

# E-Cigarette Use Among Youth and Young Adults

A Report of the Surgeon General



U.S. Department of Health and Human Services

## The Call to Action on E-Cigarette Use Among Youth and Young Adults

The Surgeon General issues this Call to Action on e-cigarettes, specifically focusing on youth and young adults, to accelerate policies and programs that can reduce e-cigarette use among young people. This Call to Action comes amid the dramatic increase in e-cigarette use among our nation's youth and young adults. It highlights the need to implement proven strategies that will prevent potentially harmful effects of e-cigarette use among young people. The previous chapters explained what we know and do not know about e-cigarettes and reviewed policy options. Gaps in scientific evidence still exist, and this Call to Action is being issued while these products and their patterns of use are changing quickly. However, policies and strategies are available that can clearly reduce the public health threat posed by e-cigarette use among young people.

Use of e-cigarettes is increasing rapidly among young people, even among those who have never smoked cigarettes.

This Call to Action presents six goals and related strategies that should guide efforts to reduce e-cigarette use among youth and young adults. To achieve these goals, we must work together, which means working with individuals and families; civic and community leaders; public health and health care professionals; e-cigarette manufacturers and retailers; voluntary health agencies; researchers; and other stakeholders.

### Stakeholders Who Can Take Action

- Individuals, parents, and families
- Teachers, coaches, and other youth influencers
- Civic and community leaders
- Public health and health care professionals
- Researchers
- Federal government
- State, local, tribal, and territorial governments
- E-cigarette manufacturers, distributors, and retailers
- Voluntary health agencies, non-governmental organizations, and other community- and faith-based organizations

### Goal 1. First, Do No Harm

Since 1964, reports from the U.S. Surgeon General have led the way in identifying the harms of tobacco use and detailing the most effective ways to reduce the dangerous effects of tobacco use. For example, reports from 1994 and 2012 outlined proven strategies to prevent and reduce tobacco use among youth and young adults (U.S. Department of Health and Human Services [USDHHS] 1994, 2012). Building on these and other past reports, this Call to Action considers the harms of e-cigarette use among youth and young adults and stresses the importance of strategies that will protect young people from the adverse consequences of these new products.



## Strategy 1A.

**Implement a comprehensive strategy to address e-cigarettes that will avoid adverse consequences and give careful consideration to the risks for youth and young adults. This can be done by including e-cigarettes in policies and programs related to conventional cigarette smoking at the national, state, local, tribal, and territorial levels.**

We have many effective strategies to prevent tobacco use among youth and young adults (USDHHS 2012), and many of these strategies can also be applied to e-cigarettes. A strategy to address e-cigarette use among young people should be precautionary. A precautionary approach urges action to prevent harm when there is scientific uncertainty. That is, when there is inadequate or early knowledge, public health decisions should be made on the basis of precaution to prevent harm, rather than on certain risk. This approach requires proof that a product is not harmful—especially for youth—rather than proof that it is harmful. The burden of proof regarding product safety should be placed on those who wish to market and sell such tobacco products, rather than the public health community charged with protecting the public's health. The harms of nicotine exposure in youth and young adults are well-documented in this report and warrant this Call to Action (see Chapter 3). We must protect the health of our nation's young people by assuring that there will be no harm to youth from e-cigarettes. The stakeholders identified on the previous page should work together to prevent and reduce the use of all forms of tobacco products, including e-cigarettes, among our nation's youth and young adults. A comprehensive strategy includes:

- Implementing the U.S. Food and Drug Administration's (FDA's) authority to regulate tobacco products in order to provide oversight of the manufacturing, distribution, and marketing of e-cigarettes, particularly as they relate to youth and young adults;
- Funding comprehensive statewide tobacco control programs at levels recommended by the Centers for Disease Control and Prevention (CDC);
- Implementing comprehensive clean indoor air policies that protect people from exposure to second-hand tobacco smoke and the aerosol emitted from e-cigarettes;
- Raising and strongly enforcing minimum age-of-sale laws for all tobacco products, including e-cigarettes, to prevent initiation at young ages;

**Use of e-cigarettes can expose young people to nicotine. Nicotine can be highly addictive and can harm brain development. Nicotine use may also lead to the use of other tobacco or nicotine-containing products.**

- Setting price policies for e-cigarettes, which could include taxation policies;
- Restricting advertising and marketing that encourages youth and young adults to use e-cigarettes;
- Sponsoring high-impact media campaigns to educate the public using evidence-based information about the consequences of e-cigarette use among youth and young adults, including the harms of nicotine on the developing brain; and
- Expanding tobacco control and prevention research efforts to increase our understanding of the evolving landscape of e-cigarettes.

