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Recommendations From the USPSTF for Prevention and Cessation of Tobacco Use in Children and Adolescents

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In this issue of *JAMA*, the US Preventive Services Task Force (USPSTF) presents updated recommendations on prevention and cessation of tobacco use among children and adolescents seen in primary care settings.¹ The USPSTF recommends education and brief counseling with a clinician to prevent initiation of tobacco use (B recommendation). The USPSTF also concludes that evidence is insufficient to assess the balance of benefits and harms of primary care-feasible interventions for the cessation of tobacco use among school-aged children and adolescents (I statement). These recommendations reflect the accompanying Evidence Review.^{2,3}

The current recommendations from the USPSTF regarding prevention are similar to those in the previous (2013) report.⁴ New to the current recommendations are the inclusion of e-cigarettes as a tobacco product and the statement on insufficient evidence for tobacco use cessation treatments. The recommendations represent a call for better research into youth tobacco use interventions relevant to the modern landscape of e-cigarette and other noncigarette tobacco product use among youth. There are significant gaps highlighted by findings of the USPSTF review of the available evidence, such as the absence of large trials testing primary care-relevant interventions (behavioral counseling or medication) to promote youth tobacco use cessation and any intervention research addressing e-cigarette prevention or cessation in youth. Given these gaps, it is uncertain that primary care interventions alone will reverse recent increases in youth e-cigarette use^{5–7} without new regulatory policies that restrict availability of tobacco products that attract youth.

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Adolescent cigarette smoking peaked in the mid-1990s, when an estimated 35% of youth reported using cigarettes in the past month, but has declined almost every year since.⁶ Although this decline is important, this progress alone is not enough, because adolescents now use other tobacco products. In 2019, 31.2% of high school students reported currently using some form of tobacco, and cigarettes (5.8%) were reported as the third most commonly used product, after e-cigarettes (27.5%) and cigars (7.6%).^{5,7}

Cigarettes have been supplanted by flavored tobacco products, including e-cigarettes, little filtered cigars, and hookahs (tobacco waterpipes).⁵⁻⁸ Most prevalent are e-cigarettes- devices that aerosolize a solution containing propylene glycol, glycerol, nicotine, and flavorants. Unlike early e-cigarette products that used free-base nicotine formulations that were difficult to inhale and slowly absorbed, the newest vaping devices are prefilled with high concentrations of a salt-based nicotine formulation that is easily inhaled and deliver high doses of nicotine like a cigarette, suggesting a high dependence potential for these products.

As the products have evolved, so too have industry marketing strategies. e- Cigarette companies communicate to youth through social media platforms like Twitter and Instagram.⁹ Social media marketing relies on “open source marketing,” in which consumers post their own content. Social media “influencers” with very large audiences receive free products in exchange for unofficially promoting products.

As indicated by the USPSTF,¹ with all tobacco products, including e-cigarettes, nicotine addiction is an important threat to adolescent health because it leads to long-term use. The USPSTF further points out that “[e]xposure to nicotine during adolescence can harm the developing brain, which may affect brain function and cognition, attention, and mood....”¹ Exposure also may adversely affect the respiratory system and other organs, and these effects differ between nicotine-containing and cannabis-containing vaping products. e- Cigarette, or vaping, product use-associated lung injury (EVALI) cases are associated with counterfeit tetrahydrocannabinol (THC) vape solutions, and vitamin E acetate (an additive present in cannabis solutions) is the most likely offending agent.¹⁰ Because individuals who vape nicotine can refill their devices with off-brand solutions (which might contain nicotine, THC, vitamin E acetate, flavors containing diacetyl,^{11,12} lipids,¹³ or other chemicals), EVALI bears consideration in discussions about tobacco with youth.

The USPSTF advises clinicians to provide prevention counseling regardless of risk factors, such as being male, white race, not college-bound, from a rural area, having parents with lower levels of education, parental smoking, having childhood friends who smoke, being an older adolescent, experiencing highly stressful events, or perceiving tobacco use as low risk.¹ This is an appropriate recommendation because the use of e-cigarettes and other tobacco products is being observed across all sociodemographic strata.⁵⁻⁷

In the USPSTF Evidence Review,^{2,3} the meta-analytic regression did not find evidence of differences in effect sizes across youth tobacco use prevention trials testing different modalities, target audiences, durations, and intervention delivery settings. The USPSTF interpreted these results as evidence that clinicians have a broad range of effective behavioral counseling interventions from which to choose.¹ While the meta-analytic

comparison across studies is useful, rigorous well-powered prevention trials testing head-to-head comparisons of different intervention types would be informative for circumstances that require preventive interventions to deliver robust effects. Foremost is a need for research into interventions for cessation of youth tobacco product use, particularly for e-cigarette use.

The conclusion from the USPSTF that the evidence on interventions to prevent cigarette smoking could be applied to the prevention of e-cigarette use because the 2 tobacco products share similar contextual and cultural factors¹ is a logical inference but may have some limits. For instance, intervention content that addresses the risks associated with passive tobacco smoke exposure, the effects of tobacco on teeth, and other negative consequences of tobacco use described in Table 2 in the USPSTF Recommendation Statement¹ may require adaptation until the health effects of e-cigarette use and aerosol exposure are better understood. Meanwhile, in discussions with children and their parents about tobacco, clinicians may consider asking about the use of vaping products, discussing the risks associated with vaping, and helping parents learn how to identify modern vaping products, some of which can easily be mistaken for computer USB drives because of their similar appearance. Interventions would ideally explain to youth that all tobacco products, including vaping products, contain potentially dangerous chemicals, and that e-cigarettes often contain nicotine, which is addictive and adversely affects healthy brain development.

Along with primary care interventions, regulation of tobacco products may help reverse recent trends in youth use of e-cigarettes, similar to how past regulation of combustible cigarettes successfully contributed to reversing high youth cigarette smoking rates in the 1990s. Needed are regulations that restrict availability of e-cigarette products that appeal to youth by limiting nontobacco flavors, permitting only product designs meant for adult smokers that mimic the cigarette (and do not resemble computer USB drives), and setting limits on e-cigarette nicotine concentration or prohibiting e-cigarettes containing nicotine salt formulations that may be easy for youth to inhale and become addicted to. Until such e-cigarette regulations emerge, clinicians have guidance outlined in the USPSTF recommendations to help reduce youth tobacco use by implementing primary care interventions to prevent tobacco use.¹

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