

## Original Research

# A Mixed Methods Approach to Improving Provider Counseling of Patients Who Vape

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## Abstract

### Significance

Vaping is an epidemic among young people, but there is little guidance on how medical providers should counsel young adults about vaping. To address this gap, we examined how electronic health record (EHR) systems prompt providers to collect vaping data and interviewed young adults about vaping communications with providers and preferred information sources.

### Methods

In this mixed methods study, we used survey research methods to explore if prompts exist in EHR systems to guide discussions about vaping with youth seen in primary care. We collected primary care practice information about EHR prompts regarding e-cigarette use from 10 rural North Carolina practices from August 2020 through November 2020 and interviewed 17 young adults (age 18-21 years) who reviewed resources and provided their opinion on the resource's relevance for their age group. Interviews were stratified by vaping status, transcribed, coded, and thematically analyzed.

### Results

Only 5 of 10 EHR systems included prompts to capture information about vaping and data capture was optional in all 5 cases. Of the 17 interviewees, 10 were female, 14 were White, 3 were non-White and the mean age was 19.6 years. Two central themes emerged. Young adults: 1) were open to confidential, non-confrontational interactions with trusted providers and supported the use of a 2-page resource/discussion guide, questionnaires about vaping, and other waiting room resources, and 2) wanted prevention and cessation resources to be age-appropriate, including medical facts from a trusted source, and to be disseminated via social media platforms used by young adults.

### Conclusions

We found a lack of EHR functionalities in screening for vaping status hindered patients from receiving counseling on use. Young adults report a willingness to communicate with and learn from trusted providers and to gain understanding from information accessed via social media.

### Keywords

vaping; e-cigarette use; electronic cigarette; e-cig use; electronic health records; EHR; young adults; adolescents; teens; smoking cessation; smoking prevention

## Introduction

Tobacco use remains the leading cause of preventable disease, disability, and death in the United States.<sup>1</sup> Although rates of combustible cigarette use have declined in recent years, there is an “epidemic” of vaping among high school students and young adults (ages 18-24 years).<sup>2-4</sup> In 2019, 28% of high school students reported vaping in the past 30 days.<sup>5</sup> Nicotine in vapes can damage adolescents’ brains, aerosols have harmful constituents, and vaping can lead to combustible tobacco product use.<sup>6</sup> Nearly all tobacco use begins during adolescence, thus preventing exposures among youth is critical.<sup>7</sup>

Primary care settings are firmly dedicated to the prevention and treatment of a variety of health conditions; however, there is little published evidence on the effectiveness of tobacco cessation and treatment interventions in young adults.<sup>8</sup> Nonetheless, the American Academy of Pediatrics (AAP) recommends physicians offer young adults screening, referral, and/or treatment for nicotine dependence.<sup>9</sup> Unfortunately, screening rates remain suboptimal among youth and young adults for non-cigarette products. While reviews of electronic health record (EHR) data show high rates of cigarette screening during well-child visits (>90%), there is often no screening of electronic cigarette (e-cigarette) use.<sup>10</sup> Further, knowledge of evidence-based health consequences for e-cigarettes was low across different groups of medical care providers.<sup>11,12</sup>

Despite the known benefits of primary care interventions to prevent and reduce adult tobacco use, there is little clinical guidance for young adult vaping. There are few validated screening tools that specifically guide conversations and capture whether young adults vape.<sup>11,13</sup> Many current screening tools ask only about “tobacco;” however, young people frequently do not consider vapes to be tobacco products.<sup>14</sup> While there are guidelines for cigarette smoking cessation, in order to address vaping, these need to be tailored as: 1) vaping is easier to conceal than smoking cigarettes, 2) many young adults do not believe vapes contain nicotine or other harmful chemicals but acknowledge the harms of cigarettes, and 3) many vapes contain high amounts of nicotine (even higher than cigarettes), which can make quitting more diffi-

cult.<sup>15-17</sup> As vapes continue to rise in popularity, research is needed to establish new evidence to inform and expand tobacco guidelines in order to screen and address vaping among young adults.

In this mixed methods study, we used survey research methods to explore whether prompts exist in EHR systems to guide discussions with young adults seen in primary care. We conducted semi-structured interviews to understand what kind of advice young adults would give their providers to optimize the quality of communications between providers and young adult patients regarding vaping. Interviewees were also asked questions about the following topics regarding vaping: access to information, motivations for engaging in vaping behaviors, and how practitioners and staff can best engage with young adults and share information about vaping.

