

CDC should employ evidence-based strategies to help people quit using tobacco that support the initiation of quit attempts and maintaining long-term abstinence, including: social media interventions, clinician-extender or point-of-care technology tools, interactive voice response systems, market segmentation, insurance coverage for cessation treatment, tobacco-free policies in substance abuse treatment, mental health and other institutional settings including prisons and military settings.

Janice Tsoh PhD, Dorie Apollonio PhD, Noah Gubner PhD, Joseph Guydish PhD, Sharon Hall PhD, Gary Humfleet PhD, Pam Ling MD, Danielle Ramo PhD, Jason Satterfield PhD, Maya Vijayraghavan MD, Lauren Lempert JD, MPH, and Stanton Glantz PhD

Center for Tobacco Control Research and Education, University of California San Francisco

Docket control number CDC-2017-0103
January 2, 2018

Although the Centers for Disease Control and Prevention’s (CDC) request for information to inform future activities regarding how to help people quit using tobacco identifies the importance of helping tobacco users to *quit completely*, its focus on “efficiency” and “cost-effectiveness” should emphasize the effectiveness of achieving outcomes of both *quit attempt initiation* and *long-term smoking abstinence*. In considering evidence-based treatment, the CDC should discourage provision of over-the-counter nicotine replacement therapies (NRT) and other cessation medications unless they are tied to counselling.¹ Likewise, CDC should also discourage use of e-cigarettes and other novel tobacco products for quit attempts. While some people have been able to quit using cigarettes with e-cigarettes, for most people – especially adolescents and young adults – e-cigarettes make it harder to quit, and they end up dual- or poly-users of cigarettes, e-cigarettes, and other tobacco products, often substituting alternative tobacco products in places where cigarettes are prohibited.^{2,3,4} CDC should also promote strategies to help adolescents and young adults quit. Further, CDC should work to counter the FDA’s new so-called “harm reduction” approach to nicotine which may have the effect of increasing initiation to tobacco products, especially among adolescents and young adults, and steering smokers to

¹ Kotz D, Brown J, West R. Prospective cohort study of the effectiveness of smoking cessation treatments used in the “real world.” *Mayo Clin Proc.* 2014;89(10):1360–1367. Kotz D, Brown J, West R. “Real-world” effectiveness of smoking cessation treatments: a population study. *Addiction.* 2014;109(3):491–499. Leas, EC, et al, Effectiveness of Pharmaceutical Smoking Cessation Aids in a Nationally Representative Cohort of American Smokers. *JNCI: Journal of the National Cancer Institute*, dxj240, <https://doi.org/10.1093/jnci/djx240>. Published: 21 December 2017.

² Kalkhoran S, Glantz SA. E-cigarettes and smoking cessation in real-world and clinical settings: a systematic review and meta-analysis. *Lancet Respir Med.* 2016 Feb;4(2):116-28. doi: 10.1016/S2213-2600(15)00521-4. Epub 2016 Jan 14.

³ Lee S, Grana RA, Glantz SA. Electronic cigarette use among Korean adolescents: a cross-sectional study of market penetration, dual use, and relationship to quit attempts and former smoking. *J Adolesc Health.* 2014 Jun;54(6):684-90. doi: 10.1016/j.jadohealth.2013.11.003. Epub 2013 Nov 22.

⁴ Glantz SA, Bareham D. E-cigarettes: Use, Effects on Smoking, Risks, and Policy Implications. *Ann Rev Pub Health* 2018 (in press).

e-cigarettes which could depress population-level smoking cessation. Although it has the authority to do so, FDA has failed to prohibit flavors in newly deemed tobacco products (including e-cigarettes), which not only encourages initiation, especially among youth, but also discourages quitting. Additionally, CDC should consider settings where cigarettes have traditionally been used as rewards in mental health hospitals, prisons, and military settings,⁵ which both encourages smoking initiation and discourages quitting. CDC's future activities should extend to these settings. Following are recommendations for evidence-based strategies that can help achieve these goals.

(1) HOW CAN CDC LEVERAGE EMERGING TECHNOLOGIES TO DELIVER EVIDENCE-BASED CESSATION INTERVENTIONS THROUGH NEW AND INNOVATIVE PLATFORMS THAT HAVE BROAD REACH, ESPECIALLY AMONG YOUNGER ADULTS, THOSE WITH LOW INCOME, AND ADULTS WITH CHRONIC AND/OR BEHAVIORAL HEALTH CONDITIONS?

CDC should promote emerging technologies using social media (e.g. Facebook, Twitter) and clinician-extender technologies (e.g. computer tablets, websites, mobile apps that work in conjunction with health provider input). These channels have shown broad reach in delivering evidence-based cessation interventions to underserved populations, and are especially effective for young adults. Digital platforms can be ideal to deliver evidence-based extended interventions to produce high rates of long-term abstinence.

Social media and mobile interventions:

In 2017, the Pew Research Center reported that 95% of Americans own a cellphone⁶ and 70% use social media.⁷ Mobile interventions may be an ideal medium to provide extended treatments, which have shown to produce unparalleled long-term abstinence rates (45% to 55% abstinence rates at 1 year or beyond).^{8,9} Despite the high quit rates from these extended treatments, there are multiple barriers in recruiting and retaining patients into face-to-face extended treatments. Given mobile interventions for tobacco use have a broad reach, these interventions can implement extended treatment after an intensive face-to-face intervention, to provide intensive electronic contacts with tailored and extensive contents, or to provide support for extended prescription to yield high abstinence rates. These ideas are discussed in a recent commentary by Dr. Hall.¹⁰

⁵ Smith, Elizabeth A, Poston, Walker S., Jahnke, Sara A., Jitnarin, Nattinee, Haddock, Christopher K., Malone, Ruth E. United States Military Tobacco Policy Research: A White Paper. 2016. <https://escholarship.org/uc/item/13v9c7pg>

⁶ <http://www.pewinternet.org/fact-sheet/mobile/>

⁷ <http://www.pewinternet.org/fact-sheet/social-media/>

⁸ Hall SM, Humfleet GL, Munoz RF, Reus VI, Robbins JA, Prochaska JJ. Extended treatment of older cigarette smokers. *Addiction*. 2009;104(6):1043-52. doi: 10.1111/j.1360-0443.2009.02548.x. PubMed PMID: 19392908; PubMed Central PMCID: PMC2718733.

⁹ Hall SM, Humfleet GL, Munoz RF, Reus VI, Prochaska JJ, Robbins JA. Using extended cognitive behavioral treatment and medication to treat dependent smokers. *Am J Public Health*. 2011;101(12):2349-56. doi: 10.2105/AJPH.2010.300084. PubMed PMID: 21653904; PMCID: PMC3222443.

¹⁰ Hall, S. M. Commentary on Laude, et. al.: Extended treatment of cigarette smoking. *Addiction*. 2017; 112 (8) 1460-1461. doi: 10.1111/add.13884.

Social media has a broad reach to young adult smokers with high engagement and retention rates.^{11,12,13} A 2017 review identified 7 studies supporting feasibility, acceptability, and preliminary effectiveness of social media interventions for smoking cessation.¹⁴ A counselling intervention delivered via Twitter in combination with nicotine replacement therapy (NRT) yielded significantly higher short-term quit rates when compared to those receiving NRT alone.¹⁵ Dr. Danielle Ramo and colleagues at the University of California San Francisco have developed the Tobacco Status Project (TSP) intervention delivered via Facebook targeting young adult smokers. TSP has demonstrated high engagement and promising efficacy at 3-months.^{16,17} Dr. Ramo's research team is currently conducting two randomized trials to extend TSP to address both tobacco and alcohol use among young adults¹⁸ and to test a culturally tailored TSP for sexual and gender minority smokers.¹⁹ These new trials will help determine the optimal length of treatment and the extent to which tailoring is helpful for young adults and vulnerable groups.

