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Analyzing Medical Advocacy Organizations' Positions on E-cigarettes

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Medical advocacy organizations influence professional practice and legislative priorities, both of which eventually impact the perspective of the general public.

Executive Summary

Medical advocacy organizations often promote policy change. Their advocacy work can also influence public perception of health conditions and behaviors. With this in mind, we conducted a study to analyze these organizations' publicly available policy or position statements related to e-cigarette use. We describe the content of the statements, explore the nuances of the science underpinning the statements, and discuss how the statements may contribute to the social and policy environment.

Fourteen policy/position statements met our study inclusion criteria.[1] After reviewing the statements, we conducted a qualitative discourse analysis by

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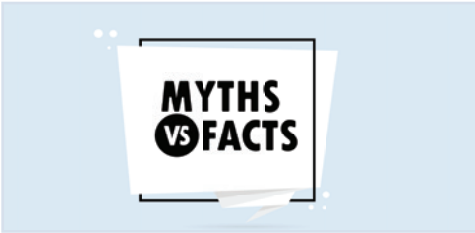
1. "Electronic Nicotine Delivery Systems (ENDS)," American Academy of Family Physicians, 2019. https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html; Roy S. Herbst et al., "Electronic Nicotine Delivery Systems: An Updated Policy Statement from the American Association for Cancer Research and the American Society of Clinical Oncology," *Clinical Cancer Research* 28:22 (Nov. 14, 2022), pp. 4861-4870. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Position Statement: Electronic Cigarette," American Association for Respiratory Care, February 2020. https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span," American Public Health Association, Oct. 24, 2020. https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Policy Statement on E-cigarettes," American College of Preventive Medicine, last accessed Feb. 28, 2023. https://www.acpm.org/getmedia/ab615b59-a492-4ca1-8935-79ab05a3cef9/e-cigarettes_policy.pdf.aspx; "Electronic Cigarettes, Vaping, and Health H-495.972," American Medical Association, 2019. https://policysearch.ama-assn.org/policyfinder/detail/e-cigarettes?uri=%2FAMADoc%2FHOD.xml-0-4504.xml; "Public Policy Statements: E-Cigarettes," American Society of Addiction Medicine, April 1, 2020. https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement," American Osteopathic Association, 2020. https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Public Policy Position – Tobacco and Health," American Lung Association, June 25, 2021. https://www.lung.org/policy-advocacy/public-policy-positions/public-policy-position-tobacco; "American Cancer Society Position Statement on Electronic Cigarettes," American Cancer Society, last accessed Feb. 28, 2023. https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping," Oncology Nursing Society, August 2022. https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statements on e-cigarettes," American Academy of Otolaryngology–Head and Neck Surgery, April 21, 2021. https://www.entnet.org/resource/position-statements-on-e-cigarettes; "Position Statement on Vaping," American Academy of Addiction Psychiatry, Nov. 18, 2019. https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf; "Current Polices: Tobacco Use and Vaping," American Dental Association, Aug. 3, 2021. https://www.ada.org/about/governance/current-policies#tobacco.

thematically coding the content of each and tabulating the frequency with which identified themes appear. We identified 12 themes and 18 subthemes, which we condensed into six broad categories that provided a loose structure for reporting the results of the discourse analysis: youth use; nicotine addiction; health impacts and e-cigarette or vaping use-associated lung injury; chemical exposure; accidental injuries and poisonings; and calls to action.

Our study found that, overall, the medical advocacy organizations' statements were grounded in scientific evidence, but they often failed to convey important subtleties. This is noteworthy because the discourse produced by medical advocacy organizations has social and political implications. Although the statements often offered a balanced assessment of e-cigarettes' potential harms, the message that has been reaching and resonating with policymakers and the public is that e-cigarettes are more harmful than combustible cigarettes, which is the opposite of the general scientific consensus.[2] This misalignment is problematic, as the message of increased harm—in addition to other misperceptions about relative risk, nicotine and net effect on public health—has led to misguided proposed and implemented policies that include bans on all non-tobacco-flavored e-cigarettes and limits on nicotine concentration.[3]



The message of increased harm—in addition to other e-cigarette misperceptions about relative risk, nicotine and net effect on public health—has led to misguided proposed and implemented policies.

As a result of this study, we make **three key suggestions** to ensure that a more complete message reaches policymakers and the public. **First**, advocacy organizations should promote the need for high-quality research that considers and attempts to mitigate the challenges of studying e-cigarette use. **Second**, public education campaigns should be targeted to appropriate audiences and should evolve as scientific evidence evolves. **Third**, because medical advocacy organizations play a key role in the discourse about e-cigarettes, they should educate policy makers about the nuances of the issue, encourage policymakers to consider the net public health impact of their recommendations, and encourage governmental organizations to correct misperceptions and clearly communicate relative risk.

Introduction

Although smoking rates in the United States have decreased over the past few decades, it is estimated that 30.8 million adults still smoke combustible cigarettes.[4] Smoking remains the leading cause of preventable death and illness in the United

2. "Nicotine Is Why Tobacco Products Are Addictive," U.S. Food & Drug Administration, June 29, 2022. https://www.fda.gov/tobacco-products/health-effects-tobacco-use/nicotine-why-tobacco-products-are-addictive; Gideon St. Helen et al., "Comparison of Systemic Exposure to Toxic and/or Carcinogenic Volatile Organic Compounds (VOC) during Vaping, Smoking, and Abstention," *Cancer Prevention Research* 13:2 (Feb. 5, 2020), pp. 153-162. https://aacrjournals.org/cancerpreventionresearch/article/13/2/153/258439/Comparison-of-Systemic-Exposure-to-Toxic-and-or; "About Electronic Cigarettes (E-Cigarettes)," Centers for Disease Control and Prevention, Nov. 10, 2022. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html; Kathleen Stratton et al., eds., *Public Health Consequences of E-Cigarettes*, (The National Academies Press, 2018), p. 598. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes; A. McNeill et al., "Nicotine vaping in England: an evidence update including health risks and perceptions, 2022," King's College London, Sept. 29, 2022, pp. 40-42. https://kclpure.kcl.ac.uk/portal/files/194502390/Nicotine_vaping_in_England_2022_report.pdf.
3. Laura Bach, "States & Localities that Have Restricted the Sale of Flavored Tobacco Products," Campaign for Tobacco-Free Kids, March 17, 2023. https://www.tobaccofreekids.org/assets/factsheets/0398.pdf; Michael Nedelman, "New bill aims to cap nicotine levels in e-cigarettes," CNN health, Oct. 7, 2019. https://www.cnn.com/2019/10/07/health/vaping-nicotine-cap-krishnamoorthi-bn/index.html; "Utah House Bill 438: Electronic Cigarette Requirements," LegiScan, last accessed March 22, 2023. https://legiscan.com/UT/text/HB0438/2023.
4. "Current Cigarette Smoking Among Adults in the United States," Centers for Disease Control and Prevention, March 17, 2022. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm.

States.[5] Quitting smoking is challenging for many people, and traditional quitting aids, like nicotine replacement therapy, do not work for everyone. Of course, abstaining from tobacco use entirely is the optimal smoking cessation strategy for health, but for people who cannot, will not or are not ready to quit, e-cigarettes offer an alternative way to consume nicotine with fewer health risks than combustible cigarettes.[6]

Despite their reduced risk profile, e-cigarettes are one of the most divisive topics in tobacco control policy.

Despite their reduced risk profile, e-cigarettes are one of the most divisive topics in tobacco control policy.[7] Tobacco control policy refers to how tobacco products, including e-cigarettes, are regulated and how the public is educated about the harms of tobacco use. Many organizations have taken public positions on how e-cigarettes should be regulated and their value in the tobacco control environment. Among them, medical advocacy organizations are an important voice in the conversation. In speaking for and defining positions for their constituencies, these organizations influence professional practice and legislative priorities, both of which eventually impact the perspective of the general public.

To better understand the stances medical advocacy organizations are taking on e-cigarettes, we analyzed the position or policy statements of 14 such organizations. This analysis provides a summary of the discourse produced by the selected medical advocacy organizations, explores the subtleties of the data underpinning the discourse, and comments on how these statements may be contributing to the social and political climate around e-cigarettes.

Methods

To identify the prevailing trends in medical advocacy organizations' stances on e-cigarettes, we conducted a qualitative discourse analysis of policy positions. Primary inclusion criteria were that the publishing organization was based in the United States; the organization had published a public-facing position or policy statement on e-cigarettes, electronic nicotine delivery systems (ENDS), or nicotine between January 2018 and February 2023; the publishing organization was a nationally focused health or medical organization (excluding hospital systems); the organization advocated for healthcare providers or a disease or organ system strongly associated with smoking-related morbidity or mortality; and the organization did not specialize in pediatric populations. To identify policy and position statements, we used the following search terms to compile a list of medical and health-focused organizations: "medical advocacy (association OR organization)," "health advocacy (association OR organization)," "health professional (association OR organization)" and "medical professional (association OR organization)." After compiling a list of organizations, we searched their websites using the search

5. Ibid.
6. Stratton et al., eds. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes; "About Electronic Cigarettes (E-Cigarettes)." https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html; "E-Cigarettes, Vapes, and other Electronic Nicotine Delivery Systems (ENDS)," U.S. Food & Drug Administration, June 29, 2022. https://www.fda.gov/tobacco-products/products-ingredients-components/e-cigarettes-vapes-and-other-electronic-nicotine-delivery-systems-ends.
7. Thomas J. Glynn et al., "E-Cigarettes, Harm Reduction, and Tobacco Control: A Path Forward?," *Mayo Clinic Proceedings* 96:4 (April 2021), pp. 856-862. https://www.mayoclinicproceedings.org/article/S0025-6196(20)31382-3/fulltext#secsectitle0025.

feature for the following terms: "e-cigarette," "ENDS," "nicotine" and "tobacco." Of the organizations identified, 14 had released position or policy statements related to e-cigarette use that met the inclusion criteria.[8]

After collecting the organizations' statements, we reviewed each of them and thematically coded the content. We then tabulated the frequency that each coded theme appeared in the statements. We identified 12 main themes and 18 subthemes before themes and subthemes began repeating and new ones were not being identified. Based on the frequency with which each theme appeared, similarities between themes and overlap between subthemes, we identified six categories that summarized the themes: youth use; nicotine addiction; health impacts and e-cigarette or vaping use-associated lung injury (EVALI); chemical exposure; accidental injuries and poisonings; and calls to action.