These components make up an evidence-based strategy. However, the e-cigarette marketplace is diverse and continues to evolve. Thus, ongoing efforts should rapidly and effectively track and adapt to such changes, thereby protecting our nation's young people from the consequences of e-cigarette use and exposure to second-hand aerosol.



**Strategy 1B.**

Provide consistent and evidence-based messages about the health risks of e-cigarette use and exposure to secondhand aerosol from e-cigarettes.

Research on e-cigarettes is ongoing, and the e-cigarette marketplace continues to evolve. Even so, a sufficient body of evidence justifies actions taken now to prevent and reduce the use of e-cigarettes and exposure to secondhand aerosol from e-cigarettes, particularly among youth and young adults. Most important, many health risks are already known, and sufficient information exists to take action to minimize potential harms. The evidence is most compelling for nicotine. As part of comprehensive reviews, previous Surgeon General's reports have provided causal findings on the development of addiction and other health consequences of exposure to nicotine (USDHHS

1988, 2014). Beyond addiction, intake of nicotine by young people can harm brain development (Chapter 3).

Additionally, aerosol from e-cigarettes contains toxins that can harm the body, and the flavorings used in these products cannot be considered safe for inhalation, either firsthand or secondhand (Chapter 3). For example, some flavorings have been known to be associated with pulmonary toxicity (Allen et al. 2016).

Messaging about the potential role of e-cigarettes in reducing the burden of tobacco-related diseases should note that e-cigarette products that deliver nicotine are not considered safe, particularly for youth and young adults, even before researchers fully characterize and quantify all of their health risks, including possible permanent changes to the adolescent brain and lungs.

The use of any tobacco product, including e-cigarettes, among young people is unsafe.

## Goal 2. Provide Information About the Dangers of E-Cigarette Use Among Youth and Young Adults

Once youth and young adults start using products that contain nicotine, including e-cigarettes, they can become addicted. Such addiction has the potential to lead to long-term use of products that contain nicotine, such as cigarettes. Most adolescents who use tobacco already use more than one nicotine-containing product and are not just using e-cigarettes alone (Chapter 2). The majority of tobacco users start before they are 18 years of age, and almost no one starts after age 25 (USDHHS 2012). Therefore, the best way to protect young people from the harms of tobacco use, including e-cigarettes, is to prevent the use of these products altogether. Prevention should start with robust public policies that make it easy for youth not to use tobacco and harder for them to use any tobacco products. Parents, teachers, health professionals, and other influencers of youth should be educated about the risks of e-cigarette use. They can then help educate their own children as well as other young people about the harms of e-cigarettes and the risk of a potential lifetime of nicotine addiction.

Use of e-cigarettes and exposure to nicotine is particularly dangerous for pregnant women. Nicotine is toxic to the fetus and impairs fetal brain and lung development.

**Strategy 2A.**

Educate parents, teachers, coaches, and other influencers of youth about the risks of e-cigarette use among youth and young adults.

Parents, guardians, teachers, coaches, health professionals, faith leaders, and other persons whose advice and behavior influence youth play critical roles in protecting youth and young adults from the harms of e-cigarette use and exposure to the secondhand aerosol emitted from these devices. Most adults are familiar with some of the dangers of using tobacco products, especially conventional cigarettes, and of exposure to secondhand tobacco smoke. Because of these dangers, many adults have taken steps to keep children safe. However, most adults are not aware of the potential risks of using e-cigarettes and exposure to secondhand aerosol, and e-cigarette marketing often promotes these products as safe alternatives to smoking conventional cigarettes. But messaging about the dangers is essential. For example, the use of these products can lead to nicotine addiction, harm brain development, and lead to continued tobacco use.