To date, social media interventions have shown positive short term outcomes with high engagement and broad reach; CDC should encourage use of these channels. These findings may extend to other platforms such as Instagram and Snapchat, which is worth exploring despite there are no published trials to our knowledge.

¹¹ Ramo DE, Liu H, Prochaska JJ. A mixed-methods study of young adults' receptivity to using Facebook for smoking cessation: if you build it, will they come? *Am J Health Promot.* 2015 Mar-Apr;29(4):e126-35. doi: 10.4278/ajhp.130326-QUAL-128. Epub 2014 Feb 27.

¹² Ramo DE, Rodriguez TM, Chavez K, Sommer MJ, Prochaska JJ. Facebook Recruitment of Young Adult Smokers for a Cessation Trial: Methods, Metrics, and Lessons Learned. *Internet Interv.* 2014 Apr;1(2):58-64.

¹³ Ramo DE, Thurl J, Chavez K, Delucchi KL, Prochaska JJ. Feasibility and Quit Rates of the Tobacco Status Project: A Facebook Smoking Cessation Intervention for Young Adults. *J Med Internet Res.* 2015 Dec 31;17(12):e291. doi: 10.2196/jmir.5209.

¹⁴ Naslund JA, Kim SJ, Aschbrenner KA, McCulloch LJ, Brunette MF, Dallery J, et al. Systematic review of social media interventions for smoking cessation. *Addict Behav.* 2017; 73:81-93.

¹⁵ Pechmann C, Delucchi K, Lakon CM, Prochaska JJ. Randomised controlled trial evaluation of Tweet2Quit: a social network quit-smoking intervention. *Tob Control.* 2016.

¹⁶ Ramo DE, Thurl J, Delucchi KL, Ling PM, Hall SM, Prochaska JJ. The Tobacco Status Project (TSP): Study protocol for a randomized controlled trial of a Facebook smoking cessation intervention for young adults. *BMC Public Health.* 2015; 15:897.

¹⁷ Ramo DE, Thurl J, Delucchi KL, Hall SM, Ling PM, Belohlavek A, Zhao S, Beomyun H, Prochaska J. The tobacco status project: Three month outcomes for a randomized controlled trial of a Facebook smoking cessation intervention for young adults. *Drug and Alcohol Dependence*, 171, e173. DOI: <http://dx.doi.org/10.1016/j.drugalcdep.2016.08.474>.

¹⁸ <https://clinicaltrials.gov/show/NCT03163303>

¹⁹ <https://clinicaltrials.gov/show/NCT03259360>

Clinician-extender technologies:

Over 70% of smokers have a clinical encounter with a healthcare provider annually.²⁰ “Clinical-extender technologies” take advantage of this fact and, working in conjunction with health provider input, use modern technologies to extend the clinical support for smokers to enhance motivation for quitting smoking, initiate quit attempts, and maintain abstinence. These interventions can be delivered via computer tablets, websites, or mobile apps before (or after) a clinical visit in a waiting room or at home or any location via mobile devices. ***These interventions have shown important promise in saving clinician time while improving the fidelity of evidence-based interventions such as the 5A’s (Ask, Advise, Assess, Assist and Arrange).***

These “blended models” offer the efficiency and scalability of technological tools while retaining the social influence and personal skill of health care providers.²¹ A recent study conducted by Dr. Jason Satterfield and colleagues in 3 primary care clinics serving diverse patients showed that a 5-minute computer tablet intervention delivered in the waiting room could prep both providers and patients to have productive 5A’s discussions to promote tobacco cessation. Surveys and debrief interviews showed that the technology was acceptable and the blended model promoted adherence and positive behavioral changes among English- and Spanish-speaking patients.^{22,23,24}

The use of an interactive, tailored video education program called “Video Doctor” has shown efficacy in facilitating patient-provider discussions among pregnant smokers and limited English proficient Asian American smokers in primary care. The first study was conducted in 5 community prenatal clinics.²⁵ Pregnant smokers who reported tobacco use in the past 30 days were randomized. Pregnant smokers receiving the Video Doctor intervention were more likely to receive provider advice on tobacco use (60.9 vs. 15.8%).

²⁰ US Public Health Service. Treating tobacco use and dependence: 2008 update. Clinical practice guideline. Rockville, MD: US Department of Health and Human Services, US Public Health Service; 2008. https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/update/treating_tobacco_use08.pdf

²¹ Satterfield JM. (2016). Thinking Outside the Visit: Digitally Extending the Reach of Behavioral Health. *JGIM*, 31:982-984. DOI 10.1007/s11606-016-3736-9

²² Kalkhoran S., Appelle N.A., Napoles A.M., Munoz R.F., Lum P.J., Alvarado N., Gregorich S.E., Satterfield J.M. (2016). Beyond the Ask and Advise: Implementation of a Computer Tablet Intervention to Enhance Provider Adherence to the 5As for Smoking Cessation. *J Subst Abuse Treat*, 60:91-100. PubMed PMID 26150093; PubMed Central PMCID: PMC4670822.

²³ Napoles AM, Apelle N, Kalkhoran S, Vijayaraghavan M, Alvarado N, Satterfield JM. (2016). Perceptions of clinicians and staff regarding the use of digital technology in primary care: qualitative interviews prior to implementation of a computer-facilitated 5As intervention. *BMC Medical Informatics and Decision Making*, 16:44-57

²⁴ Satterfield J.M., Gregorich S, Kalkhoran S, Lum P, Bloome J, Alvarado N, Munoz R, Vijayaraghavan M. (In Review). Computer-Facilitated 5A’s for Smoking Cessation: A Randomized Trial of Technology to Promote Provider Adherence. *Am J Prev Med*.

²⁵ Tsoh JY, Kohn MA, Gerbert B. Promoting smoking cessation in pregnancy with Video Doctor plus provider cueing: a randomized trial. *Acta Obstet Gynecol Scand*. 2010;89(4):515-23. doi: 10.3109/00016341003678419. PubMed PMID: 20196678; PMCID: 3312043.

Another study, conducted by Dr. Janice Tsoh and colleagues was a single-group feasibility pilot examining the feasibility, acceptability and efficacy of an interactive “Mobile Doctor” intervention (iMD) with Korean- and Vietnamese-speaking male patients who smoked daily and presented for a primary care visit in a Federally Qualified Health Center.^{26,27} Asian Americans, the fastest growing population in the United States, reportedly have the lowest rates of receiving physician advice among other racial ethnic groups, 34%²⁸ to 41%.²⁹ The iMD delivers 5As (Ask, Advise, Assess, Assist and Arrange) via tailored in-language video messages on a mobile tablet to patients right before a healthcare visit. Participation rate was high with >50% in precontemplation with no intent to quit smoking within 6 months. The delivery of the video intervention averaged 13 minutes in duration. All patients reported discussing tobacco use with their provider after the iMD session. EHR-documented 5As were significantly higher at the iMD visit for Assess, Assist, and Arrange (36% to 60%) when compared to other visits without iMD (6% to 13%). The team is currently conducting a randomized trial with iMD in English, Cantonese, Korean and Vietnamese languages.³⁰

Integrating digital technologies into clinical practice could provide sustainable and inexpensive support to smokers over extended periods without geographical location constraints. CDC should encourage and support the implementation of these clinician-extender or point-of-care technologies to engage both patients and providers within and outside of clinical settings to support smoking cessation efforts.

(2) WHAT ARE SOME INNOVATIVE APPROACHES TO REDUCE THE COST—IN TIME, STAFFING, AND FUNDING—OF PROVIDING EFFECTIVE CESSATION SERVICES TO PEOPLE WHO WANT TO QUIT USING TOBACCO?