Discourse Analysis Results

In this section, we discuss the six categories identified in the data from the medical advocacy organizations' policy and position statements, focusing on how each theme was framed in the statements and the frequency with which the ideas appear.

Youth Use

Concern about youth use was the most prevalent theme found in the statements from medical advocacy organizations, with nearly all statements mentioning concerns about youth use or noting that people under 21 should not use e-cigarettes.[9] Although youth use was a common theme, the intensity with which the organizations leaned on the theme varied considerably. Some of the statements focused most of their attention on the risks associated with youth use and the need to decrease it, whereas others mentioned that young people should not use e-cigarettes but did not make it the focus of their position statement.

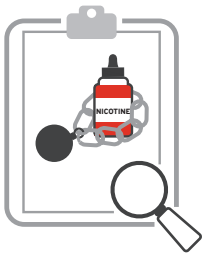
8. "Electronic Nicotine Delivery Systems (ENDS)." https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Policy Statement on E-cigarettes." https://www.acpm.org/getmedia/ab615b59-a492-4ca1-8935-79ab05a3cef9/e-cigarettes_policy.pdf.aspx; "Electronic Cigarettes, Vaping, and Health H-495.972." https://policysearch.ama-assn.org/policyfinder/detail/e-cigarettes?uri=%2FAMADoc%2FHOD.xml-0-4504.xml; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Public Policy Position – Tobacco and Health." https://www.lung.org/policy-advocacy/public-policy-positions/public-policy-position-tobacco; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf; "Current Polices: Tobacco Use and Vaping." https://www.ada.org/about/governance/current-policies#tobacco.

9. "Electronic Nicotine Delivery Systems (ENDS)." https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Policy Statement on E-cigarettes." https://www.acpm.org/getmedia/ab615b59-a492-4ca1-8935-79ab05a3cef9/e-cigarettes_policy.pdf.aspx; "Electronic Cigarettes, Vaping, and Health H-495.972." https://policysearch.ama-assn.org/policyfinder/detail/e-cigarettes?uri=%2FAMADoc%2FHOD.xml-0-4504.xml; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Public Policy Position – Tobacco and Health." https://www.lung.org/policy-advocacy/public-policy-positions/public-policy-position-tobacco; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.

The youth-use theme was often linked to other themes. The need to decrease youth use always justified calls for banning flavored e-cigarettes.[10] Nicotine addiction was another theme that was often, but not always, linked with concerns about youth use.[11] The idea that e-cigarette use predisposes people to future combustible cigarette use, sometimes called the "gateway theory," was another theme associated with youth use.[12] Subthemes of the youth use theme included discussion about how exposure to nicotine can produce changes in developing brains and concerns about reversing progress on decreasing tobacco use.[13]

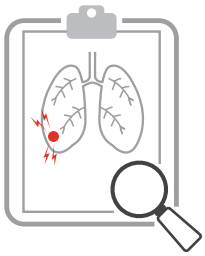
Nicotine Addiction

About one-half of the statements from medical advocacy organizations mentioned the risk of nicotine addiction.[14] In most cases, nicotine addiction was framed as a harm in and of itself. While the primary theme among the medical advocacy organization statements was that nicotine addiction is harmful, there were three associated subthemes. The first was that high nicotine concentrations in e-cigarette liquids furthers addiction. Similarly, several statements expressed concern that dual use (i.e., using combustible cigarettes and e-cigarettes simultaneously) perpetuates addiction. The other subtheme was that nicotine itself is harmful. The nicotine addiction theme was often present in conjunction with youth use and health impacts themes.



10. Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; American Public Health Association. https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Current Polices: Tobacco Use and Vaping." https://www.ada.org/about/governance/current-policies#tobacco; "Public Policy Position – Tobacco and Health." https://www.lung.org/policy-advocacy/public-policy-positions/public-policy-position-tobacco; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.
11. Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Policy Statement on E-cigarettes." https://www.acpm.org/getmedia/ab615b59-a492-4ca1-8935-79ab05a3cef9/e-cigarettes_policy.pdf.aspx; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes.
12. "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.
13. "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; Judith J. Prochaska and Neal L. Benowitz, "Current advances in research in treatment and recovery: Nicotine addiction," *Science Advances* 5:10 (Oct. 16, 2019). https://www.science.org/doi/full/10.1126/sciadv.aay9763.
14. "Electronic Nicotine Delivery Systems (ENDS)." https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Public Policy Position – Tobacco and Health." https://www.lung.org/policy-advocacy/public-policy-positions/public-policy-position-tobacco; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.

Health Impacts or EVALI



Roughly one-half of the statements referenced different health impacts or EVALI.[15] Considering the publishing organizations of these statements, it is somewhat surprising that more statements did not reference health impacts. What was also striking about the statements that did mention health impacts was that many of the discussions and references were fairly vague. Nicotine addiction, as previously mentioned, was the most common and specific health outcome discussed in the statements. Beyond nicotine addiction, most of the statements made general references, such as threats "to the health of users;" "cardiovascular and non-cancer lung disease risk;" "DNA damage and inflammation;" "respiratory and cardiac changes;" and nicotine's effect on blood pressure, immune function and developing brains.[16] Statements often linked health outcomes and EVALI to other themes, including youth use (especially nicotine's effect on developing brains), nicotine addiction and chemical exposure.[17] Although some statements did recognize that e-cigarettes represent a lower health risk than combustible cigarettes, the statements still framed the health impacts of e-cigarettes negatively.[18]

Chemical Exposure

About one-quarter of the statements discussed chemical exposures associated with e-cigarettes.[19] When discussing chemical exposures and toxicants, most of the statements referenced the potential health effects or discussed how chemical exposure from e-cigarettes is lower than that from combustible cigarettes. Within the chemical exposure theme, there were three subthemes: metals, carcinogens

15. "Electronic Nicotine Delivery Systems (ENDS)." https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.

16. "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "AACR-ASCO Joint Recommendations for Electronic Nicotine Delivery System Regulations." https://www.aacr.org/professionals/policy-and-advocacy/tobacco-and-cancer/policy-positions-and-statements/aacr-asco-joint-recommendations-for-electronic-nicotine-delivery-system-regulations; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping.

17. "Electronic Nicotine Delivery Systems (ENDS)." https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.

18. Ibid.

19. Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Policy Statement on E-cigarettes." https://www.acpm.org/getmedia/ab615b59-a492-4ca1-8935-79ab05a3cef9/e-cigarettes_policy.pdf.aspx; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html.

and that e-cigarettes result in lower exposure to chemicals than combustible cigarettes. Chemical exposure was often linked to the theme of health impacts.[20]

Accidental Injuries and Poisonings

Slightly more than one-third of the medical advocacy organization statements noted that e-liquids could result in accidental poisonings or that there had been cases of e-cigarette devices catching fire or exploding and causing injuries.[21] In most cases, the statements discussed the risk of accidental poisoning in the context of young children unknowingly consuming an adult's e-liquid.[22]

Calls to Action

Most of the statements included at least one call to action. The four main calls to action were banning non-tobacco-flavored products, banning all e-cigarettes, limiting the nicotine concentration of e-cigarettes and conducting more research on the long-term effects of e-cigarette use. Banning non-tobacco-flavored products was the most common call to action, with nearly three-quarters of the statements advocating it.[23] The justification for banning flavored products was nearly always to decrease youth use. Of note, none of the statements mentioned the role that flavored products could play in helping adults who smoke transition from combustible cigarettes to e-cigarettes.[24] One organization went further, calling for a ban on all e-cigarettes.[25] Limiting the nicotine concentration of e-cigarettes was another call to action that approximately one-quarter of the statements suggested.[26] This call to action was linked to concerns about youth use and nicotine addiction. About one-half of the statements also called for additional research into

20. Ibid.
21. "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Policy Statement on E-cigarettes." https://www.acpm.org/getmedia/ab615b59-a492-4ca1-8935-79ab05a3cef9/e-cigarettes_policy.pdf.aspx; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes.
22. "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes.
23. Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Current Polices: Tobacco Use and Vaping." https://www.ada.org/about/governance/current-policies#tobacco; "Public Policy Position – Tobacco and Health." https://www.lung.org/policy-advocacy/public-policy-positions/public-policy-position-tobacco; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.
24. Christopher Russell et al., "Changing patterns of first e-cigarette flavor used and current flavors used by 20,836 adult frequent e-cigarette users in the USA," *Harm Reduction Journal* 15:33 (June 28, 2018). https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-018-0238-6#Abs1; Shannon Gravely et al., "The Association of E-cigarette Flavors With Satisfaction, Enjoyment, and Trying to Quit or Stay Abstinent From Smoking Among Regular Adult Vapers From Canada and the United States: Findings From the 2018 ITC Four Country Smoking and Vaping Survey," *Nicotine & Tobacco Research* 20:10 (October 2020), pp. 1831-1841. https://academic.oup.com/ntr/article/22/10/1831/5843872?login=true.
25. "Current Polices: Tobacco Use and Vaping." https://www.ada.org/about/governance/current-policies#tobacco.
26. "AACR-ASCO Joint Recommendations for Electronic Nicotine Delivery System Regulations." https://www.aacr.org/professionals/policy-and-advocacy/tobacco-and-cancer/policy-positions-and-statements/aacr-asco-joint-recommendations-for-electronic-nicotine-delivery-system-regulations; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes.

the health effects of e-cigarettes.[27] Most of the statements focused on the need for long-term evaluations of e-cigarette use on health and their effectiveness as cessation aids.[28]

Evaluating the Statements

Overall, the position and policy statements published by medical advocacy groups were accurate and underpinned by a reasonable amount of evidence, but the statements did not always provide a nuanced discussion of the debate around regulating e-cigarettes. As a result, despite the statements being based on available evidence and, in many cases, offering a cautious description of how e-cigarettes affect health, policymakers and the public seem to be focusing on only one part of the message—that e-cigarettes are more dangerous to individuals and public health than combustible cigarettes.[29] However, this is not an accurate conclusion.