Parents, teachers, coaches, and others can protect their children and other young people by educating them about e-cigarettes:

- Talk openly about the harms of nicotine and tobacco use.
- Express ~~only~~ the idea that young people should not use any tobacco products, including e-cigarettes.
- Do not let any individuals use e-cigarettes or other tobacco products around children.
- Ask health care providers, adults, and parents to discuss with children the health risks of using e-cigarettes, such as nicotine addiction.
- Patronize restaurants and other places that do not allow the use of e-cigarettes indoors, and let business owners that allow e-cigarette use indoors know that it is not as safe as clean air or even legal in many places.
- Make sure children's day care centers, schools, and universities are completely tobacco-free, including being free of e-cigarettes. A comprehensive tobacco-free campus policy prohibits any tobacco use, including e-cigarettes, on school property by anyone at any time. These policies should be expanded to include school events that are held off campus.
- Prohibit tobacco and e-cigarette company sponsorship of teams or events, promotional activities, and offers of educational materials for preventing tobacco use among youth.

• Make homes and cars completely tobacco-free, including the use of e-cigarettes. This means no use by family members, friends, or guests. Opening a window does not fully protect against exposure to secondhand cigarette smoke or from the secondhand aerosol from e-cigarettes. For youth and young adults to be fully protected from indoor exposure, all indoor environments must be 100% free from tobacco smoke and e-cigarette aerosol.

- Set an example by being tobacco-free.
- Provide positive support and encouragement to anyone who is trying to quit tobacco.

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E-cigarettes are now the most common form of tobacco used by young people. High school students use e-cigarettes more than adults.

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Research suggests that youth and young adults are not as aware of the health consequences of e-cigarette use as they are with the consequences of cigarette smoking (Chapter 2) (Pearson et al. 2012; Richardson et al. 2014; Tan and Bigman 2014). FDA has the authority to require health warnings on tobacco products and tobacco advertising. In addition, FDA and other federal entities, along with state and local organizations, can carry out educational campaigns to better inform the public, especially parents, and increase their understanding of the harms of e-cigarette use.



**Strategy 2B.****Educate health professionals about the risks of e-cigarette use among youth and young adults.**

The health care setting is an ideal place to educate people of all ages on the potential risks of e-cigarette use and exposure to secondhand aerosol from e-cigarettes. Because e-cigarettes are a relatively new product, health care professionals frequently face a lot of questions about them. These often include questions related to the risks of using e-cigarettes and whether these products can help people to quit smoking. No e-cigarettes have been approved as safe and effective cessation aids.

For youth, in particular, sufficient evidence shows that the use of nicotine is not safe regardless of the delivery device: combustible, non-combustible, or electronic (USDHHS 2014; see also Chapter 3). Thus, health

care professionals should warn youth and youth influencers, such as parents, about the health risks of using any product that contains nicotine, including e-cigarettes. They should also warn youth about the dangers of using other substances, such as marijuana, in e-cigarette devices (American Academy of Pediatrics 2015).



### Goal 3. Continue to Regulate E-Cigarettes at the Federal Level to Protect Public Health

In 2009, the Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act) provided FDA with authority to regulate tobacco products in a manner that is “appropriate for the protection of public health” (e.g., §§ 906(d)(1), 907(a)(3)(A) & (a)(4)(A), and § 910(c)(2)(A) of the Federal Food, Drug, and Cosmetic Act, as amended by the Tobacco Control Act) (Family Smoking Prevention and Tobacco Control Act 2009, p. 1786). The Tobacco Control Act also requires FDA to consider in regulatory actions the health effects at the individual and population levels, including the impacts on the initiation of measures taken to quit tobacco use as well as effects on relapse among former tobacco users. But FDA is not the only federal agency that can address certain aspects of e-cigarettes (see Chapter 5, Table 5.1).

**Strategy 3A.****Implement FDA regulatory authority over the manufacturing, marketing, and distribution of e-cigarettes.**

A federal appellate court decision titled Sottera, Inc. v. Food & Drug Administration (2010) determined that FDA can regulate e-cigarettes and other products made or derived from tobacco under the Tobacco Control Act, and that these products are not drugs or devices under the Food, Drug, and Cosmetic Act unless marketed as therapeutic or smoking cessation products. In May 2016, FDA finalized a rule deeming most products meeting the definition of a tobacco product, including e-cigarettes, subject to regulation under the Tobacco Control Act. The regulation went into effect on August 8, 2016 (but is under litigation) (FDA 2016).