Interactive voice response systems provide cost-effective cessation services to smokers during hospitalization and post-discharge. Other innovative approaches including the use of social media and clinician-extender technologies have shown broad reach to deliver evidence-based treatment to smokers in community and practice-based settings. While NRT is a proven cessation intervention, the evidence consistently shows that NRT used without counselling is

²⁶ Tsoh J, Quach T, Duong T, Park E, Wong C, Lam H, Huang S, Nguyen T. Addressing tobacco use in Korean and Vietnamese smoking patients in community health primary care setting in California, United States. Symposium presentation at the Society for Research on Nicotine and Tobacco 23rd Annual Meeting; Florence, Italy 2017. Available:

http://c.ymcdn.com/sites/www.srnt.org/resource/resmgr/conferences/2017_annual_meeting/SRNT_2017_Abstract_Book_Web.pdf

²⁷ Tsoh J, Quach T, Duong T, Park E, Wong C, Huang S, Nguyen T. Interactive Mobile Doctor (iMD) to Promote Patient-Provider Discussion on Tobacco Use among Korean and Vietnamese Patients in Primary Care: A Pilot Study. *Nicotine & Tobacco Research*. Under Review.

²⁸ Babb S, Malarcher A, Schauer G, Asman K, Jamal A. Quitting Smoking Among Adults—United States, 2000–2015. *MMWR Morb Mortal Wkly Rep* 2017;65:1457–1464.

²⁹ Nugent C, Schoenborn C, Vahratian A. Discussions between health care providers and their patients who smoke cigarettes. Hyattsville, MD: National Center for Health Statistics; 2014. Available from: <http://www.cdc.gov/nchs/data/databriefs/db174.pdf>.

³⁰ <https://clinicaltrials.gov/show/NCT02966132>

ineffective or even harmful in terms of promoting cessation. Thus, in order to provide effective smoking cessation services, the CDC should discourage provision of NRT without counseling.

Smoking-induced diseases are among the leading etiologies for hospital admissions and a significant contributor to health care costs in safety net health settings. Smoking cessation would significantly improve health outcomes and reduce costs. Providing tobacco cessation treatment during a hospitalization is an effective intervention because smokers may be motivated to quit, especially if they are admitted for a smoking-related illness,³¹ and are forced to be temporarily abstinent because of hospital smoke-free policies.³² However, the efficacy of hospital-based counseling is limited if the counseling is not continued in the outpatient setting after discharge. ***Thus, providing access to sustained cessation support after hospital discharge is critical in order to increase cessation rates.***

The ***interactive voice response system (IVR)*** is a promising technology that offers hospitalized smokers continued cessation counseling after discharge, thereby increasing their chances of successful smoking cessation.³³ The IVR is a telephone-based technology that allows a computer to detect voice and touch tones during a phone conversation and respond with prerecorded audio. An IVR system has been used to automatically initiate phone calls after discharge, screen and assess smoking status, do medication management, and connect appropriate patients to a live counselor. This in combination with FDA-approved medications for cessation for 3 months has been shown to increase 6-month abstinence among hospitalized patients. A recent review found that offering smoking cessation counseling post-discharge for more than a month after discharge increased smoking cessation, whereas interventions that offered less post-discharge contact were not effective.³⁴

The IVR system has been used successfully in several hospitals in the U.S. (e.g. Massachusetts General Hospital, Medical University of South Carolina Health Systems) and Canada (“Ottawa Model”) with improvement in cessation rates.^{35,36} In a recent randomized controlled trial of an IVR intervention for hospitalized smokers, those in the intervention arm had biochemically-confirmed 6-month point prevalence abstinence rate of 26% compared to 15% in the usual care arm. Self-reported past 7-day abstinence rates were 52% for sustained care versus 39% for usual care at 1 month, and 41% versus 28% at 6 months.

³¹ Rigotti NA, Munafo MR, Stead LF, Smoking Cessation Interventions for Hospitalized Smokers. A Systematic Review. Arch Intern Med. 2008; 168(18):1950-1960.

³² Longo DR, Brownson RC, Kruse RL. Smoking bans in US hospitals: results of a national survey. JAMA. 1995; 274(6):488-491.

³³ Regan S, Reyen M, Lockhart AC, Richards AE, Rigotti NA. An interactive

³⁴ Rigotti NA, Munafo MR, Stead LF, Smoking Cessation Interventions for Hospitalized Smokers. A Systematic Review. Arch Intern Med. 2008; 168(18):1950-1960.

³⁵ Rigotti NA, Regan S, Levy DS et al., Sustained Care Intervention and Postdischarge Smoking Cessation Among Hospitalized Adults: A Randomized Clinical Trial. JAMA. 2014; 312(7): 719-728.

³⁶ Mullen KA, Manuel DG, Hawken SJ et al., Effectiveness of a hospital-initiated smoking cessation programme: 2-year health and healthcare outcomes. Tob Control. 2016; 0: 1-7.

The same trial found an estimated first-year incremental costs-per-quit attempt of \$7,220-\$3,062, as the number of smokers ranged from 50 to 500, respectively.³⁷ For subsequent years, the estimated cost-per-patient reduced to \$302-\$288 and the cost per quit attempt to \$2741-\$2641. If insurers paid for medications, the cost-per-patient in the first year ranged between to \$608-\$151 as the number of smokers ranged from 50 to 500, respectively, and \$115-\$101 for subsequent years. The cost-per-quit, assuming insurers paid for medications, for the first year was \$5,527-\$1,369 and \$1,048-\$921 in subsequent years. The largest cost burden for a hospital system to set up the IVR system is during the first year, with an estimated one-time-infrastructure cost of approximately \$27,000, assuming that insurers paid for mediations. These costs reduced significantly in subsequent years after establishing the IVR system.

These cost estimates suggest that an IVR-based intervention could be most effective in hospital systems that treat a large volume of smokers and that have a centralized tobacco treatment program. The IVR-based intervention could be particularly cost-effective in safety net hospitals that serve a large volume of low-income patients, where tobacco use is concentrated. Such programs would be most viable if government and private insurance policies continue to cover evidence-based smoking cessation treatments.

In the Canadian system, current smokers who were recruited from one of 14 hospitals and who participated in the 'Ottawa Model' for smoking cessation (an IVR-based intervention for 6 months) experienced lower rates of all-cause readmission, smoking-related readmission, and all-cause emergency department visits.³⁸ Reductions in mortality were not observed at 1 months, but they were significantly reduced at 1- and 2-years follow-up. Such interventions could potentially reduce subsequent health care utilization, thereby further reducing health-care costs. ***Considering the overall low-costs of providing hospital-based cessation programs, these types of interventions should be implemented in all hospitals.***

As discussed above, other technology-based approaches such as ***social media*** (including Facebook and Twitter) and ***clinician-extender technologies*** via brief interactive assessment and feedback via computer tablets or online at health care settings have shown promise in delivering tobacco cessation treatment. Moreover, these technologies have a broad reach extending to disadvantaged populations in community and practice-based settings, and show high engagement and acceptability for both smokers and their healthcare providers. ***Although these technologies may require an upfront investment and careful attention to implementation challenges, they provide an important opportunity to save clinician time while improving fidelity, improve outcomes, and save money.***³⁹

While NRT is a proven cessation intervention *when combined with counselling*, the evidence consistently shows that NRT used without counselling is ineffective or even harmful in terms of promoting

³⁷ Rigotti NA, Regan S, Levy DS et al., Sustained Care Intervention and Postdischarge Smoking Cessation Among Hospitalized Adults: A Randomized Clinical Trial. JAMA. 2014; 312(7): 719-728.