KEY TAKEAWAY

Despite the statements being based on available evidence and, in many cases, offering a cautious description of how e-cigarettes affect health, policymakers and the public seem to be focusing on only one part of the message—that e-cigarettes are more dangerous to individuals and public health than combustible cigarettes. However, this is not an accurate conclusion.

To help illustrate the subtleties of the science and discourse surrounding e-cigarettes, this section provides a brief overview of the research on e-cigarettes that relates to the findings in the discourse analysis. As we evaluate the medical advocacy groups' policy and position statements, it is important to first understand the basic premise of e-cigarettes as a valuable harm reduction tool. By acknowledging that e-cigarettes can reduce the harm of using combustible tobacco products for people who smoke, we can better appreciate how they might benefit individual and public health.

The Role of Nicotine in Smoking-Related Disease

E-cigarettes are a method of delivering nicotine—the addictive chemical in tobacco—while eliminating or limiting exposure to the chemicals derived from combusting tobacco leaves.[30] Because e-cigarettes do not produce as many of these chemicals, the general consensus is that they are less harmful than combustible cigarettes, but they are not harmless (i.e., people who do not already use combustible tobacco products should not begin to use e-cigarettes).[31] A number of

27. "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Electronic Cigarettes, Vaping, and Health H-495.972." https://policysearch.ama-assn.org/policyfinder/detail/e-cigarettes?uri=%2FAMADoc%2FHOD.xml-0-4504.xml; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "AACR-ASCO Joint Recommendations for Electronic Nicotine Delivery System Regulations." https://www.aacr.org/professionals/policy-and-advocacy/tobacco-and-cancer/policy-positions-and-statements/aacr-asco-joint-recommendations-for-electronic-nicotine-delivery-system-regulations; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "Current Polices: Tobacco Use and Vaping." https://www.ada.org/about/governance/current-policies#tobacco; "AAFP Advocacy Focus: Tobacco and Nicotine Use." https://www.aafp.org/advocacy/advocacy-topics/prevention-public-health/tobacco-nicotine.html.
28. Ibid.
29. Amy L. Nyman et al., "Perceived Comparative Harm of Cigarettes and Electronic Nicotine Delivery Systems," *JAMA Network Open* 2:11 (Nov. 20, 2019). https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2755664; Jidong Huang et al., "Changing Perceptions of Harm of e-Cigarette vs Cigarette Use Among Adults in 2 US National Surveys From 2012 to 2017," *JAMA Network Open* 2:3 (March 29, 2019). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6450305; Layla Malt et al., "Perception of the relative harm of electronic cigarettes compared to cigarettes amongst US adults from 2013 to 2016: analysis of the Population Assessment of Tobacco and Health (PATH) study data," *Harm Reduction Journal* 17:65 (Sept. 18, 2020). https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-020-00410-2; Tarang Patel et al., "Patient Perception of Vaping in the Midst of the Electronic Cigarette and Vaping Product Associated Lung Injury (EVALI) Epidemic," *Missouri Medicine* 117:3 (May-June 2020), pp. 265-270. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7302022.
30. "Nicotine Is Why Tobacco Products Are Addictive." https://www.fda.gov/tobacco-products/health-effects-tobacco-use/nicotine-why-tobacco-products-are-addictive; St. Helen et al. https://aacrjournals.org/cancerpreventionresearch/article/13/2/153/258439/Comparison-of-Systemic-Exposure-to-Toxic-and-or; "About Electronic Cigarettes (E-Cigarettes)." https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html; Stratton et al., eds., p. 598. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes; McNeill et al., pp. 40-42. https://kclpure.kcl.ac.uk/portal/files/194502390/Nicotine_vaping_in_England_2022_report.pdf.
31. Ibid.

the medical advocacy organizations in our study acknowledged, to some degree, that e-cigarettes are less harmful than combustible cigarettes.[32]

Nevertheless, many of the statements framed nicotine addiction as a harm in and of itself, which is not necessarily true. Without a doubt, addiction to any substance can be distressing, and the majority of people who smoke report that they would like to stop, but the relationship between nicotine addiction and negative health impacts is complex.[33] Separating nicotine consumption from the health harms of smoking—which is the benefit e-cigarettes offer—makes it possible to see how nicotine addiction itself is not the primary cause of harm. Rightly or not, some people perceive value from consuming nicotine. Because the adverse consequences normally associated with consuming nicotine (i.e., lung cancer, chronic obstructive pulmonary disease [COPD], heart disease) are likely caused not by nicotine itself, but by the mechanism of consumption (i.e., smoking combustable cigarettes), giving people an option to consume nicotine through less harmful mechanisms can benefit their overall health, even if they do not quit consuming nicotine altogether.[34]

Many of the statements framed nicotine addiction as a harm in and of itself, which is not necessarily true. Giving people an option to consume nicotine through less harmful mechanisms can benefit their overall health, even if they do not quit consuming nicotine altogether.

Nicotine replacement therapy is evidence of this. Because few serious adverse events are associated with nicotine replacement therapy, the Food and Drug Administration (FDA) approved label changes that allow individuals to use multiple nicotine replacement therapy products simultaneously and for longer than 12 weeks, if needed.[35] If the relative risk of using nicotine in a nicotine replacement therapy product is sufficiently low that the FDA endorses using these nicotine-containing products in the longer term to promote cessation, it begs the question as to why nicotine, on its own, is framed as harmful in many medical advocacy organizations' position statements.

Although nicotine is not entirely without negative health effects, the extent to which these observable effects lead to the manifestation of disease is still a topic of debate.[36] The observable biological changes attributable to nicotine include increased heart rate and blood pressure; changes to blood vessel, kidney, lung,

32. "AACR-ASCO Joint Recommendations for Electronic Nicotine Delivery System Regulations." https://www.aacr.org/professionals/policy-and-advocacy/tobacco-and-cancer/policy-positions-and-statements/aacr-asco-joint-recommendations-for-electronic-nicotine-delivery-system-regulations; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes.

33. "Smoking Cessation: Fast Facts," Centers for Disease Control and Prevention, March 21, 2022. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/cessation/smoking-cessation-fast-facts/index.html.

34. Kate Kelland, "Is Nicotine All Bad?," *Scientific American*, May 19, 2015. https://www.scientificamerican.com/article/is-nicotine-all-bad; "Nicotine Is Why Tobacco Products Are Addictive." https://www.fda.gov/tobacco-products/health-effects-tobacco-use/nicotine-why-tobacco-products-are-addictive; Scott Gottlieb and Mitchell Zeller, "A Nicotine-Focused Framework for Public Health," *The New England Journal of Medicine* 377 (Sept. 21, 2017), pp. 1111-1114. https://www.nejm.org/doi/full/10.1056/NEJMp1707409; Michael B. Steinberg et al., "Nicotine Risk Misperception Among US Physicians," *Journal of General Internal Medicine* 36 (Sept. 1, 2021), pp. 3888-3890. https://link.springer.com/article/10.1007/s11606-020-06172-8.

35. "FDA: OK to use nicotine replacement therapies for longer than 12 weeks," CBS News, April 1, 2013. https://www.cbsnews.com/news/fda-ok-to-use-nicotine-replacement-therapies-for-longer-than-12-weeks; Lisa M. Fucito et al., "Addressing the Evidence for FDA Nicotine Replacement Therapy Label Changes: A Policy Statement of the Association for the Treatment of Tobacco Use and Dependence and the Society for Research on Nicotine and Tobacco," *Nicotine & Tobacco Research* 16:7 (July 2014), pp. 909-914. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6281057; Peter N. Lee and Marc W. Fariss, "A systematic review of possible serious adverse health effects of nicotine replacement therapy," *Archives of Toxicology* 91 (2017), pp. 1565-1594. https://link.springer.com/article/10.1007/s00204-016-1856-y.

36. Patrice Marques et al., "An updated overview of *e-cigarette* impact on human health," *Respiratory Research* 22:151 (May 18, 2021). https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5; Emily Banks et al., "Electronic cigarettes and health outcomes: systematic review of global evidence," National Centre for Epidemiology and Population Health, April 2022. https://openresearch-repository.anu.edu.au/bitstream/1885/262914/1/Electronic%20cigarettes%20health%20outcomes%20review_2022_WCAG.pdf; McNeill et al. https://kclpure.kcl.ac.uk/portal/files/194502390/Nicotine_vaping_in_England_2022_report.pdf; Stratton et al., eds. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes.

neurologic and immune-system function; and possibly insulin resistance, which may in turn increase the risk of type 2 diabetes.[37] Nicotine's potential carcinogenic properties remain unclear.[38] Although several studies have suggested that nicotine itself is a carcinogen, it has not been determined whether nicotine causes cancer independent of tobacco-leaf combustion.[39]

E-cigarettes Reduce Exposure to Potentially Harmful Constituents

The extent to which e-cigarettes are harmful to health is likely correlated less with nicotine content and more with exposure to other chemicals.