FDA's rule for e-cigarettes includes several provisions that can help protect youth and young adults from the harms of e-cigarettes, such as the following:

- Prohibiting the sale of e-cigarettes to youth who are under 18 years of age (both in person and online);
- Requiring proof of age at the point of purchase;

- Prohibiting vending machine sales in all facilities where children are allowed to enter;
- Prohibiting the distribution of free samples;
- Requiring health warnings about nicotine on packaging and in advertisements;
- Requiring manufacturers to register their e-cigarette products with FDA and disclose the ingredients and levels of harmful and potentially harmful constituents in those products to that agency;
- Requiring premarket review of new or changed tobacco products and authorization by FDA before they can be introduced into the marketplace; and
- Requiring manufacturers that intend to market e-cigarettes for use to reduce harm or risk of tobacco-related disease to receive authorization from FDA based on scientific evidence that the product is less harmful or presents less risk to the public.

This authority allows FDA to undertake future regulatory actions, if determined appropriate for the protection of public health, including:

- Within constitutional limitations, restricting promotion, marketing, and advertising of e-cigarettes;
- Restricting Internet sales and requiring age verification on websites and upon delivery;
- Prohibiting characterizing flavors;
- Promulgating product standards to reduce the toxicity, addictiveness, or appeal of tobacco products;



- Regulating packaging, including requiring minimum package sizes, mandating child-resistant packaging, and requiring health warnings; and
- Prohibiting self-service displays.

Despite gaining this broad authority, FDA does not have specific authority for certain regulatory actions. For example, FDA generally does not restrict tobacco use in public places, levy taxes on tobacco products, or restrict sales to only certain types of retailers (e.g., pharmacies); and FDA cannot completely eliminate nicotine in tobacco products, require prescriptions for tobacco products, or raise the minimum age for sale of tobacco products above 18.

Other complementary comprehensive tobacco control strategies at the state, local, tribal, and territorial levels include:

- Implementing comprehensive clean indoor air laws;
- Prohibiting sales to those under 21 years of age;
- Increasing prices of tobacco products; and
- Developing high-impact countermarketing campaigns.

Effective action at the state and local levels is critical to fully protecting young people from the harms of e-cigarettes.



**Strategy 3B.**

Reinforce other federal agencies as they implement programs and policies to address e-cigarettes.

Of the other federal agencies that play a role in implementing strategies to address e-cigarettes (see Chapter 5, Table 5.2), some target specific populations (e.g., the U.S. Department of Defense and the U.S. Department of Veterans Affairs); others cover specific areas (e.g., the

General Services Administration, National Park Service); and some focus on certain aspects of e-cigarettes (e.g., the Federal Trade Commission, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency). Specific strategies to address e-cigarettes could include those that protect employees, customers, and visitors from exposure to secondhand aerosol, support and encourage tobacco cessation, and curb youth-targeted or false advertising. For example, the National Park Service (2015) implemented a policy to protect employees and visitors from exposure to secondhand aerosol from e-cigarettes.

## Goal 4. Programs and Policies to Prevent E-Cigarette Use Among Youth and Young Adults

Subject to certain exceptions, the Tobacco Control Act does not limit the authority of state, local, tribal, and territorial governments to enact any tobacco-related policies related to the sale, distribution, or possession of tobacco products; exposure to these products; or access to them. This broad preservation of authority enables states and localities to adopt many comprehensive tobacco control strategies that have been proven to prevent and reduce tobacco use among youth and young adults. That means that state, local, tribal, and territorial governments could act first in developing regulations, policies, and programs that minimize any individual- and population-level harms of e-cigarettes. The strongest, most innovative tobacco control policies typically have originated at the local level before eventually being adopted at the state level. However, it is important that these strategies are developed with evaluators and epidemiologists that can collect robust data to inform the implementation and sustainment of such strategies.