³⁸ Mullen KA, Manuel DG, Hawken SJ et al., Effectiveness of a hospital-initiated smoking cessation programme: 2-year health and healthcare outcomes. Tob Control. 2016; 0: 1-7.

³⁹ Satterfield JM. (2016). Thinking Outside the Visit: Digitally Extending the Reach of Behavioral Health. JGIM, 31:982-984. DOI 10.1007/s11606-016-3736-9

cessation.⁴⁰ Many states and medical systems provide NRT alone; this practice should be discouraged as a waste – and possibly counterproductive – use of resources.

This issue is of particular concern because the tobacco industry is now entering the NRT business as part of a plan to hold on to customers informed by the understanding that NRT without counselling likely depresses cessation. As Apollonio and Glantz⁴¹ noted:

Major tobacco companies in the United States and the United Kingdom viewed NRT, even when it was only available by prescription, as a recreational product that could maintain and possibly expand the use of nicotine as smoking became less socially acceptable. Although NRT was approved for cessation, tobacco industry research found in the early 1990s that many smokers used it in combination with cigarettes and that smokers who used NRT for cessation would otherwise have quit outright.^{49–51,53,54}

In the 21st century, medical research began to find similar results. The majority of smokers who receive prescription NRT receive counseling on how to use the medication.⁵⁹ Initial clinical trials suggesting comparable effectiveness for OTC NRT relied on simulated OTC use rather than real-world OTC use.^{11–16} Follow-up population studies of OTC NRT showed it did not improve—and could impede—cessation, without an organized cessation program.^{8,9,17,18} Outside of monitored settings, NRT is often used for shorter periods than recommended and not combined with behavioral counseling.¹⁰ These findings are consistent even among individuals motivated to quit: a follow-up study of participants enrolled in a clinical trial of nicotine patch users found that after 8 years, there was no statistically significant difference in abstinence for patch users than nonusers.⁶⁰ Moreover, smokers who used over-the-counter NRT were significantly less likely to quit than were smokers who did not use any cessation aids.^{8,9}

Tobacco companies expressed interest in developing and marketing alternative products containing nicotine as early as the 1950s, but they were concerned about marketing them because doing so could lead to FDA regulation. In 2009, following new FDA regulation of cigarettes, tobacco companies began selling the alternative nicotine products they had first proposed decades earlier.⁶¹ In 2014, RJ Reynolds Tobacco began selling its nicotine gum, Zonnic, throughout the United States. Internally, RJR classified Zonnic with its e-cigarette brand Vuse, considering both products to be part of its “quest toward becoming a ‘total tobacco company.’”⁴ Reflecting this ambition, marketing in 2015 for Zonnic suggested that smokers could use it with cigarettes: “Quitting doesn’t have to feel like all or nothing.”⁶¹ This marketing is consistent with tobacco industry research that found many smokers used NRT in combination with cigarettes

⁴⁰ Kotz D, Brown J, West R. Prospective cohort study of the effectiveness of smoking cessation treatments used in the “real world.” *Mayo Clin Proc.* 2014;89(10):1360–1367. Kotz D, Brown J, West R. “Real-world” effectiveness of smoking cessation treatments: a population study. *Addiction.* 2014;109(3):491–499. Leas, EC, et al, Effectiveness of Pharmaceutical Smoking Cessation Aids in a Nationally Representative Cohort of American Smokers. *JNCI: Journal of the National Cancer Institute*, djsx240, <https://doi.org/10.1093/jnci/djsx240>. Published: 21 December 2017.

⁴¹ Apollonio D, Glantz SA. Tobacco Industry Research on Nicotine Replacement Therapy: “If Anyone Is Going to Take Away Our Business It Should Be Us”. *Am J Public Health.* 2017 Oct;107(10):1636-1642. doi: 10.2105/AJPH.2017.303935. Epub 2017 Aug 17.

instead of as a means to quit smoking. Philip Morris began marketing nicotine lozenges in 2016.^{5,6}

...

Tobacco industry research from the 1970s forward treated all products containing nicotine—including cigarettes, e-cigarettes and their precursors, and others (e.g., gums, patches, and candy)—as part of a single market: the nicotine delivery, or Craving Relief market. Industry marketing anticipates that noncigarette nicotine delivery products will be used by smokers for whom smoking is unacceptable, thus facilitating and normalizing lifelong nicotine addiction. These findings suggest that the least harmful way to sell nicotine delivery products is to restrict them to smokers whose quit attempts are medically supervised, consistent with the original studies of NRT for smoking cessation.⁷ [Citations in this quotation are citations in Apollonio D, Glantz SA. Tobacco Industry Research on Nicotine Replacement Therapy: "If Anyone Is Going to Take Away Our Business It Should Be Us". *Am J Public Health*. 2017 Oct;107(10):1636-1642. doi: 10.2105/AJPH.2017.303935. Epub 2017 Aug 17.]

The CDC should discourage provision of over-the-counter NRT and other cessation medications unless they are tied to counselling.

(3) HOW MIGHT STANDARDIZATION OF QUITLINE SERVICES ACHIEVE GREATER EFFICIENCY WHILE ALSO PRESERVING STATE QUITLINES' "BRANDS," FLEXIBILITY, AND CAPACITY FOR INNOVATION?

CDC should establish a standardized quitline treatment protocol with identified basic core treatment components of quitline service that are consistent to the intervention protocol used to establish the effectiveness of quitline.⁴² The standardized quitline treatment protocol amendable to add-on components such as interactive web-sites, NRT combined with counselling as selected by states according to resources.⁴³

(4) WHAT COMMUNICATION CHANNELS AND COMMUNICATION STRATEGIES SHOULD CDC CONSIDER EMPLOYING TO ENSURE THAT BOTH TOBACCO USERS, INCLUDING THOSE BELONGING TO HIGH-RISK AND DISADVANTAGED POPULATIONS, AND HEALTH CARE PROVIDERS ARE AWARE OF AND HAVE ACCESS TO EVIDENCE-BASED CESSATION RESOURCES?

In addition to conventional media communication channels, CDC should employ market segmentation strategies, and peer-outreach strategies such as community or lay health worker outreach for underserved, hard-to-reach population segments.

⁴² Zhu SH, Anderson CM, Tedeschi GJ, Rosbrook B, Johnson CE, Byrd M, Gutierrez-Terrell E. Evidence of real-world effectiveness of a telephone quitline for smokers. *N Engl J Med*. 2002;347(14):1087-93. doi: 10.1056/NEJMsa020660. PubMed PMID: 12362011.

⁴³ Lichtenstein E, Zhu S-H, Tedeschi GJ. Smoking Cessation Quitlines: An Underrecognized Intervention Success Story. *The American psychologist*. 2010;65(4):252-261. doi:10.1037/a0018598.

Smartphones and mobile devices are used widely by young adults (96% live in households with smartphones)⁴⁴ and in the US, while Black and Hispanic people are less likely to have home broadband internet access, they own mobile devices at rates shares similar to whites.⁴⁵ Media promotion has shown effectiveness in increasing quitline utilization among English and non-English speakers.

In addition to media communication channels, **market segmentation strategies** may be used to define communication audiences and reach high risk and disadvantaged populations more effectively. Our research has shown how tobacco marketing encourages use among vulnerable groups such as poor women,⁴⁶ rural males,^{47,48,49,50} and young people.^{51,52,53,54} Others have shown how tobacco companies target African Americans,^{55,56,57} Hispanics,⁵⁸ Asians,⁵⁹ working poor,⁶⁰ the LGBT community,^{61,62} homeless

⁴⁴ <http://www.pewresearch.org/fact-tank/2017/05/25/a-third-of-americans-live-in-a-household-with-three-or-more-smartphones/>

⁴⁵ <http://www.pewresearch.org/fact-tank/2017/08/31/smartphones-help-blacks-hispanics-bridge-some-but-not-all-digital-gaps-with-whites/>

⁴⁶ Brown-Johnson CG, England LJ, Glantz SA, Ling PM. Tobacco industry marketing to low socioeconomic status women in the U.S.A. *Tob Control*. 2014;23(e2):e139-46.