The extent to which e-cigarettes are harmful to health is likely correlated less with nicotine content and more with exposure to other chemicals. Rightly, some of the statements mentioned that e-cigarettes expose people who vape to some detrimental chemicals, which include some carcinogens and metals.[40] Although most commercially available e-liquids are made from ingredients like humectants and flavorings that are generally considered safe for consumption by humans if used in recommended amounts, few have been rigorously evaluated for their toxicity when inhaled.[41] Furthermore, the degree of exposure to potentially harmful constituents varies based on e-cigarette use patterns, such as length of puff; how hot the heating element gets; the type and concentration of nicotine; the type of device; how deeply a person inhales; and how often a person vapes, among other things, making it difficult to standardize research protocols and compare these factors in studies.[42]

Yet returning to the premise of relative-risk reduction, e-cigarettes are generally regarded as exposing users to fewer potentially harmful constituents than combustible cigarettes.[43] For example, one study found levels of the urinary metabolites of acrylonitrile, acrolein, propylene oxide, acrylamide and crotonaldehyde to be up to two times higher among e-cigarette users than they were among people who did not smoke or use e-cigarettes; however, they were significantly lower among exclusive e-cigarettes users than among dual e-cigarette and combustible cigarette users.[44] Of note, the aforementioned chemicals are all known to have deleterious effects on human health.[45] When it comes to exposure to metals, current research suggests that the use of e-cigarettes may result in similar

37. Neal L. Benowitz, "Emerging Nicotine Delivery Products. Implications for Public Health," *Annals of the American Thoracic Society* 11:2 (2014). https://atsjournals.org/doi/full/10.1513/AnnalsATS.201312-433PS; Maria Esteban-Lopez et al., "Health effects and known pathology associated with the use of E-cigarettes," *Toxicology Reports* 9 (2022), pp. 1357-1368. https://www.sciencedirect.com/science/article/pii/S2214750022001421; Marques et al. https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5; Banks et al. https://openresearch-repository.anu.edu.au/bitstream/1885/262914/1/Electronic%20cigarettes%20health%20outcomes%20review_2022_WCAG.pdf.
38. Marques et al. https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5.
39. Ibid.; Nargiz Travis et al., "Health Effects of Electronic Cigarettes: An Umbrella Review and Methodological Considerations," *International Journal of Environmental Research and Public Health* 19:15 (July 25, 2022). https://www.mdpi.com/1660-4601/19/15/9054.
40. Terry Gordon et al., "E-Cigarette Toxicology," *Annual Review of Pharmacology and Toxicology* 62 (Jan. 6, 2022). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9386787.
41. Jeffrey E. Gotts et al., "What are the respiratory effects of e-cigarettes?," *BMJ* 366 (Sept. 30, 2019). https://www.bmj.com/content/366/bmj.l5275.long; Gordon et al. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9386787.
42. Marques et al. https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5; McNeill et al. https://kclpure.kcl.ac.uk/portal/files/194502390/Nicotine_vaping_in_England_2022_report.pdf; Eric Soule et al., "Electronic cigarette use intensity measurement challenges and regulatory implications," *Tobacco Control* 32:1 (2023), pp. 124-129. https://tobaccocontrol.bmj.com/content/32/1/124.
43. St. Helen et al. https://aacrjournals.org/cancerpreventionresearch/article/13/2/153/258439/Comparison-of-Systemic-Exposure-to-Toxic-and-or; "About Electronic Cigarettes (E-Cigarettes)." https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html; Stratton et al., eds., p. 598. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes; McNeill et al., pp. 40-42. https://kclpure.kcl.ac.uk/portal/files/194502390/Nicotine_vaping_in_England_2022_report.pdf.
44. Marques et al. https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5.
45. Ibid.

levels of exposure to the use of combustible cigarettes.[46] Overall, however, there is a need for continued research into the toxicology of e-cigarettes.

Effects on Individual and Public Health Outcomes

Because the specific toxicology of e-cigarettes is still being determined, it is not surprising that many of the statements included vague language about the specific health risks associated with e-cigarette use.[47] The absence of long-term epidemiologic studies evaluating the effects of these products makes it challenging to conclusively link them to any single disease.[48] Additionally, many diseases associated with tobacco develop over long periods of time, meaning it would take many years of use to determine whether e-cigarettes cause disease.[49] Furthermore, the ability to conduct effective long-term studies on e-cigarettes is complicated by the fact that many of those who use e-cigarettes also currently use or formerly used combustible cigarettes, which means that studies that are not carefully controlled may actually be measuring the negative health effects set in motion by smoking combustible cigarettes, not e-cigarettes.[50] Nevertheless, e-cigarettes have been available in the United States since about 2007, and in the intervening decade and a half, research has yet to deliver evidence of a causal link between nicotine-containing e-cigarette use and disease development or progression.[51] Therefore, the statements that do not acknowledge e-cigarettes as a harm reduction tool for people who smoke are reinforcing the narrative that e-cigarettes are equally or more harmful than combustible cigarettes.

It is difficult to definitively establish a causal link between e-cigarettes and disease; nevertheless, e-cigarettes have been available in the United States since about 2007, and research has yet to deliver evidence of a causal link between nicotine-containing e-cigarette use and disease development or progression.

It is important to note that although long-term studies of the health effects of e-cigarette use in humans are lacking, studies have shown the activation of biological processes that could plausibly lead to disease.[52] For example, various changes to the cardiovascular system have been documented among e-cigarette users, but the degree to which these changes cause heart disease requires further inquiry.[53] This is, in part, because any negative effects may be outweighed by the improvements to blood pressure and vascular function that are gained when

46. Shane Sakamaki-Ching et al., "Correlation between biomarkers of exposure, effect and potential harm in the urine of electronic cigarette users," *BMJ Open Respiratory Research* 7:1 (2020). https://bmjopenrespres.bmj.com/content/7/1/e000452; Di Zhao et al., "Metal/Metalloid Levels in Electronic Cigarette Liquids, Aerosols, and Human Biosamples: A Systematic Review," *Environmental Health Perspectives* 128:3 (March 18, 2020). https://ncbi.nlm.nih.gov/pmc/articles/PMC7137911.
47. "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "AACR-ASCO Joint Recommendations for Electronic Nicotine Delivery System Regulations." https://www.aacr.org/professionals/policy-and-advocacy/tobacco-and-cancer/policy-positions-and-statements/aacr-asco-joint-recommendations-for-electronic-nicotine-delivery-system-regulations; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping.
48. Marques et al. https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5; Esteban-Lopez et al. https://www.sciencedirect.com/science/article/pii/S2214750022001421.
49. Gotts et al. https://www.bmj.com/content/366/bmj.l5275.long.
50. Travis et al. https://www.mdpi.com/1660-4601/19/15/9054.
51. Banks et al. https://openresearch-repository.anu.edu.au/bitstream/1885/262914/1/Electronic%20cigarettes%20health%20outcomes%20review_2022_WCAG.pdf; McNeill et al. https://kclpure.kcl.ac.uk/portal/files/194502390/Nicotine_vaping_in_England_2022_report.pdf; Stratton et al., eds. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes; "Surgeon General's Advisory on E-cigarette Use Among Youth," Centers for Disease Control and Prevention, December 2018. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/surgeon-general-advisory/index.html.
52. Marques et al. https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5; Lisa M. Faulcon et al., "Adverse Experience Reports of Seizures in Youth and Young Adult Electronic Nicotine Delivery Systems Users," *Journal of Adolescent Health* 66:1 (January 2020), pp. 15-17. https://www.sciencedirect.com/science/article/abs/pii/S1054139X19304823.
53. Marques et al. https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5; Faulcon et al. https://www.sciencedirect.com/science/article/abs/pii/S1054139X19304823; Travis et al. https://www.mdpi.com/1660-4601/19/15/9054.

a person switches from combustibles to e-cigarettes.[54] In addition, emerging evidence suggests that e-cigarette use may be associated with COPD and asthma exacerbation; however, a causal relationship has yet to be established, and improvements in these conditions have been seen among people who completely switch from combustible cigarettes to e-cigarettes.[55] Finally, e-cigarette use has been associated with seizures and other neurologic symptoms, but relatively few cases have been reported and, once again, a causal relationship has not been established.[56] Thus, although the advocacy organizations' statements did not explicitly say that e-cigarettes cause disease, some of them addressed this concern in a vague way that might lead the reader to conclude that causation has been established.

The most specific health harm discussed in some of the statements was EVALI. Most of the statements analyzed for this paper accurately reported that EVALI was strongly linked to THC-containing vaping products, although several organizations did not mention this distinction.

