gas stations, corner stores and other small retail venues. Young people frequent convenience stores, and thus have high exposure to this form of tobacco advertising (Riordan, 2012). This type of marketing, known as “point-of-sale” (POS), includes not only the location and type of advertising, but also discounts (e.g., two-for-one coupons) and other incentives. A 2009 review of the evidence found there was sufficient proof that these types of promotions disproportionately influence youth smoking (Paynter & Edwards, 2009). A number of policy options are available to regulate POS marketing tactics:

- Retail licensing
- Restrictions on coupons and discounts
- Health warnings at or near the cash register at retail outlets
- Restricting product placement so that tobacco products are hidden from view

Many of the very same marketing strategies used for conventional tobacco products are now being deployed to promote e-cigarette brands (e.g., http://ecigflashbacks.strikingly.com), an increasing number of which are owned by tobacco companies.
With regard to conventional tobacco, a number of localities have restricted point-of-sale marketing. Providence, Rhode Island, prohibits coupons and other discounts on cigarettes. Three jurisdictions (New York City, Philadelphia and Jefferson County, AL) have passed laws requiring tobacco retailers to post health warnings and/or information on cessation, though these have been subject to tobacco industry lawsuits (American Nonsmokers’ Rights Foundation [ANR], 2014). As of January 15, 2011, King County Board of Health Code 19.12 prohibits sampling, defined as offering of free or nominal cost electronic smoking devices or liquid nicotine.

**Restrictions on use in public and/or indoor places**

As of October 2014, at least 22,527 US municipalities restrict smoking in public and certain private spaces (i.e., restaurants, bars, indoors) (ANR, 2014). A large body of research documents the benefits of such legislation in, among other things, reducing smoking, asthma prevalence, and heart attacks (Dinno & Glantz, 2007; Dove, Dockery, & Connolly, 2011; Hahn, 2010). Jurisdictions may seek to expand smoking prohibitions to e-cigarettes for the following reasons:

- Permitting e-cigarette use may make it more difficult to enforce existing smoke-free rules, as some e-cigarettes look identical to conventional cigarettes
- Allowing use of e-cigarettes could lead smokers of combustibles to use products in areas where smoking is banned
- If e-cigarette use is permitted in public places, people may be involuntarily exposed to possibly harmful second-hand emissions
- Young people, who are particularly susceptible to tobacco industry marketing, may perceive cigarette use as “normal” and less harmful due to the presence of e-cigarettes in their communities (U.S. HHS)

As of October 1, 2014, three states (New Jersey, North Dakota, and Utah) restricted e-cigarette use in all smoke-free venues within their state indoor air laws, and at least 11 other states prohibit use in some smoke-free public venues—often state-owned property, educational facilities and/or correctional facilities. More than 300 counties and cities restrict use of e-cigarettes in all or some smoke-free areas. Beginning January 1, 2015, Minnesota banned e-cigarette sales from all “moveable places of business” (e.g., kiosks and other transportable structures) (NCSL).

Since January 2011, King County bans e-cigarette use in workplaces, restaurants, and bars (MRSCW, 2014). Pierce County prohibits e-cigarettes from “any public place where children are lawfully permitted with the exception of certain places of
employment” (TPCHD). Grant County adopted similar measures that took effect on January 1, 2015 (Izeman, 2014). The city of Pasco, Washington, prohibits e-cigarette use in many outdoor public spaces, such as playgrounds and pools, as well as a ban on use in workplaces, restaurants, and bars (Hoops, 2014). The municipal code of Burien, Washington prohibits e-cigarette use in public parks (Public Health Seattle & King County, 2014).

Conclusion

Due to the short history of e-cigarettes, there has been a limited time frame in which to generate and assess the evidence for policy-making. However, the successful regulatory efforts around conventional tobacco products can help inform policymakers’ decisions about e-cigarette regulation. Generalization of lessons from conventional tobacco products is warranted by the common use of nicotine to attract and retain large numbers of consumers. While there is little doubt that e-cigarettes are a safer alternative to conventional tobacco products, there is still reason to be skeptical about their long-term safety and potential effectiveness as tobacco cessation devices.

When the landmark FSPTCA was enacted, the FDA gained authority to regulate cigarettes. One of its first acts was to ban the sale of flavored tobacco products (2009). Since then, e-cigarette manufacturers quickly filled the void with numerous e-cigarette flavorings. These flavorings are known to attract youth, who are physiologically susceptible to nicotine addiction. Strong evidence demonstrates that flavor bans, as well as broader marketing and age-of-purchase restrictions, can reduce nicotine and tobacco product use—and lifelong addiction—among youth. A tax on e-cigarettes would further deter youth and adults from purchasing these products. The precautionary principle, paired with the devastating history of tobacco, justifies the regulation of e-cigarettes using a range of proven policy measures. After all, legislation can be amended, but loss of human life cannot.

Author Affiliations

Patricia Atwater is the Program Coordinator for the University of Washington (UW) Tobacco Studies Program. She received her MPH from the UW School of Public Health Community-Oriented Public Health Practice Program (COPHP) in 2013.

Nick Fradkin is a second-year MPA/MPH student at the University of Washington (UW). He is a two-time UW Tobacco Studies Program scholar and currently...
works as a research assistant for the International Quitline Institute project within the Department of Family Medicine.

Elizabeth Medeiros is a first year MPH student at the University of Washington, concentrating in Social and Behavioral Sciences within the Department of Health Services. A Tobacco Studies Program scholar, Elizabeth currently works as a Research Assistant at the Northwest Center for Public Health Practice.

Joy Hamilton Gilroy is the Senior Program Manager at the Washington State Association of Local Public Health Officials (WSALPHO). A 2010 graduate of the UW School of Public Health, Joy is an expert in health policy analysis and advocacy.

Dr. Amy Hagopian is the director of the University of Washington’s Community-Oriented Public Health Practice Program in the Department of Health Services. Dr. Hagopian teaches courses in evaluation, policy, and international health and primarily researches international health workforce issues.

Dr. Abigail Halperin is a senior lecturer in Family Medicine and Health Services at the University of Washington, and founder and director of the University of Washington Tobacco Studies Program. In addition to teaching and treating patients with tobacco dependence, Dr. Halperin has been an investigator on local, national, and international research and development projects related to tobacco prevention, treatment, and policy.
References


Frieden TR, Bloomberg MR. How to prevent 100 million deaths from tobacco. The Lancet. 2007;369(9574):1758–1761. doi:10.1016/S0140-6736(07)60782-X.


McLaughlin I. License to Kill?: Tobacco Retailer Licensing as an Effective Enforcement Tool. Tobacco Control Legal Consortium. 2010:1–18.


Minnesota Department of Revenue. Tobacco Tax – E-cigarettes. http://www.revenue.state.mn.us/businesses/tobacco/Pages/e-Cig.aspx


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