⁴⁷ Ling PM, Haber LA, Wedl S. Branding the rodeo: a case study of tobacco sports sponsorship. *Am J Public Health*. 2010;100(1):32-41.

⁴⁸ Mejia AB, Ling PM. Tobacco industry consumer research on smokeless tobacco users and product development. *Am J Public Health*. 2010;100(1):78-87.

⁴⁹ Kostygina G, Ling PM. Tobacco industry use of flavourings to promote smokeless tobacco products. *Tob Control*. 2016 Nov;25(Suppl 2):ii40-ii49.

⁵⁰ Cortese DK, Ling PM. Enticing the New Lad: Masculinity as a Product of Consumption in Tobacco Industry-Developed Lifestyle Magazines. *Men Masc*. 2011;14(1):4-30.

⁵¹ Hafez N, Ling PM. Finding the Kool Mixx: how Brown & Williamson used music marketing to sell cigarettes. *Tob Control*. 2006;15(5):359-66.

⁵² Ling PM, Glantz SA. Why and how the tobacco industry sells cigarettes to young adults: evidence from industry documents. *Am J Public Health*. 2002. Jun;92(6):908-16.

⁵³ Ling PM, Glantz SA. Using tobacco-industry marketing research to design more effective tobacco-control campaigns. *JAMA*. 2002 Jun 12;287(22):2983-9.

⁵⁴ Ling PM, Glantz SA. Tobacco industry research on smoking cessation. Recapturing young adults and other recent quitters. *J Gen Intern Med*. 2004. May;19(5 Pt 1):419-26.

⁵⁵ Balbach ED, Gasior RJ, Barbeau EM. R.J. Reynolds' targeting of African Americans: 1988-2000. *Am J Public Health*. 2003;93(5):822-7.

⁵⁶ Yerger VB, Malone RE. African American leadership groups: smoking with the enemy. *Tob Control*. 2002;11(4):336-45.

⁵⁷ Yerger VB, Przewoznik J, Malone RE. Racialized geography, corporate activity, and health disparities: tobacco industry targeting of inner cities. *Journal of health care for the poor and underserved*. 2007;18(4 Suppl):10-38.

⁵⁸ Iglesias-Rios L, Parascandola M. A historical review of R.J. Reynolds' strategies for marketing tobacco to Hispanics in the United States. *Am J Public Health*. 2013;103(5):e15-27.

⁵⁹ Muggli ME, Pollay RW, Lew R, Joseph AM. Targeting of Asian Americans and Pacific Islanders by the tobacco industry: results from the Minnesota Tobacco Document Depository. *Tob Control*. 2002;11(3):201-9.

and persons with mental illness⁶³ and others. In particular, tobacco companies target young adults by making smoking appear to be a natural part of young adult social cultures and even tailored their cigarette pack designs to the culture.⁶⁴

The marketing strategies used by tobacco companies to sell cigarettes can be used to improve tobacco control programs. Previously secret tobacco industry documents reveal how tobacco companies target and market tobacco products to encourage young adult smoking and undermine smoking cessation.^{65, 66,67} These commercial market segmentation strategies can also be used to reach young adult targets for tobacco control, learning from decades of tobacco industry market research.^{68,69,70} Dr. Pamela Ling has used this knowledge to develop sophisticated strategies to improve the reach, relevance, and persuasiveness of anti-tobacco messages. Commercial market segmentation strategies can be used to define “psychographic” targets based on lifestyle, values, aspirations, activities, self-image, and social affiliation, rather than demographic characteristics alone.

One novel and efficient way to determine the psychographics of young adults is utilizing “peer crowds” for anti-tobacco interventions.^{71,72,73} In contrast to one’s friends which make up a peer group, the peer

⁶⁰ Barbeau EM, Leavy-Sperounis A, Balbach ED. Smoking, social class, and gender: what can public health learn from the tobacco industry about disparities in smoking? *Tob Control*. 2004;13(2):115-20.

⁶¹ Stevens P, Carlson LM, Hinman JM. An analysis of tobacco industry marketing to lesbian, gay, bisexual, and transgender (LGBT) populations: strategies for mainstream tobacco control and prevention. *Health Promot Pract*. 2004;5(3 Suppl):129s-134s.

⁶² Smith EA, Thomson K, Offen N, Malone RE. "If you know you exist, it's just marketing poison": meanings of tobacco industry targeting in the lesbian, gay, bisexual, and transgender community. *Am J Public Health*. 2008;98(6):996-1003

⁶³ Apollonio DE, Malone RE. Marketing to the marginalised: tobacco industry targeting of the homeless and mentally ill. *Tob Control*. 2005;14(6):409-15.

⁶⁴ Hendlin Y, Anderson SJ, Glantz SA. 'Acceptable rebellion': marketing hipster aesthetics to sell Camel cigarettes in the US. *Tob Control*. 2010;19(3):213-22.

⁶⁵ Cortese DK, Lewis MJ, Ling PM. Tobacco industry lifestyle magazines targeted to young adults. *J Adolesc Health*. 2009;45(3):268-80.

⁶⁶ Anderson SJ, Pollay RW, Ling PM. Taking ad-Vantage of lax advertising regulation in the USA and Canada: reassuring and distracting health-concerned smokers. *Soc Sci Med*. 2006;63(8):1973-85.

⁶⁷ Anderson SJ, Glantz SA, Ling PM. Emotions for sale: cigarette advertising and women's psychosocial needs. *Tob Control*. 2005;14(2):127-35.

⁶⁸ Fallin A, Neilands TB, Jordan JW, Ling PM. Social Branding to Decrease Lesbian, Gay, Bisexual, and Transgender Young Adult Smoking. *Nicotine Tob Res*. 2015;17(8):983-9.

⁶⁹ Fallin A, Neilands TB, Jordan JW, Hong JS, Ling PM. Wreaking "havoc" on smoking: social branding to reach young adult "partiers" in Oklahoma. *Am J Prev Med*. 2015;48(1 Suppl 1):S78-85.

⁷⁰ Ling PM, Lee YO, Hong J, Neilands TB, Jordan JW, Glantz SA. Social branding to decrease smoking among young adults in bars. *Am J Public Health*. 2014;104(4):751-60.

⁷¹ Lee YO, Jordan JW, Djakaria M, Ling PM. Using peer crowds to segment Black youth for smoking intervention. *Health Promot Pract*. 2014;15(4):530-7.

⁷² Lisha NE, Jordan JW, Ling PM. Peer crowd affiliation as a segmentation tool for young adult tobacco use. *Tob Control*. 2016;25(Suppl 1):i83-i89.

crowd reflects a cultural group with shared values, interests and activities that extends beyond one's immediate circle of friends.⁷⁴ Peer crowd affiliation independently predicts tobacco use, controlling for demographics. Experimental studies have shown that messages tailored to peer crowd resulted in stronger antismoking attitudes and lower levels of smoking susceptibility among adolescents who identified with that crowd.⁷⁵

In 2014 Dr. Ling completed the first population-based study of Bay Area Young Adult Health (BAYAHS) using psychographic segmentation to assess tobacco use. In controlled analyses, affiliation with "Hip Hop" (AOR=4.32, 95% CI=1.48, 12.67) and "Country" (AOR=3.13, 95% CI=1.21, 8.09) peer crowds was significantly associated with smoking. Multivariable models controlling for demographics estimated a high probability of smoking among bar patrons affiliating with Hip Hop (47%) and Country (52%) peer crowds.⁷⁶ Targeting high-risk peer crowds can reach half of the young adult smokers in San Francisco with greater efficiency. Targeting high-risk peer crowds also preferentially reaches disproportionately affected groups of young adult smokers and may be a valuable tool to address disparities in tobacco-related cancer risk and morbidity.