The most specific health harm discussed in some of the statements was EVALI.[57] In 2019 and 2020, there was an outbreak of 2,807 lung-injury cases.[58] Ultimately, the outbreak was found to be strongly associated with vitamin E acetate, an additive to some THC-containing vaping products.[59] Nevertheless, EVALI is often still referenced when discussing nicotine-containing e-cigarettes. Most of the statements analyzed for this paper accurately reported that EVALI was strongly linked to THC-containing vaping products, although several organizations did not mention this distinction.[60]

Other health harms associated with e-cigarette use mentioned by the medical advocacy groups include accidental injuries and poisonings. Accidental injuries include burns and trauma from malfunctioning devices.[61] Poisonings most often result from accidentally or purposefully ingesting or injecting e-liquid.[62] A 2020 review documented published reports of traumatic injury and poisoning from e-cigarettes.[63] The review found 126 reported cases, globally, of traumatic injury from e-cigarettes; however, U.S. burn center reports estimated that there were 2,035 burns or explosion injuries from e-cigarettes between 2015 and 2017.[64] Because not every injury results in the medical providers publishing a case report

54. Marques et al. https://respiratory-research.biomedcentral.com/articles/10.1186/s12931-021-01737-5; Travis et al. https://www.mdpi.com/1660-4601/19/15/9054; McNeill et al., p. 44. https://kclpure.kcl.ac.uk/portal/files/194502390/Nicotine_vaping_in_England_2022_report.pdf.
55. Esteban-Lopez et al. https://www.sciencedirect.com/science/article/pii/S2214750022001421; Travis et al. https://www.mdpi.com/1660-4601/19/15/9054; Emma Gugala et al., "Pulmonary Health Effects of Electronic Cigarettes: A Scoping Review," *Health Promotion Practice* 23:3 (May 2022), pp. 388-396. https://journals.sagepub.com/doi/pdf/10.1177/1524839920985506.
56. Arman Azad, "FDA investigating 127 reports of seizures, neurological symptoms related to vaping," CNN health, Aug. 7, 2019. https://www.cnn.com/2019/08/07/health/ecigarette-seizure-fda-investigation/index.html; Esteban-Lopez et al. https://www.sciencedirect.com/science/article/pii/S2214750022001421; Faulcon et al. https://www.sciencedirect.com/science/article/abs/pii/S1054139X19304823; Banks et al. https://openresearch-repository.anu.edu.au/bitstream/1885/262914/1/Electronic%20cigarettes%20health%20outcomes%20review_2022_WCAG.pdf.
57. "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.
58. "Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products," Centers for Disease Control and Prevention, Aug. 3, 2021. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html.
59. Ibid.
60. "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping.
61. Anna Tzortzi et al., "A Systematic Literature Review of E-Cigarette-Related Illness and Injury: Not Just for the Respirologist," *International Journal of Environmental Research and Public Health* 17:7 (March 27, 2020). https://www.mdpi.com/1660-4601/17/7/2248.
62. Ibid.
63. Ibid.
64. Anna Tzortzi et al. https://www.mdpi.com/1660-4601/17/7/2248; Matthew E. Rossheim et al., "Electronic cigarette explosion and burn injuries, US Emergency Departments 2015–2017," *Tobacco Control* 28:4 (2019), pp. 472-474. https://tobaccocontrol.bmj.com/content/28/4/472?papetoc.

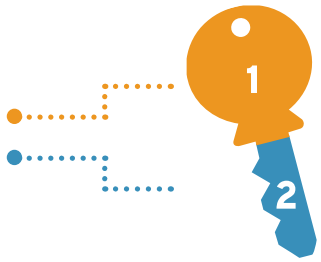
in the academic literature, the burn center reports are likely more indicative of the actual number of this type of injury. As for accidental poisoning, the 2020 review found six case reports of accidental nicotine poisoning in the United States, noting that accidental ingestion was observed only in young children and that adult cases of nicotine poisoning were associated with suicide attempts.[65] Although there are few case reports of poisonings, the U.S. poison control center fielded 17,358 calls between 2010 and 2018 about e-cigarette exposures.[66] This suggests that it continues to be important to take measures to communicate and mitigate the risk of accidental injuries and poisonings to the public.[67]

Modeling studies that have looked at available usage rates have projected that e-cigarette use will result in a net public health benefit over time.

Taking all of these considerations together, modeling studies that have looked at available usage rates have projected that e-cigarette use will result in a net public health benefit over time.[68] This is supported by the fact that the FDA has authorized several e-cigarette products for sale, which required manufacturers to submit data that showed that their product was "appropriate for the protection of public health"—a measurement that takes into consideration the net public health benefit or harm of allowing a product's sale.[69] Nevertheless, although these are positive indicators regarding the relative harmfulness of e-cigarettes, it is possible that some currently unknown, deleterious effects may emerge over time. Although the medical advocacy organization's statements sometimes acknowledged the potential benefits of e-cigarettes, they often stressed the harms over the benefits.

E-cigarettes' Net Public Health Impact: An Off-Ramp or a Gateway to Smoking?

Net public health impact is an important factor to consider when assessing the potential value of e-cigarettes in broadly improving population-level health among those who smoke, and this topic was not explicitly discussed in the medical advocacy organizations' statements. In the simplest terms, an estimation of the net public health harm or benefit from e-cigarettes comprises **two key factors:** (1) the difference in toxicity between combustible cigarettes and e-cigarettes; and (2) the difference between the number of people who quit smoking combustible cigarettes by using e-cigarettes and the number of people who started using e-cigarettes who had never previously smoked combustible cigarettes.[70] Therefore, to support the position that e-cigarettes offer a net public health benefit, we would need to demonstrate that they are a valuable harm reduction tool with a reduced



65. Ibid.
66. Baoguang Wang et al., "Poisoning exposure cases involving e-cigarettes and e-liquid in the United States, 2010–2018," *Clinical Toxicology* 58:6 (2020), pp. 488-494. https://www.tandfonline.com/doi/abs/10.1080/15563650.2019.1661426.
67. "Tips to Help Avoid Vape Battery or Fire Explosions," U.S. Food & Drug Administration, Feb. 16, 2022. https://www.fda.gov/tobacco-products/products-ingredients-components/tips-help-avoid-vape-battery-or-fire-explosions; "National Poison Data System," America's Poison Centers, last accessed March 21, 2023. https://www.aapcc.org/national-poison-data-system.
68. Gideon St. Helen and David L. Eaton, "Public Health Consequences of e-Cigarette Use," *JAMA Internal Medicine* 178:7 (July 1, 2018), pp. 984-986. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6260959; David T. Levy et al., "Public health implications of vaping in the USA: the smoking and vaping simulation model," *Population Health Metrics* 19 (April 17, 2021). https://pophealthmetrics.biomedcentral.com/articles/10.1186/s12963-021-00250-7.
69. "The Public Health Rationale for Recommended Restrictions on New Tobacco Product Labeling, Advertising, Marketing, and Promotion," U.S. Food & Drug Administration, April 29, 2019. https://www.fda.gov/media/124174/download; "Premarket Tobacco Product Marketing Granted Orders," U.S. Food & Drug Administration, Feb. 7, 2023. https://www.fda.gov/tobacco-products/premarket-tobacco-product-applications/premarket-tobacco-product-marketing-granted-orders.
70. Stratton et al., eds. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes; Julia Chen-Sankey and Michelle T. Bover-Manderski, "Importance of a Balanced Public Health Approach When Assessing Recent Patterns in the Prevalence of Adult e-Cigarette Use in the US," *JAMA Network Open* 5:7 (2022). https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794489.

risk profile compared to combustible cigarettes (which we have done in this paper and which many of the medical advocacy organizations' statements suggest) and we would have to show that the number of people who have switched from combustible cigarettes to e-cigarettes exceeds the number of people who began using e-cigarettes and who had not previously smoked combustible cigarettes.

One aspect of the second element of the estimate—establishing e-cigarettes' potential as smoking-cessation aids—has been supported by several large reports that have evaluated existing research on this topic. In 2018, a report from the National Academies of Sciences, Engineering, and Medicine concluded that there was some limited evidence supporting the use of e-cigarettes as cessation aids.[71] Similarly, a 2022 Australian Department of Health report concluded that, in a clinical setting, there was some evidence that e-cigarettes using freebase nicotine may be more effective as cessation aids than existing nicotine replacement therapy and that nicotine-containing e-cigarettes may be more effective for cessation than no intervention or usual care.[72] Finally, a 2022 Cochrane review concluded with high certainty that the use of nicotine-containing e-cigarettes increased the rate of successfully quitting smoking compared to traditional nicotine replacement therapy.[73] The review also concluded with moderate certainty that there were higher quit rates among people who used nicotine-containing e-cigarettes than there were among those who used non-nicotine-containing e-cigarettes.[74] Still, it is important to note that no e-cigarette has been approved by the FDA as a cessation device, which many of the statements mention.[75]

E-cigarettes:
Gateway or Offramp?

A 2022 Cochrane review concluded with high certainty that the use of nicotine-containing e-cigarettes increased the rate of successfully quitting smoking compared to traditional nicotine replacement therapy.