**Strategy 4A.**

State, local, tribal, and territorial governments should implement population-level strategies to reduce e-cigarette use among youth and young adults, such as including e-cigarettes in smokefree indoor air policies, restricting youth access to e-cigarettes in retail settings, licensing retailers, and establishing specific package requirements.

Over 50 years of research offers a strong body of evidence on the effectiveness of certain tobacco prevention and control measures. Much of this evidence can also



be applied to e-cigarettes. And from this evidence, state, local, tribal, and territorial entities can take a variety of actions to address e-cigarettes, such as:

- Including e-cigarettes in smokefree indoor air policies;
- Restricting youth access to e-cigarettes in retail settings;
- Licensing retailers; and
- Establishing specific package requirements.

### Including E-Cigarettes in Smokefree Indoor Air Policies

Most smokefree indoor air policies were put in place before the great rise in e-cigarette use. Because of that, these policies may not cover e-cigarettes or exposure to

the aerosol they produce. Aerosol from e-cigarettes is not harmless (CDC 2014). Smokefree indoor air policies should be updated to prohibit the use of both conventional cigarettes and e-cigarettes, thereby preserving standards for clean indoor air. Efforts to include e-cigarettes in smokefree laws should also uphold or strengthen, not weaken, existing protections against exposure to secondhand smoke.

Including e-cigarettes in smokefree indoor air policies can:

- Eliminate health risks from exposure to secondhand aerosol from e-cigarettes;
- Discourage people from using both combustible and electronic tobacco products (dual use);
- Simplify compliance with and enforcement of existing smokefree laws;
- Help to reduce the use of e-cigarettes among youth and young adults; and
- Maintain tobacco-free norms.

#### Aerosol from e-cigarettes is not harmless.

To date, several states and several hundred communities include e-cigarettes in comprehensive smokefree laws that prohibit smoking in all indoor areas of public places, including worksites, restaurants, bars, and gambling facilities (Americans for Nonsmokers' Rights Foundation 2015; CDC n.d.).



## Restricting Youth Access to E-Cigarettes

When laws prohibiting tobacco sales to youth are strong and actively enforced with the education of retailers, they successfully reduce tobacco use among youth (Task Force on Community Preventive Services 2001; Zaza et al. 2005). To date, all 50 states and the District of Columbia restrict the sale of tobacco products to minors (CDC n.d.). Extending such laws to include e-cigarettes can further protect youth from exposure to nicotine, which nearly all states have done. Specific strategies can be implemented to deter the access of youth to e-cigarettes and their use in this population:

- Restricting the sale of e-cigarettes to minors;
- Placing restrictions on Internet sales of all tobacco products and e-cigarettes, including requirements for verifying age and providing identification at the time of purchase and upon delivery;
- Requiring age verification at the point of purchase;
- Displaying clear signage in retail locations about required age for sale;
- Prohibiting the sale of e-cigarettes from vending machines;
- Eliminating self-service displays of e-cigarettes; and
- Enforcing laws on the retail sale of e-cigarettes to minors.

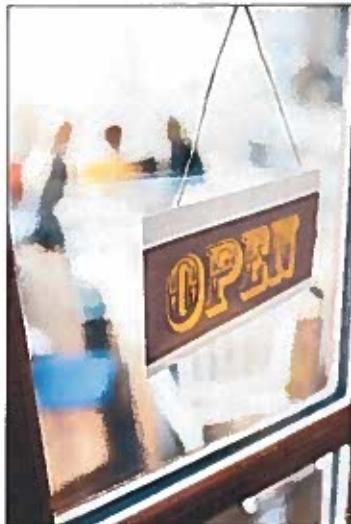
Nearly all states prohibit the sale of e-cigarettes to youth under 18 years of age. Some states have a higher minimum age for purchase (e.g., 19 or 21 years of age) (CDC 2014). Some e-cigarette manufacturers have supported state legislation to prevent minors from purchasing e-cigarettes (Healy 2014). Their actions may, to some extent, be responsible for why these age-of-sale laws have been adopted more quickly than laws that prohibit e-cigarette use in public indoor spaces. However, industry-supported, youth-access bills have contained provisions that undermine prevention efforts for youth, including preemption of stricter local policies and weak requirements for enforcement (USDHHS 2012). Additionally, laws prohibiting sales to minors are likely

to have limited effectiveness as a prevention strategy if they are not aggressively enforced and are not coupled with proven interventions, such as comprehensive smoke-free laws, pricing strategies, or public health campaigns (USDHHS 2012, 2014). Ensuring that e-cigarettes are regulated at the state and local levels can facilitate the application of additional tobacco control policies regarding e-cigarettes.