Targeting limited English proficient population segments where usage of evidence-based cessation resources is low is possible. ***Using peer-to-peer/lay health worker outreach involving both smokers and their family members with Asian American immigrants has demonstrated significant increases in utilization of quitline and NRT at 3 and 6 months follow-up.*** Dr. Janice Tsoh and colleagues conducted a single group pilot with 96 pairs of daily smoker (with 42% in precontemplation) and a family member. This study demonstrated increase in utilization of quitline (from 0% to 39%) and FDA-approved NRT or prescribed smoking cessation medications (from 2% to 16%) at 3-month.⁷⁷ In a second study, a RCT with 107 smoker-family pairs, the family-based intervention yielded significantly higher rates of quitline use (39% vs 2%) and NRT use (33% vs 4%) when compared to the control group receiving education on nutrition within 3 to 6 months post-treatment initiation.⁷⁸

⁷³ Moran MB, Sussman S. Changing attitudes toward smoking and smoking susceptibility through peer crowd targeting: more evidence from a controlled study. *Health Commun.* 2015;30(5):521-4.

⁷⁴ Lisha NE, Jordan JW, Ling PM. Peer crowd affiliation as a segmentation tool for young adult tobacco use. *Tob Control.* 2016;25(Suppl 1):i83-i89.

⁷⁵ Moran MB, Sussman S. Changing attitudes toward smoking and smoking susceptibility through peer crowd targeting: more evidence from a controlled study. *Health Commun.* 2015;30(5):521-4.

⁷⁶ Ling, Pamela M. et al. Bars, Nightclubs, and Cancer Prevention: New Approaches to Reduce Young Adult Cigarette Smoking. *American Journal of Preventive Medicine*, Volume 53, Issue 3, S78 - S85

⁷⁷ Tsoh JY, Burke NJ, Gildengorin G, Wong C, Le K, Nguyen A, Chan JL, Sun A, McPhee SJ, Nguyen TT. A Social Network Family-Focused Intervention to Promote Smoking Cessation in Chinese and Vietnamese American Male Smokers: A Feasibility Study. *Nicotine Tob Res.* 2015;17(8):1029-38. doi: 10.1093/ntr/ntv088. PubMed PMID: 26180229; PubMed Central PMCID: PMC4542845.

⁷⁸ Tsoh J, Burke N, Gildengorin G, Le K, Wong C, Kim J, McPhee S, Nguyen T. Promoting Smoking Cessation among Vietnamese Americans using a Family-Based Lay Health Worker Intervention: A Cluster Randomized Controlled Trial. Paper presented at the Society for Research on Nicotine and Tobacco 23rd Annual Meeting; Florence, Italy 2017, March.

(5) WHAT ROLE SHOULD CDC, STATE AND LOCAL HEALTH DEPARTMENTS, NOT FOR PROFIT INSTITUTIONS, TRADITIONAL HEALTHCARE PROVIDERS, AND/OR PROFESSIONAL HEALTHCARE PARTNER ORGANIZATIONS, PLAY IN ENSURING THAT HIGH-RISK POPULATIONS (SUCH AS SMOKERS LIVING BELOW THE POVERTY LEVEL OR THOSE WITH BEHAVIORAL HEALTH CONDITIONS) HAVE ACCESS TO TAILORED CESSATION SERVICES OF APPROPRIATE INTENSITY TO HELP THEM SUCCESSFULLY QUIT?

The CDC should recommend insurance coverage of smoking cessation treatment and advocate for state health department coverage of smoking treatment. In addition, the CDC should lead, coordinate, and support initiatives to implement tobacco-free grounds policies in all drug abuse treatment and mental health settings, as well as in prisons and the military.

CDC should work with departments of public health, tobacco control authorities, and substance abuse and mental health agencies at both state and county levels. It should coordinate efforts with the SAMHSA Center for Substance Treatment, and with NIH agencies concerned with smoking and cancer (NCI) and with NIH agencies concerned with addiction (NIDA, NIAAA). (While the comment below focuses on drug abuse treatment settings, the substantive recommendation extends to mental health settings and other treatment systems as well.) Additionally, CDC should work with corrections officials and military personnel to collaboratively develop cessation programs in prisons and the military services where smoking prevalence remains extremely high.⁷⁹

Cigarette smoking continues to decrease in the US general population (15.1% as of 2015),⁸⁰ while the smoking prevalence among individuals in substance use treatment in the U.S. remains high (approximately 76.3%).⁸¹ This results in a disproportionate burden of tobacco related disease among individuals with substance use disorders.⁸² Despite these high levels of smoking, prevalence has been falling among these people in parallel to the rest of the population (albeit from a higher baseline) and quit attempts have been increasing, suggesting increasing receptiveness to smoking cessation interventions.⁸³ In addition, quitting smoking has positive impact on substance use outcomes,^{84,85} and

⁷⁹ Smith EA, Poston WSC, Haddock CK, Malone RE. Installation Tobacco Control Programs in the U.S. Military. *Military medicine*. 2016;181(6):596-601. doi:10.7205/MILMED-D-15-00313.

⁸⁰ Jamal A, King BA, Neff LJ, Whitmill J, Babb SD, Graffunder CM. Current Cigarette Smoking Among Adults - United States, 2005-2015 (2016) *Mmwr-Morbidity and Mortality Weekly Report* 65:1205-1211.

⁸¹ Guldish J, Passalacqua E, Tajima B, Chan M, Chun J, Bostrom A (2011) Smoking Prevalence in Addiction Treatment: A Review. *Nicotine & Tobacco Research* 13: 401-411.

⁸² Bandiera FC, Anteneh B, Le T, Delucchi K, Guldish J (2015). Tobacco-related mortality among persons with mental health and substance abuse problems. *PLoS One* 10.

⁸³ Kulik MC, Glantz SA. Softening Among U.S. Smokers With Psychological Distress: More Quit Attempts and Lower Consumption as Smoking Drops. *Am J Prev Med*. 2017 Dec;53(6):810-817. doi: 10.1016/j.amepre.2017.08.004. Epub 2017 Oct 10.

⁸⁴ McKelvey K, Thurl J, Ramo D (2017) Impact of quitting smoking and smoking cessation treatment on substance use outcomes: An updated and narrative review. *Addict Behav* 65:161-170.

⁸⁵ Thurgood SL, McNeill A, Clark-Carter D, Brose LS (2016) A Systematic Review of Smoking Cessation Interventions for Adults in Substance Abuse Treatment or Recovery. *Nicotine Tob Res* 18: 993-1001.

no impact on relapse among patients who smoke.⁸⁶ ***The CDC should promote aggressive smoking cessation interventions by facilities treating these patients.***

Tobacco-free grounds policies (restricting use of any tobacco use on program property) are effective in reducing client smoking. Recent work by Dr. Joseph Gudysh and colleagues, not yet published, found a significant decrease in client smoking behaviors after implementation of tobacco-free grounds in 3 residential addiction treatment programs.⁸⁷ This included a reduction in smoking prevalence, a reduction in number of cigarettes smoked per day, increased time to first cigarette and an increase in the proportion of clients who reduced smoking due to program requirements. Similarly, other studies have found that implementation of a tobacco free grounds policy at substance use treatment programs (including statewide policies in New York and New Jersey) resulted in reduced client smoking.^{88,89,90,91} Contrary to the belief that client enrollment will decrease if tobacco use is restricted by tobacco-free grounds, two studies have reported no drop in census following such policies.^{92,93}

Tobacco free grounds policies have been widely implemented in other healthcare settings, including primary care clinics, hospitals, and psychiatric facilities. We recommend that the CDC support implementation of tobacco-free grounds policies in substance use treatment programs and treatment systems. ***The CDC should work with state agencies concerned with regulation and licensing of addiction treatment programs to implement tobacco-free grounds as a way to reduce tobacco-related health risks for both program staff and clients.***

⁸⁶ Weinberger AH, Platt J, Esan H, Galea S, Erlich D, Goodwin RD (2017) Cigarette Smoking Is Associated With Increased Risk of Substance Use Disorder Relapse: A Nationally Representative, Prospective Longitudinal Investigation. *J Clin Psychiatry* 78: e152-e160.