Another factor in determining the net public health benefit of e-cigarettes is a concern that garners significant attention from policymakers and the public: the risk that previously never-smoking people—especially youth—will begin using e-cigarettes. This is a valid concern, but many of the medical advocacy organizations' statements had not been updated with current relevant data at the time of our review. Although e-cigarette use rates among youth are still higher than ideal, youth use of e-cigarettes appears to be decreasing—enough so that the director of the FDA's Center for Tobacco Products recently noted that the agency has not used the term "epidemic" in reference to youth use since he was appointed in 2022.[76] To cite the statistics, in 2022, the Monitoring the Future survey found that 7.1, 14.2 and 20.7 percent of 8th, 10th and 12th grade students had vaped nicotine in the preceding 30 days, respectively.[77] These numbers have come down from the

71. Stratton et al., eds. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes.
72. Banks et al. https://openresearch-repository.anu.edu.au/bitstream/1885/262914/1/Electronic%20cigarettes%20health%20outcomes%20review_2022_WCAG.pdf.
73. Jamie Hartmann-Boyce et al., "Electronic cigarettes for smoking cessation," *Cochrane Database of Systematic Reviews* 11 (Nov. 17, 2022). https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD010216.pub7/full.
74. Ibid.
75. "E-Cigarettes, Vapes, and other Electronic Nicotine Delivery Systems (ENDS)." https://www.fda.gov/tobacco-products/products-ingredients-components/e-cigarettes-vapes-and-other-electronic-nicotine-delivery-systems-ends; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping.
76. GrimmGreen, "The Future of Vaping in the US: A Conversation with FDA's Dr. Brian King," American Vapor Manufacturers, Feb. 24, 2023. https://www.youtube.com/watch?v=OiXzrSDqeW0&ab_channel=GrimmGreen.
77. R.A. Miech et al., "Monitoring the Future National Survey Results on Drug Use, 1975–2022: Secondary School Students," Institute for Social Research, 2023. https://monitoringthefuture.org/data/Prevalence.html#drug=%22Vape+Nicotine+%28E-cigarettes%29%22.

peaks for 10th and 12th graders in 2019 of 19.9 and 25.5 percent, respectively.[78] The peak for 8th graders occurred in 2020 and was 10.5 percent.[79] Another nationally representative survey, the National Youth Tobacco Survey (NYTS), showed similar declines in vaping among young people.[80] It showed that in 2018, 20.8 percent of high school students reported using an e-cigarette at least once in the preceding month compared to 14.1 percent in 2022.[81] However, a study that stratified the NYTS data by smoking status (i.e., never, former or current smoking) found a much higher percentage of high school students who currently or formerly smoked are current e-cigarette users than never-smoking high school students.[82] The same study reported that just 7 percent of high school never-smokers used e-cigarettes more than five days per month.[83] Taken together, this study's findings suggest that the majority of high school students who vape are also using or have previously used combustible cigarettes. The study does not offer data on why each subgroup of students chooses to use e-cigarettes, but it is possible that the students who currently or formerly smoke are using e-cigarettes to transition from combustible cigarettes, which would reduce their risk of smoking-related illness.

The question of whether e-cigarette use leads to combustible cigarette smoking is important. Studies assessing this possibility show mixed results.

The related question of whether e-cigarette use leads to combustible cigarette smoking is also important. Studies assessing this possibility show mixed results.[84] To highlight a few, a 2019 study examining population-level trends in youth smoking found that the rate of decline in youth smoking accelerated after e-cigarettes became readily available.[85] One plausible explanation for this observation is that e-cigarettes may be diverting youth from smoking combustible products.[86] Conversely, a 2022 study using different methods found that the rate of decline in youth cigarette smoking slowed after e-cigarettes became readily available, which the authors noted could be taken as evidence of a population-level gateway effect.[87] Still another study found that after e-cigarettes became readily available, the rate of decline in past-30-day smoking decreased, whereas the rate of decline in ever use

78. Ibid.
79. Ibid.
80. "National Youth Tobacco Survey (NYTS)," Centers for Disease Control and Prevention, March 14, 2022. https://www.cdc.gov/tobacco/data_statistics/surveys/nyts/index.htm.
81. Karen A. Cullen et al., "Notes from the Field: Use of Electronic Cigarettes and Any Tobacco Product Among Middle and High School Students — United States, 2011–2018," *Morbidity and Mortality Weekly Report (MMWR)* 67:45 (Nov. 16, 2018), pp. 1276-1277. https://www.cdc.gov/mmwr/volumes/67/wr/mm6745a5.htm; "Results from the Annual National Youth Tobacco Survey," U.S. Food & Drug Administration, Dec. 20, 2022. https://www.fda.gov/tobacco-products/youth-and-tobacco/results-annual-national-youth-tobacco-survey.
82. Jamie Tam and Andrew F. Brouwer, "Comparison of e-cigarette use prevalence and frequency by smoking status among youth in the United States, 2014–19," *Addiction* 116:9 (Feb. 10, 2021), pp. 2486-2497. https://onlinelibrary.wiley.com/doi/full/10.1111/add.15439.
83. Ibid.
84. Alyssa F. Harlow et al., "e-Cigarette Use and Combustible Cigarette Smoking Initiation Among Youth: Accounting for Time-Varying Exposure and Time-Dependent Confounding," *Epidemiology* 33:4 (March 29, 2022), pp. 523-532. https://www.ingentaconnect.com/content/wk/ede/2022/00000033/00000004/art00014; Gary C.K. Chan et al., "Gateway of common liability? A systematic review and meta-analysis of studies of adolescent e-cigarette use and future smoking initiation," *Addiction* 116:4 (April 2021), pp. 743-756. https://onlinelibrary.wiley.com/doi/abs/10.1111/add.15246; Lion Shahab et al., "Association of initial e-cigarette and other tobacco product use with subsequent cigarette smoking in adolescents: a cross-sectional, matched control study," *Tobacco Control* 30 (2021), pp. 212-220. https://tobaccocontrol.bmj.com/content/tobaccocontrol/30/2/212.full.pdf; Ruoyan Sun et al., "Is Adolescent E-Cigarette Use Associated With Subsequent Smoking? A New Look," *Nicotine & Tobacco Research* 24:5 (May 2022), pp. 710-718. https://academic.oup.com/ntr/article/24/5/710/6432620.
85. David T. Levy et al., "Examining the relationship of vaping to smoking initiation among US youth and young adults: a reality check," *Tobacco Control* 28:6 (2019), pp. 629-635. https://tobaccocontrol.bmj.com/content/28/6/629.
86. Ibid.; Natasha A. Sokol and Justin M. Feldman, "High School Seniors Who Used E-Cigarettes May Have Otherwise Been Cigarette Smokers: Evidence From Monitoring the Future (United States, 2009 – 2018)," *Nicotine & Tobacco Research* 23:11 (November 2021), pp. 1958-1961. https://academic.oup.com/ntr/article-abstract/23/11/1958/6276227.
87. Melissa B. Harrell et al., "Impact of the e-cigarette era on cigarette smoking among youth in the United States: A population-level study," *Preventive Medicine* 164 (November 2022). https://www.sciencedirect.com/science/article/abs/pii/S0091743522003140.

of combustible cigarettes accelerated.[88] It is also worth noting that youth smoking is at or near its lowest recorded level in the United States.[89] Taking all of this into consideration, there is insufficient evidence to conclude whether e-cigarettes are a gateway to smoking at the population level.

Social and Political Implications of These Statements

Medical advocacy organizations are authoritative organizations that influence policy and public opinion. The statements these organizations have produced about e-cigarettes are, on the whole, evidence-based and accurate. However, the tone and framing that are used (i.e., neutral vs. urgent tones; focused on youth uptake vs. more general framing) impact the message that permeates the crowded public discourse on this topic. For example, although the estimation of net public health benefit or harm from e-cigarettes takes three main components into account—one of which considers the effect of youth use— youth use often drives the policy recommendations and tone in the statements.[90]

KEY TAKEAWAY

The statements medical advocacy organizations have produced about e-cigarettes are, on the whole, evidence-based and accurate. However, the tone and framing that are used impact the message that permeates the crowded public discourse on this topic.

Youth Use: The Center Point of the Tobacco Control Conversation

Interestingly, although some medical advocacy organizations produced statements before 2018, several organization published their statements on e-cigarettes in 2019.[91] This corresponds roughly with the release of a Surgeon General's advisory statement on Dec. 18, 2018 that emphasized "the importance of protecting our children from a lifetime of nicotine addiction and associated health risks by immediately addressing the epidemic of youth e-cigarette use."[92] It is therefore possible that this advisory statement compelled some organizations to produce statements on e-cigarettes and thus affected the tone and framing used.

Since the time youth use was declared an epidemic, there have been presidential roundtables and multiple congressional hearings related to e-cigarettes.[93] The

88. MeLisa R. Creamer et al., "Effects of e-cigarette use on cigarette smoking among U.S. youth, 2004–2018," *Preventive Medicine* 142 (January 2021). https://www.sciencedirect.com/science/article/abs/pii/S0091743520303406.

89. Miech et al. https://monitoringthefuture.org/data/Prevalence.html#drug=%22Vape+Nicotine+%28E-cigarettes%29%22; "Trends in Tobacco Use Among Youth," Centers for Disease Control and Prevention, April 12, 2022. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/trends-in-tobacco-use-among-youth.html; National Cancer Institute, "Youth Tobacco Use," National Institutes of Health, April 2022. https://progressreport.cancer.gov/prevention/youth_smoking; "Past 30-Day Use of Cigarettes Among Youth (Aged 12-17), by Sociodemographics," Population Assessment of Tobacco and Health, last accessed March 16, 2023. https://www.icpsr.umich.edu/files/NAHDAP/pathstudy/Youth-30Day-Cigarette.pdf.

90. "Electronic Nicotine Delivery Systems (ENDS)." https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Public Policy Position – Tobacco and Health." https://www.lung.org/policy-advocacy/public-policy-positions/public-policy-position-tobacco; "American Cancer Society Position Statement on Electronic Cigarettes." https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarettes-vaping/e-cigarette-position-statement.html; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes.

91. Aruni Bhatnagar et al., "Electronic Cigarettes: A Policy Statement From the American Heart Association," *Circulation* 130:16 (Aug. 24, 2014), pp. 1418-1436. https://www.ahajournals.org/doi/10.1161/CIR.0000000000000107; "Electronic Cigarettes, Vaping, and Health H-495.972." https://policysearch.ama-assn.org/policyfinder/detail/e-cigarettes?uri=%2FAMADoc%2FHOD.xml-0-4504.xml; "Electronic Nicotine Delivery Systems (ENDS)." https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html.