Many actions can help to protect young people from the harms of e-cigarettes, such as including e-cigarettes in smokefree indoor air policies, restricting youth access to e-cigarettes in retail settings, licensing retailers, and setting specific package requirements.

## Licensing Retailers

Licensing is another strategy to control access to e-cigarettes among youth and young adults. A tobacco-related license can authorize a business to manufacture, distribute, or sell tobacco products (McLaughlin 2010). Licensing requirements help to prevent sales to minors, prevent evasion of tobacco excise taxes, ensure that licensees comply with tobacco-related laws, and promote safe manufacturing practices (ChangeLab Solutions 2012). Businesses that repeatedly violate these laws can have their right to engage in commercial activity suspended or their licenses permanently removed. The possibility of these outcomes provides a strong incentive to comply with license requirements. Licensing may also be used to restrict the sale of flavored products or to address consumer and worker safety issues involved with the mixing of liquids for e-cigarette products (e-liquids).



## Establishing Specific Packaging Requirements

Federal, state, local, tribal, and territorial governments are actively considering the potential harms of e-liquids. Exposure to these liquids may lead to nicotine and other types of poisoning. Calls to poison control centers about e-cigarettes and e-liquids have been on the rise, and about half of these calls are for incidents involving young children (American Association of Poison Control Centers 2015). The most common adverse health effects of poisoning are vomiting, nausea, and eye irritation, but some deaths have occurred as well. Developing strategies to monitor and prevent future poisonings is critical.

Calls to poison control centers about e-cigarettes are on the rise. A large portion of these calls are for incidents involving young children.

Enacting laws that require e-liquids to be labeled and sold in childproof packaging is one way to reduce the incidence of poisonings, particularly among children. To date, in addition to the federal Child Nicotine Poisoning Prevention Act of 2015 (2016) enacted in January 2016, more than a dozen states have enacted laws requiring childproof packaging for e-liquids (Tobacco Control Legal Consortium n.d.). Health care providers, the public health community, e-cigarette manufacturers and retailers, and the public should be aware that e-liquids pose a serious public health concern, particularly among young children.

### Strategy 4B.

Coordinate, evaluate, and share best practices from state and local entities that have implemented programs and policies to address e-cigarette use among youth and young adults.

Many governments at the national, state, local, tribal, and territorial levels are involved in the regulation of e-cigarettes. To have the biggest impact on reducing the use and exposure of e-cigarettes among youth and young adults, it is integral for these governments to share best practices and coordinate and evaluate efforts as part of a comprehensive tobacco prevention and control strategy. FDA has asserted regulatory authority over e-cigarettes, and other agencies and governments, as discussed previously and in Chapter 5, also have relevant authorities.

## Goal 5. Curb Advertising and Marketing that Encourages Youth and Young Adults to Use E-Cigarettes

Unconstrained marketing of e-cigarettes drives consumer demand for these products. E-cigarette manufacturers are using tactics similar to those used to market conventional cigarettes to youth, including offering candy-flavored products; employing youth-minded themes, such as rebellion, glamour, and sex; getting celebrity endorsements; and obtaining sports and music sponsorships (Chapter 4). Some groups have called for extending to e-cigarettes the same marketing restrictions that already apply to conventional cigarettes and other tobacco products (Association of State and Territorial Health Officials 2014; Partnership for Prevention 2014). But regulating commercial speech is typically met with significant barriers and complex legal issues (Laird-Metke 2010), and partial advertising bans and voluntary agreements generally have not been fully effective at reducing consumption because the tobacco industry adapts by shifting to other types of advertising that are not regulated (National Cancer Institute 2008). Despite these obstacles, public health organizations and state and local governments must take action to control the marketing of e-cigarettes to youth and young adults, including (a) seeking legally feasible interventions that are proven to curb youth-oriented tobacco marketing, including removing advertising from television; and (b) continuing to help build an evidence base that informs future potential restrictions on e-cigarette marketing.