⁸⁷ Gubner NR, Williams DD, Le T, Gudysh J (Manuscript in preparation) Exploring Smoking Related Outcomes Before and After the Implementation of a Tobacco Free Grounds Policy in Residential Addiction Treatment Programs.

⁸⁸ Gudysh J, Yip D, Le T, Gubner NR, Delucchi K, Roman P (2017) Smoking-related outcomes and associations with tobacco-free policy in addiction treatment, 2015-2016. *Drug Alcohol Depend* 179: 355-361

⁸⁹ Gudysh J, Tajima B, Kulaga A, Zavala R, Brown LS, Bostrom A, Ziedonis D, Chan M (2012) The New York policy on smoking in addiction treatment: findings after 1 year. *Am J Public Health* 102: e17-25.

⁹⁰ Richey R, Garver-Apgar C, Martin L, Morris C, Morris C (2017) Tobacco-Free Policy Outcomes for an Inpatient Substance Abuse Treatment Center. *Health Promot Pract* 18: 554-560.

⁹¹ Williams JM, Foulds J, Dwyer M, Order-Connors B, Springer M, Gadde P, Ziedonis DM (2005) The integration of tobacco dependence treatment and tobacco-free standards into residential addictions treatment in New Jersey. *J Subst Abuse Treat* 28: 331-340.

⁹² Richey R, Garver-Apgar C, Martin L, Morris C, Morris C (2017) Tobacco-Free Policy Outcomes for an Inpatient Substance Abuse Treatment Center. *Health Promot Pract* 18: 554-560.

⁹³ Williams JM, Foulds J, Dwyer M, Order-Connors B, Springer M, Gadde P, Ziedonis DM (2005) The integration of tobacco dependence treatment and tobacco-free standards into residential addictions treatment in New Jersey. *J Subst Abuse Treat* 28: 331-340.

(6) HOW CAN CDC SUPPORT STATE AND LOCAL HEALTH DEPARTMENTS, TRADITIONAL HEALTHCARE PROVIDERS, NOT FOR PROFIT HEALTH INSTITUTIONS, AND PROFESSIONAL HEALTHCARE PARTNER ORGANIZATIONS TO ENSURE THAT EVIDENCE-BASED TOBACCO CESSATION INTERVENTIONS ARE INTEGRATED INTO PRIMARY AND BEHAVIORAL HEALTH CARE SETTINGS ON A CONSISTENT AND SUSTAINABLE BASIS?

CDC should support the implementation of home health portals and/or point-of-care technological tools like computer tablets to offer important opportunities for delivering screening and brief interventions for tobacco and other behavioral health challenges. CDC should emphasize the importance of screening and intervention of e-cigarette and other new tobacco product use. Importantly, CDC should emphasize the importance of public education about the danger of e-cigarette use specifically in deterring success in quit attempts.

Digitalize screening and referral services as part of EHR are examples of pathways for integrating tobacco cessation interventions into primary and behavioral health care settings in a consistent and sustainable basis. ***Linkages to EHR's must be incorporated along with careful attention to existing clinic flows. Linkages to billing and documentation would improve acceptance of the technology and raise the value added. These tools should be recommended for providers, patients, and even learners in health professions education.***^{94,95,96}

CDC should mount equational campaigns to counter claims that e-cigarettes are an effective smoking cessation intervention.⁹⁷ While some people do successfully quit smoking with e-cigarettes, probably daily users of high delivery systems, these people are a small minority of e-cigarette users (around 10-20%). For most smokers, including youth, using e-cigarettes is associated with large and statistically significant reductions in quitting. As a result, the overall population effect is that, combining these two competing effects, smokers who use e-cigarettes are less, not more, likely to quit smoking (Figure 1).

⁹⁴ Kalkhoran S., Appelle N.A., Napoles A.M., Munoz R.F., Lum P.J., Alvarado N., Gregorich S.E., Satterfield J.M. (2016). Beyond the Ask and Advise: Implementation of a Computer Tablet Intervention to Enhance Provider Adherence to the 5As for Smoking Cessation. *J Subst Abuse Treat*, 60:91-100. PubMed PMID 26150093; PubMed Central PMCID: PMC4670822.

⁹⁵ Napoles AM, Apelle N, Kalkhoran S, Vijayaraghavan M, Alvarado N, Satterfield JM. (2016). Perceptions of clinicians and staff regarding the use of digital technology in primary care: qualitative interviews prior to implementation of a computer-facilitated 5As intervention. *BMC Medical Informatics and Decision Making*, 16:44-57.

⁹⁶ Satre DD, Ly K, Wamsley M, Curtis A, Satterfield J. (2017). A Digital Tool to Promote Alcohol and Drug Use Screening, Brief Intervention, and Referral to Treatment Skill Translation: A Mobile App Development and Randomized Controlled Trial Protocol. *JMIR Res Protoc*. 6(4):e55. PMID: 28420604.

⁹⁷ Kalkhoran S, Glantz SA. E-cigarettes and smoking cessation in real-world and clinical settings: a systematic review and meta-analysis. *Lancet Respir Med*. 2016 Feb;4(2):116-28. doi: 10.1016/S2213-2600(15)00521-4. Epub 2016 Jan 14. Lee S, Grana RA, Glantz SA. Electronic cigarette use among Korean adolescents: a cross-sectional study of market penetration, dual use, and relationship to quit attempts and former smoking. *J Adolesc Health*. 2014 Jun;54(6):684-90. doi: 10.1016/j.jadohealth.2013.11.003. Epub 2013 Nov 22. Glantz SA, Bareham D. E-cigarettes: Use, Effects on Smoking, Risks, and Policy Implications. *Ann Rev Pub Health* 2018 (in press).