92. "Surgeon General's Advisory on E-Cigarette Use Among Youth." https://www.cdc.gov/tobacco/basic_information/e-cigarettes/surgeon-general-advisory/pdfs/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018-h.pdf; Rob Stein, "Surgeon General Warns Youth Vaping Is Now An 'Epidemic,'" NPR, Dec. 18, 2018. https://www.npr.org/sections/health-shots/2018/12/18/677755266/surgeon-general-warns-youth-vaping-is-now-an-epidemic.

93. "Hearing on E-Cigarettes and Teen Usage, Day 1," C-SPAN, July 24, 2019. https://www.c-span.org/video/?462955-1/hearing-cigarettes-teen-usage-day-1; "Hearing on E-Cigarettes and Teen Usage, Day 2," C-SPAN, July 25, 2019. https://www.c-span.org/video/?462992-1/hearing-cigarettes-teen-usage-day-2; "Hearing on Vaping and E-Cigarettes," C-SPAN, Dec. 4, 2019. https://www.c-span.org/video/?467034-1/hearing-vaping-cigarettes; "Hearing on Underage Vaping Legislation," C-SPAN, June 23, 2021. https://www.c-span.org/video/?512820-1/hearing-underage-vaping-legislation; "White House Roundtable on Teen Vaping and E-Cigarettes," C-SPAN, Nov. 22, 2019. https://www.c-span.org/video/?466761-1/president-trump-holds-roundtable-teen-vaping.

presidential roundtable resulted in a ban on all non-tobacco or menthol-flavored, pod-based e-cigarette products.[94] Additionally, many states and localities enacted or proposed banning all non-tobacco-flavored e-cigarette products.[95] Similarly, legislation to limit nicotine content has also been proposed.[96] This shows how political discourse can interact with medical discourse and contribute to the public visibility of an issue.

Perception Is Reality: Incorrect Perceptions May Adversely Affect Behavior

It is possible that the discourse put out by medical advocacy, in combination with media coverage and the policy environment, has played a part in shifting the public opinion on e-cigarettes. Between 2012 and 2018, the percentage of adults who perceived e-cigarettes as being more harmful or much more harmful than combustible cigarettes substantially increased from 1.3 or 2.8 percent, depending on the survey, to 8 percent.[97] Additionally, by 2018, 43 percent perceived the two products as equally harmful, up from about 36 percent.[98] There is also some evidence suggesting that the EVALI outbreak soured public perception of e-cigarettes even further. One 2020 study of patients from University of Missouri clinics found that 55.1 percent thought that e-cigarettes were less safe than combustible cigarettes.[99] This study was conducted shortly after the EVALI outbreak.[100]

Misperceptions about nicotine's direct health effects may impact patient care.

One survey found that more than

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believed all tobacco products were equally harmful.

Importantly, it is not just the public's opinion that is influenced by medical advocacy organizations' positions. Medical providers are perhaps even more aware of the stances taken by these organizations and may be primed to consider any product that delivers nicotine as harmful. One survey of physicians conducted in 2021 found that more than three-quarters agreed or strongly agreed that nicotine, on its own, directly contributes to the development of COPD and cancer, whereas about 90 percent agreed or strongly agreed with that statement for cardiovascular disease.[101]

These misperceptions about nicotine's direct health effects may impact patient care. One survey found that more than 60 percent of physicians believed all tobacco products were equally harmful.[102] The same survey found that about 40 percent of physicians believed that the cessation of combustible tobacco use should be the goal, even if it meant switching to a less harmful product, yet only 21.7 percent of physicians had ever recommended an e-cigarette to a patient.[103] These beliefs

94. Chris Kirkham, "Trump administration restricts some e-cigarette flavors," *Reuters*, Jan. 2, 2020. https://www.reuters.com/article/us-usa-vaping/trump-administration-restricts-some-e-cigarette-flavors-idUSKBN1Z11B7.
95. Bach. https://www.tobaccofreekids.org/assets/factsheets/0398.pdf.
96. Nedelman. https://www.cnn.com/2019/10/07/health/vaping-nicotine-cap-krishnamoorthi-bn/index.html; "Utah House Bill 438: Electronic Cigarette Requirements." https://legiscan.com/UT/text/HB0438/2023.
97. Nyman et al. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2755664; Huang et al. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6450305; Malt et al. https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-020-00410-2.
98. Nyman et al. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2755664.
99. Patel et al. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7302022.
100. Ibid.
101. Michelle T. Bover Manderski et al., "Persistent Misperceptions about Nicotine among US Physicians: Results from a Randomized Survey Experiment," *International Journal of Environmental Research and Public Health* 18:14 (July 21, 2021). https://www.mdpi.com/1660-4601/18/14/7713.
102. Cristine D. Delnevo et al., "Communication Between US Physicians and Patients Regarding Electronic Cigarette Use," *JAMA Open Network* 5:4 (April 15, 2022). https://jamanetwork.com/journals/jamanetworkopen/article-abstract/2791164.
103. Ibid.

and behaviors could translate to patients perceiving that their physicians hold stigmatized beliefs about smoking and e-cigarette use, which could lead some patients to withhold information about their tobacco use.[104] In the context of the medical advocacy organization statements, our findings suggest that their messaging about relative risk is not reshaping physicians' beliefs about nicotine or e-cigarettes' harm reduction potential, given that few statements thoroughly discussed their risk relative to combustible cigarettes.

Lost in Translation: With E-cigarettes, the Details Matter

Of note, the nuanced details that do exist in the statements tend to get lost when they are translated by the media and consumed by the public. For example, studies have estimated that news coverage of EVALI correlated with a 21 to 30 percent decline in e-cigarette sales in the weeks that followed the Centers for Disease Control and Prevention's announcement of the outbreak.[105] Similarly, a working paper by the National Bureau of Economic Research reported that the probability of perceiving e-cigarettes as more harmful than combustible cigarettes increased by 15.9 percentage points after news broke about EVALI.[106] The paper also reported that this change in perception remained higher than before the outbreak was announced even after it was determined that EVALI was associated with tainted THC-containing vaping products.[107] Although most of the medical advocacy organization statements accurately attributed EVALI to tainted THC-containing vaping products, the statements still expressed concern about possible lung injury from nicotine-containing e-cigarettes, which may have contributed to the media's increased reporting on the dangers of vaping any substance during the EVALI outbreak.[108]

Similarly, although some of the medical advocacy organizations acknowledge that e-cigarettes are likely less harmful than combustible cigarettes, this message is not breaking through the opposite rhetoric coming from the media, policymakers and other organizations.[109] In fact, one study that analyzed media coverage about e-cigarettes in 2019 found that e-cigarette stories peaked during the height of the

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104. Cristine D. Delnevo et al., "Communication Between US Physicians and Patients Regarding Electronic Cigarette Use," *JAMA Network Open* 5:4 (2022). https://jamanetwork.com/journals/jamanetworkopen/article-abstract/2791164; Laurel Erin Curry et al., "Nondisclosure of Smoking Status to Health Care Providers Among Current and Former Smokers in the United States," *Health Education & Behavior* 40:3 (Sept. 14, 2012). https://journals.sagepub.com/doi/abs/10.1177/1090198112454284?journalCode=hebc.
105. Lawrence Jin et al., "Misinformation, Consumer Risk Perceptions, and Markets: The Impact of an Information Shock on Vaping and Smoking Cessation," National Bureau of Economic Research, July 2022. https://www.nber.org/papers/w30255; Kamila Janmohamed et al., "News events and their relationship with US vape sales: an interrupted time series analysis," *BMC Public Health* 22 (March 10, 2022). https://link.springer.com/article/10.1186/s12889-022-12858-x.
106. Dhaval M. Dave et al., "News that Takes Your Breath Away: Risk Perceptions During an Outbreak of Vaping-Related Lung Injuries," National Bureau of Economic Research, April 2020. https://www.nber.org/system/files/working_papers/w26977/w26977.pdf.
107. Ibid.
108. Eric C. Leas et al., "News Coverage of the E-cigarette, of Vaping, product use Associated Lung Injury (EVALI) outbreak and internet searches for vaping cessation," *Tobacco Control* 30:5 (2021), pp. 578-582. https://tobaccocontrol.bmj.com/content/30/5/578; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statement on Vaping." https://www.aaap.org/wp-content/uploads/2019/11/Position-Statement-on-Vaping-11.18.19.pdf.
109. Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf; "Use of E-cigarettes and Vaping: Position Statement from the Oncology Nursing Society Regarding E-Cigarettes and Vaping." https://www.ons.org/make-difference/ons-center-advocacy-and-health-policy/position-statements/e-cigarettes-and-vaping; "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes.

EVALI outbreak and that articles that mentioned EVALI were significantly less likely to discuss e-cigarettes being less risky than combustible cigarettes compared to articles that did not mention EVALI.[110] Although evidence suggests that media portrayals of the relative risk of e-cigarettes lack important specificity and that public opinion has trended toward inaccurate perceptions of risk, there has been little visible effort by medical advocacy organizations to correct these phenomena.[111] One indication of this is that many of the statements have not been updated since at least 2020, which coincides with the year the EVALI outbreak subsided.[112]

In summary, the medical advocacy organizations' statements show many similarities to the current policy landscape and public discourse around e-cigarettes. Many statements call for a ban on non-tobacco-flavored e-cigarettes and nicotine concentration limits, both of which have been proposed or passed at the federal, state and local levels.[113] Similarly, youth use remains the greatest concern of many policymakers, as it was in many of the statements.[114] These similarities demonstrate how important it is that medical advocacy groups' statements be conveyed to the public and policymakers in a complete and unemotional way to avoid missing the key components of a complicated, multifaceted debate.