### Strategy 5A.

Curb e-cigarette advertising and marketing that are likely to attract youth and young adults.

In the absence or delayed implementation of government restrictions on the marketing of e-cigarettes, media outlets, the management staff of special event and sports venues, and retailers can voluntarily refuse to air or place youth- and young adult-oriented e-cigarette advertising; avoid sponsorships; and not offer free samples of these products at fairs, festivals, and other events.

E-cigarettes are aggressively marketed using tactics similar to those proven to lead to cigarette smoking among youth.

Finally, state and local public health agencies can stimulate enforcement of and compliance with existing

rules that limit marketing. For example, they can monitor advertising and notify their state's attorney general or the Federal Trade Commission about improper claims or marketing that is not clearly identified as advertising (Federal Register 1972; FTC 1984; Center for Public Health and Tobacco Policy 2013).

### Strategy 5B.

Urge the e-cigarette companies to stop advertising and marketing that encourages and glamorizes e-cigarette use among youth and young adults.

E-cigarette advertising has increased considerably over the years in multiple venues (Legacy for Health 2014; Ganz et al. 2015; see also Chapter 4), while the advertising for conventional cigarettes on television has been prohibited in the United States since 1971. But e-cigarettes are now marketed on television and other mainstream media channels, such as radio and magazines, which are main sources of information for youth and young adults. Emerging research suggests that exposure to television advertisements for e-cigarettes increases the likelihood that young people will use e-cigarettes in the future and will believe that e-cigarettes can be used in places where conventional cigarette smoking is not allowed (Farrelly et al. 2015). This is not surprising because e-cigarette marketing has previously included unproven claims about safety and smoking cessation, as well as statements that e-cigarettes are exempt from clean air policies that restrict smoking (USDHHS 2014). Visual depictions of e-cigarette use in advertisements may also serve as smoking cues to both current and former smokers, increasing their urges to smoke and undermining their efforts to quit (Maloney and Cappella 2015). Advertising for e-cigarettes that encourages and glamorizes the use of e-cigarettes among youth and young adults can harm public health by undermining:

- Clean indoor air standards;
- Enforcement of smokefree policies;
- Tobacco-free social norms; and
- Marketing restrictions that prohibit the advertising of cigarettes and smokeless tobacco on television and radio.

Discontinuing advertising and marketing by e-cigarette companies that intentionally or unintentionally encourages or glamorizes e-cigarette use among youth and young adults is essential. Responsible advertising by the e-cigarette companies is needed, including advertising that focuses directly on established adult smokers

and features adults (not young adults), does not depict active use of e-cigarettes, does not use themes proven to appeal to youth and young adults, avoids media channels with high youth access, and does not undermine cessation efforts involving traditional tobacco products.

## Goal 6. Expand Surveillance, Research, and Evaluation Related to E-Cigarettes

Tobacco control research focused on e-cigarettes has grown considerably in the past few years. Certainly, more detailed information is needed to better understand the use of e-cigarettes and its relationship to the use of other types of tobacco products. A comprehensive and evolving approach to research, surveillance, and evaluation is needed.

### Strategy 6A.

Improve the quality, timeliness, and scope of e-cigarette surveillance, research, and evaluation.

Present surveillance systems show that e-cigarette use is increasing rapidly and that most regular e-cigarette users also use conventional tobacco products (see Chapter 2). Thus, further study can inform strategies that minimize harms and maximize the potential health benefits of these products at the individual and population levels. Data should be timely and focus on the patterns of e-cigarette initiation and use among the general public—including youth, young adults, and former smokers. Strategic and comprehensive research and evaluation must further characterize the health risks of e-cigarette use. A comprehensive package of surveillance, research, and evaluation should:

- Track patterns of e-cigarette use through cross-sectional surveys and through panels that follow the same people, including youth and young adults, over time;
- Monitor trends in the e-cigarette retail market by type of product;
- Examine the channels and messaging in the e-cigarette marketplace to inform proactive countermarketing strategies;



- Assess the short- and medium-term health effects of e-cigarette use by youth and young adults and track long-term consequences;
- Examine the risk factors and other risk behaviors that may be associated with using e-cigarettes; and
- Create a model to develop and track the public health impact of e-cigarettes.