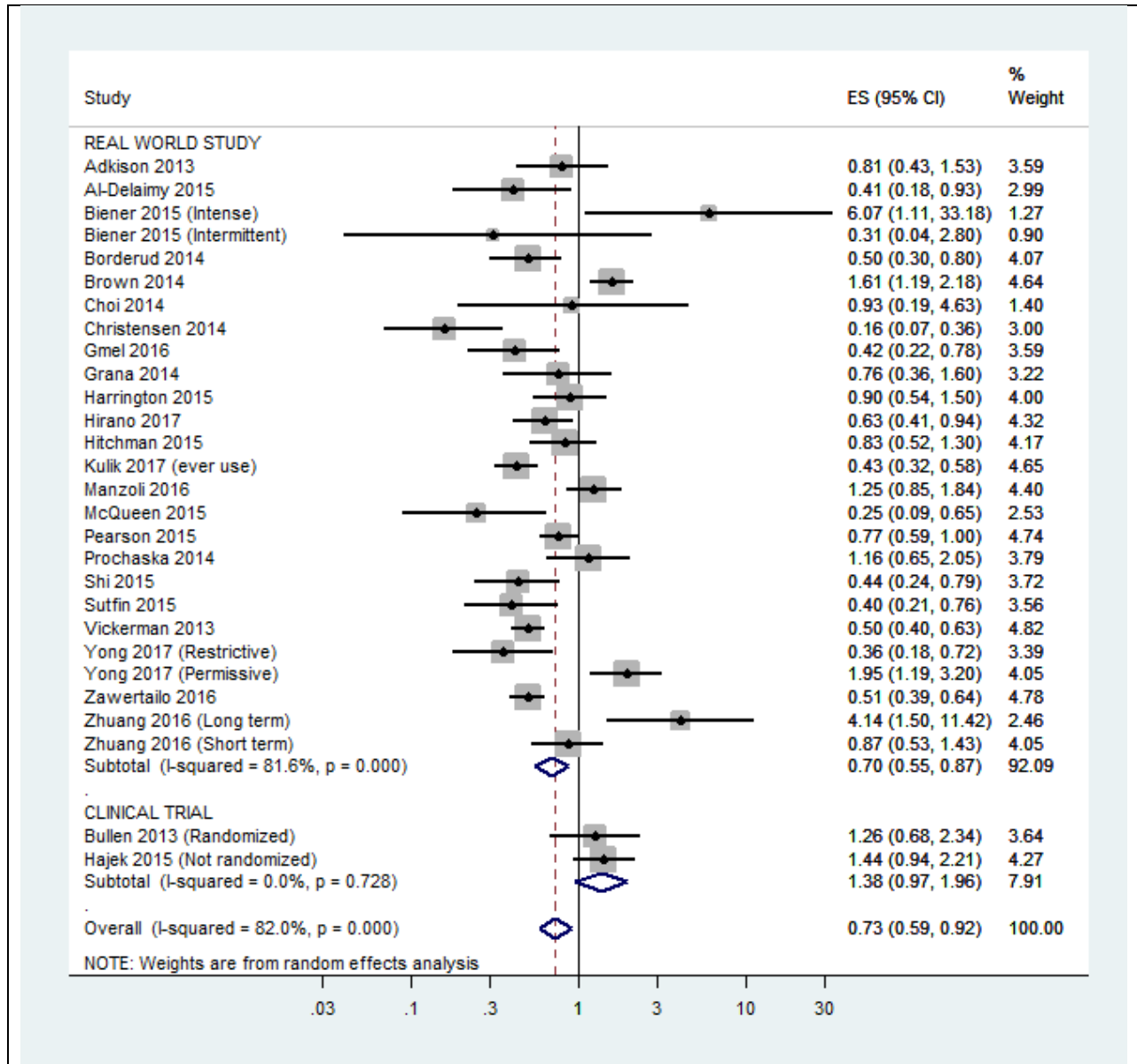


Figure 1. Meta-analysis of relationship between e-cigarette use and smoking cessation. While a few studies show increased cessation (generally in heavy users of high delivery systems), the overall effect in the population is reduced cessation.⁹⁸

CDC should also continue to warn the public about the dangers of dual use of e-cigarettes and cigarettes – the most common pattern of e-cigarette use -- as it has started to do in its TIPS campaign, since there is emerging evidence that dual use is worse than smoking alone.⁹⁹

⁹⁸ Glantz SA, Bareham D. E-cigarettes: Use, Effects on Smoking, Risks, and Policy Implications. Ann Rev Pub Health 2018 (in press).

(7) HOW CAN THE PUBLIC HEALTH SECTOR MOST EFFECTIVELY MAXIMIZE THE IMPACT OF PUBLIC AND PRIVATE INSURANCE COVERAGE OF CESSATION TREATMENTS AS PART OF EFFORTS TO ENSURE THAT ALL TOBACCO USERS HAVE BARRIER-FREE ACCESS TO THESE TREATMENTS?

The CDC should strongly advocate patient-centered insurance coverage of cessation treatments and encourage healthcare systems to include provision of smoking cessation as part of their mandatory risk management efforts.

The 2017 Cochrane Review¹⁰⁰ assessed the impacts of healthcare financing interventions on promoting smoking cessation and concluded that ***patient-centered financial intervention that provides full insurance coverage was effective in increasing smoking abstinence post 6-month, as well as in increasing quit attempts and utilization of evidence-based smoking cessation treatment.*** On the other hand, provider or system focused financial interventions (such as financial incentives for performance or direct payment to providers) did not increase any of the primary or secondary smoking cessation outcomes. Provider-focused interventions increased referral/utilization of behavioral counseling but not other outcomes.

CDC should encourage hospitals and healthcare systems to integrate mandated smoking cessation efforts as part of their risk management plans.¹⁰¹ The important factors in evaluating the role of clinical practice guidelines in medical malpractice litigation have been discussed, but have focused on broad policy implications rather than on a concrete example of how an actual guideline might be evaluated. ***There are four items that need to be considered in negligence torts: legal duty, a breach of that duty, causal relationship between breach and injury, and damages.*** The Clinical Practice Guidelines for Treating Tobacco Use and Dependence,¹⁰² recommends effective and inexpensive treatments for nicotine addiction, the largest preventable cause of death in the US, and can be used as an example to focus on important considerations about the appropriateness of practice guidelines in the judicial system. ***Furthermore, the failure of many doctors and hospitals to deal with tobacco use and dependence raises the question of whether this failure could be considered malpractice,*** given the Public Health Service guideline's straightforward recommendations, their efficacy in preventing serious disease and cost-effectiveness. Although each case of medical malpractice depends on a multitude of

⁹⁹ Yao T, Max W, Sung HY, Glantz SA, Goldberg RL, Wang JB, Wang Y, Lightwood J, Cataldo J. Relationship between spending on electronic cigarettes, 30-day use, and disease symptoms among current adult cigarette smokers in the U.S. PLoS One. 2017 Nov 7;12(11):e0187399. doi: 10.1371/journal.pone.0187399. eCollection 2017.

¹⁰⁰ van den Brand FA, Nagelhout GE, Reda AA, Winkens B, Evers SMAA, Kotz D, van Schayck OCP. Healthcare financing systems for increasing the use of tobacco dependence treatment. Cochrane Database of Systematic Reviews 2017, Issue 9. Art. No.: CD004305. DOI: 10.1002/14651858.CD004305.pub5.

¹⁰¹ Torrijos RM1, Glantz SA. The US Public Health Service "treating tobacco use and dependence clinical practice guidelines" as a legal standard of care. Tob Control. 2006 Dec;15(6):447-51.

¹⁰² US Public Health Service. Treating tobacco use and dependence: 2008 update. Clinical practice guideline. Rockville, MD: US Department of Health and Human Services, US Public Health Service; 2008. https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/update/treating_tobacco_use08.pdf

factors unique to individual cases, a court could have sufficient basis to find that the failure to adequately treat the main cause of preventable disease and death in the US qualifies as a violation of the legal duty that doctors and hospitals owe to patients habituated to tobacco use and dependence.

The CDC should encourage healthcare systems to take note of this risk and include provision of smoking cessation as part of their mandatory risk management efforts.

We applaud CDC's efforts in planning and investing efforts to ensure all tobacco users have ready access to evidence-based treatment options. CDC should strongly encourage healthcare systems to include provision of smoking cessation as part of their mandatory risk management efforts and advocate insurance coverage for cessation treatment. Importantly, provision of NRT alone without counseling support should be discouraged. While working to promote better provision of cessation support as described above, it is important to keep in mind that most people still quit on their own; the CDC should continue to promote and support all quit attempts across all healthcare, institutional, social service, and community settings. CDC should also continue to warn the public about the dangers of e-cigarettes, specifically in deterring quit attempts. Social media interventions, clinician-extender or point-of-care technology tools, interactive voice response systems and patient-centered insurance coverage for cessation are evidence-based strategies to connect tobacco users to cessation treatment to support both initiation of quit attempts and maintaining long-term abstinence that CDC should promote.