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Points for Consideration

In one regard, the cautious statements about e-cigarettes' potential as cessation aids and less hazardous products can be understood. Without the long history of research documenting the harms of e-cigarettes, it is nearly impossible to make definitive claims about the health and social impacts of e-cigarettes. Given this issue, one of the most common and important themes among all of the statements was a call for further research into the health effects of e-cigarettes and their utility as a cessation aid.[115] Indeed, it is vital to continue building our understanding of

110. Michelle Jeong et al., "Content Analysis of E-cigarette News Articles Amidst the 2019 Vaping-Associated Lung Injury (EVALI) Outbreak in the United States," *Nicotine & Tobacco Research* 24:5 (May 2022), pp. 799-803. https://academic.oup.com/ntr/article/24/5/799/6384733.

111. Keyu Chen et al., "US News and Social Media Framing Around Vaping," International Conference on Computational Data and Social Networks, (2022), pp. 188-199. https://link.springer.com/chapter/10.1007/978-3-031-26303-3_17; Nyman et al. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2755664; Jidong Huang et al. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6450305; Malt et al. https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-020-00410-2.

112. "Electronic Nicotine Delivery Systems (ENDS)." https://www.aafp.org/about/policies/all/electronic-nicotine-delivery-systems.html; Herbst et al. https://aacrjournals.org/clincancerres/article/28/22/4861/710466/Electronic-Nicotine-Delivery-Systems-An-Updated; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Electronic Cigarettes, Vaping, and Health H-495.972." https://policysearch.ama-assn.org/policyfinder/detail/e-cigarettes?uri=%2FAMADoc%2FHOD.xml-0-4504.xml; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Referred Resolution: Regulation of E-Cigarettes and Nicotine Vaping Policy Statement." https://osteopathic.org/wp-content/uploads/policies/Policy_H455-A-20_Referred_Resolution-_Regulation_of_E-Cigarettes_and_Nicotine_Vaping.pdf.

113. Bach. https://www.tobaccofreekids.org/assets/factsheets/0398.pdf; Nedelman. https://www.cnn.com/2019/10/07/health/vaping-nicotine-cap-krishnamoorthi-bn/index.html; Utah House Bill 438: Electronic Cigarette Requirements." https://legiscan.com/UT/text/HB0438/2023.

114. "Durbin Leads Bipartisan Group Of Senators Urging HHS To Address Repeated Failures At FDA To Regulate E-Cigarettes," Dick Durbin United States Senator Illinois, Feb. 1, 2023. https://www.durbin.senate.gov/newsroom/press-releases/durbin-leads-bipartisan-group-of-senators-urging-hhs-to-address-repeated-failures-at-fda-to-regulate-e-cigarettes; "Congressman Krishnamoorthi Applauds FDA Decision To Clear The Market Of Two Types Of Flavored Vuse E-Cigarettes Because Of Their Risk To Young People," United States Congressman Raja Krishnamoorthi, Jan. 24, 2023. https://krishnamoorthi.house.gov/media/press-releases/congressman-krishnamoorthi-applauds-fda-decision-clear-market-two-types; "Advocates, Public Health Leaders Join New York State Department of Health In Highlighting Governor Hochul Proposal to Ban the Sale of All Flavored tobacco Products, Including Menthol," New York State Department of Health, Feb. 9, 2023. https://www.health.ny.gov/press/releases/2023/2023-02-09_flavored_tobacco_products.htm; Daryl Huff, "Hawaii lawmakers push flavor bans and higher taxes to fight teen vaping," *Hawaii News Now*, Feb. 28, 2023. https://www.hawaiinewsnow.com/2023/02/28/hawaii-lawmakers-push-flavor-bans-higher-taxes-fight-teen-vaping.

115. "Position Statements on e-cigarettes." https://www.entnet.org/resource/position-statements-on-e-cigarettes; "Public Policy Statements: E-Cigarettes." https://www.asam.org/advocacy/public-policy-statements/details/public-policy-statements/2021/08/09/e-cigarettes; "Electronic Cigarettes, Vaping, and Health H-495.972." https://policysearch.ama-assn.org/policyfinder/detail/e-cigarettes?uri=%2FAMADoc%2FHOD.xml-0-4504.xml; "Regulation, Implementation, and Enforcement of Policies Regarding E-Cigarette Use Across the Life Span." https://www.apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Policy-Database/2021/01/12/E-Cigarette-Use-Across-the-Life-Span; "Position Statement: Electronic Cigarette." https://www.aarc.org/wp-content/uploads/2017/03/statement-of-ecigarette.pdf; "AAFP Advocacy Focus: Tobacco and Nicotine Use." https://www.aafp.org/advocacy/advocacy-topics/prevention-public-health/tobacco-nicotine.html.

e-cigarettes' health effects and public health impact, and well-designed, high-quality studies are critical. This is something that medical advocacy organizations should emphasize when they call for more research.

In addition, studying e-cigarettes' effects can be complicated for several reasons. First, illnesses caused by smoking combustible cigarettes take decades to develop. Because e-cigarettes expose users to fewer carcinogens and toxins, it is likely that any grave health harms from e-cigarettes will take as long, if not longer, to develop than combustible-cigarette-related illnesses. Although studies that assess harm in mice and cell cultures can offer hints as to the long-term effects of e-cigarette use, long-term, epidemiologic studies are necessary to confirm the effects on human health outcomes. Furthermore, these studies can be challenging to interpret because many people who use e-cigarettes are current or former smokers, which can cause confounding results, as combustible cigarettes cause many of the same health outcomes that researchers are trying to link to e-cigarette use.[116] These are just a few of the considerations to study design that organizations calling for more research could recommend be addressed.

Another facet of tobacco control is public education, and medical advocacy organizations have an opportunity to make sure public-facing education is clear, complete and accurate.

Another facet of tobacco control is public education, and medical advocacy organizations have an opportunity to make sure public-facing education is clear, complete and accurate. Ensuring that public education campaigns are factual and reaching the desired audiences (i.e., youth) without having unintended effects on other audiences (i.e., adults who smoke and might benefit from switching to e-cigarettes) is important to maximizing the potential public health benefits of e-cigarettes. One of the marketing restrictions for e-cigarettes is that they cannot be marketed with claims about having a modified risk profile unless the statements are authorized by the FDA, and they cannot be marketed as cessation aids unless they have been approved as such through the FDA's Center for Drug Evaluation and Research.[117] At this time, no e-cigarette product has received either designation; however, it is possible that one or more e-cigarette products will achieve one or both of these designations in the future.[118] If this occurs, medical advocacy organizations and governmental organizations should develop public education campaigns and tailor their messages to different audiences to include information about relative risk and cessation potential based on how e-cigarette use could harm or benefit them.

When it comes to using e-cigarettes as cessation aids, another organization that can guide practice is the U.S. Preventive Services Task Force. Currently, the organization has concluded that there is insufficient evidence to recommend e-cigarettes as cessation aids.[119] This organization can continue to evaluate the evidence associated

116. Stratton et al., eds. https://nap.nationalacademies.org/catalog/24952/public-health-consequences-of-e-cigarettes.
117. "Deeming Tobacco Products To Be Subject to the Federal Food, Drug, and Cosmetic Act, as Amended by the Family Smoking Prevention and Tobacco Control Act; Restrictions on the Sale and Distribution of Tobacco Products and Required Warning Statements for Tobacco Products," Federal Register, May 10, 2016. https://www.federalregister.gov/documents/2016/05/10/2016-10685/deeming-tobacco-products-to-be-subject-to-the-federal-food-drug-and-cosmetic-act-as-amended-by-the.
118. Ibid.
119. "Tobacco Smoking Cessation in Adults, Including Pregnant Persons: Interventions," U.S. Preventive Services Task Force, Jan. 19, 2021. https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/tobacco-use-in-adults-and-pregnant-women-counseling-and-interventions.

with e-cigarette use for cessation and evolve their guidelines as additional evidence becomes available. Medical advocacy organizations have a role to play in this as thought leaders and arbiters of public opinion. Their public education campaigns should evolve with the current evidence, FDA authorizations and U.S. Preventive Services Task Force guidelines.

Finally, although medical advocacy organizations have a role to play in the discourse around e-cigarettes, they are not solely responsible for influencing public opinion. Governmental organizations must also be involved in correcting misinformation and providing comprehensive assessments of relative risk. Because medical advocacy organizations can influence policy, these organizations can use their clout to encourage policymakers to take a measured, evidence-based stance when legislating public health matters.

Because medical advocacy organizations can influence policy, these organizations can use their clout to encourage policymakers to take a measured, evidence-based stance when legislating public health matters.

Conclusion

Historically, tobacco control policy has been straightforward from a medical perspective: do not start smoking and, if you already smoke, try your best to quit as soon as possible. The development of e-cigarettes complicated this messaging while also offering a new opportunity to improve health outcomes for people who smoke. It is promising that some medical advocacy organizations recognize the harm reduction potential of e-cigarettes; however, there is still skepticism to overcome. Evaluating the official statements of medical advocacy organizations demonstrates how the discourse produced by these organizations can manifest in public perception and policy. In the current climate where both public risk misperceptions and tobacco control policy seem to have discounted e-cigarettes as a harm reduction strategy, there is a continued need for high-quality research confirming e-cigarettes' reduced relative-risk profile and potential as cessation aids. It is also important that policymakers and the public understand that the statements from medical advocacy organizations sometimes lack the necessary nuance and must be interpreted within the context of multiple social factors. Understanding the patterns and social impact of the discourse produced by medical advocacy organizations demonstrates how important it is to carefully communicate complex health concepts to avoid the spread of misconceptions.

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