The rapidly changing nature of the e-cigarette landscape calls for a comprehensive and evolving approach to research, surveillance, and evaluation.

For such a package, researchers, the public health community, and other key stakeholders must work together to address and overcome many challenges:

- The rapidly changing e-cigarette landscape and terminology;
- Limited resources for collecting timely information;

- The cross-sectional nature of existing surveys and their limited space for questions;
- The different populations that need to be studied;
- A lack of validated questions; and
- Different measures and definitions across surveys.

### Strategy 6B.

Address surveillance, research, and evaluation gaps related to e-cigarettes.

Patterns of e-cigarette use are rapidly changing among youth and young adults, as well as among other groups in the population. Longitudinal data are not yet available to address some of the most critical issues related to e-cigarettes. The e-cigarette marketplace is changing so fast that surveillance data and research on the harms of e-cigarette use and the impact of these changes on traditional tobacco products are lagging behind. As they look to fill in gaps in scientific research, it is important for researchers to continue to seek more current and complete answers to many critical questions, such as:

- What are the risks of progressing to traditional tobacco use among youth and young adults who have used e-cigarettes?
- What are the health risks posed by e-cigarettes?
- Are e-cigarettes safer and more effective than current products at helping smokers with smoking cessation?
- What are the health consequences for youth and young adults of initiation of e-cigarettes and of dual use (conventional cigarettes plus e-cigarettes) compared with the health benefits of completely quitting smoking (or not starting at all)?
- What are the health risks to former smokers who are exposed to nicotine from e-cigarette use? Will these persons be more likely to resume smoking?

Additionally, surveillance of e-cigarette marketing and the advertising messages and strategies used is critical, as is the carrying out of more studies assessing the link between exposure to e-cigarette marketing and use of these products. With traditional tobacco products, state and local public health agencies have monitored

retail settings, assessed outdoor advertising, and identified sponsorships of events by tobacco companies. These efforts should be adapted to e-cigarettes.

The health care setting has always been an important venue for exchanging information about evidence-based approaches to smoking cessation and for protecting susceptible groups from exposure to secondhand smoke. More research is needed on the role of e-cigarettes in facilitating or hindering cessation of conventional cigarettes and the potential hazards of exposure to secondhand aerosol from e-cigarettes so that e-cigarettes can also be a part of this exchange. But even without this research, there is sufficient evidence about the dangers that nicotine-containing cigarettes pose for youth and young adults that health care providers and professionals can act now to prevent the use of such products among their young patients.

Finally, existing research and surveillance efforts should include more detailed measures than just general use of e-cigarettes, including:

- Frequency and patterns of e-cigarette use;
- Type of e-cigarette and/or other tobacco product used;
- The natural history of e-cigarette use, including initiation, co-use with other tobacco products, and flavoring;
- Ingredients, such as nicotine and flavors;
- Brand;
- Reasons for using and quitting e-cigarettes;
- Exposure to e-cigarette advertising;
- Methods of obtaining e-cigarettes; and
- Exposure to secondhand aerosol from e-cigarettes.

Additionally, evaluation is critical to further assess the impact of policies on e-cigarette initiation, use, and other patterns of tobacco use.

## Conclusions

E-cigarette use, particularly among youth and young adults, has become a public health concern that warrants immediate and coordinated action. The increase in e-cigarette use among youth and young adults in the past few years is cause for great concern. Many questions remain about e-cigarettes and their long-term impact, even as evidence on patterns of use and risks to health continue to emerge. But we know enough about these health risks to take action now to protect the health of our nation's young people. We cannot wait. Strategies to prevent and control the harms of e-cigarettes among youth and young adults need to be precautionary. Therefore,

we must take a precautionary approach by implementing these strategies and protecting the health of our nation's young people.

We know what works to effectively prevent tobacco use among young people. Now we must apply these strategies to e-cigarettes—and continue to apply them to other tobacco products. To achieve success, we must work together, aligning and coordinating efforts across a wide range of stakeholders. We must protect our nation's young people from a lifetime of nicotine addiction and associated problems by immediately addressing e-cigarettes as an urgent public health problem. Now is the time to take action.