## Methods

The University of North Carolina at Chapel Hill (UNC-Chapel Hill) Institutional Review Board (IRB) determined the study was Non-Human Subjects Research and exempt from further IRB review.

### Procedures for the Practice Surveys

We created a list of 15 rural primary care practices that serve young adults in the 16 western North Carolina counties that make up the Mountain Area Health Education Center, Inc. (MAHEC). We recruited 10 practices with different EHR systems to understand the diverse nature of screening for vape use. We emailed clinicians or practice managers invitations to participate in the survey. Through the survey questions, we collected information about how nicotine use was assessed and captured. Practices were compensated \$20 for completing the survey.

### Qualitative Interviews With Young Adults

#### Participants

Young adults ages 18-21 years were recruited from western and central North Carolina via distributed flyers through peer networks, as well as educational and research efforts supported by MAHEC and UNC-Chapel Hill. Potential participants accessed an online survey,

provided contact information, and scheduled a “cessation” or a “prevention” interview contingent on survey responses. Informed consent was obtained at the time of the interviews. Interview questions and shared resources were identical for each interview group, with the exception of having prevention and/or cessation resources shared based on group assignment. Interviews were restricted to groups of 1-4 participants.

### Procedures

Seventeen young adults gave informed consent and participated in recorded video interviews. Demographic data were collected and participants responded to questions about vaping exposure and knowledge (**Appendix A**). The interview guide included questions about vape ingredients, vaping behaviors among participants’ peers, and access to information about vaping. We also asked if participants were comfortable with medical professionals asking them about vaping and how they prefer to be approached.

Participants were asked to briefly review and provide opinions on several prevention or cessation resources made available during the interviews. These included the Truth Initiative, Smokefree Teen, The Real Cost, e-cigarette information from the Office of the Surgeon General, Smoke Screen, and Catch My Breath, as well as a 2-page conversation guide resource (**Appendix B**: <https://go.unc.edu/Bq7k8>) for providers to use with patients. The 2-page guide was co-developed by members of our research team using relevant literature to guide the process.<sup>18-27</sup> We asked participants to share whether these resources were relevant to their age group and whether they would recommend them to providers. Finally, we asked participants for advice regarding where to distribute key information on vaping to optimally reach youth. Interviews were approximately 40 minutes long and participants received \$100 in compensation.

### Data analysis

The interviews were professionally transcribed and imported into ATLAS.ti 9.0 for data analysis (ATLAS.ti Scientific Software Development GmbH). Initial codes were developed based on relevant interview topics. In a 3-step process, 6 researchers (LR, JH, SM, SD, KM, AB) gained

familiarity with the codebook and established uniformity among coders. First, using standard protocols, coders independently coded 2 initial transcripts (ie, 1 prevention and 1 cessation), identified additional codes, and revised existing codes in the draft codebook. Second, an inter-coder reliability test was performed through Atlas.ti using Krippendorff’s Alpha, in which values range from 0 (perfect disagreement) to 1 (perfect agreement). Alpha equal to and above 0.667 is acceptable reliability; the inter-coder score for the coded transcripts in this study was 0.724.<sup>28</sup> Third, following the reliability test, all coders met to review and finalize the codebook.

The remaining transcripts were divided among 5 coders, and each transcript was independently coded. After all the coding was complete, the research team identified major themes from the ideas and concepts that emerged from the data. Inductive coding techniques as described by Strauss and Corbin (1990) were used along with the constant comparison method, which involves comparing elements that are present in 1 data source (eg, transcript 1) with elements in another source (eg, transcripts 2, 3, 4, etc.) to identify commonalities.<sup>29-31</sup>

## Results

### Primary Care Practice Survey

Survey data were collected from 10 practices located in 7 counties in western North Carolina, 5 of which had rural designations from the North Carolina Rural Center (**Table 1**).<sup>32</sup> The practices were served by a mix of providers (eg, physicians and advanced practice providers) from three primary care specialties: Family Medicine, Pediatrics, and Internal Medicine. Across the practices, the median percentage of White patients was 83%, while 7% were Latinx, and the median number of patients with Medicaid was 25%. One practice exclusively served American Indians. Ten EHR systems were evaluated, of which 5 had fields to record the patients’ vaping status and prompts to offer counseling (**Table 2**). No practices’ EHR systems had required vaping fields.

### Qualitative Interviews

The demographics of our interviewees are shown in **Table 3**. We had a total of 17 participants, of which 10 were female, and 14 were

**Table 1.** Characteristics of 10 Primary Care Practices Responding to the Electronic Health Record Survey and Noted Vaping Queries

		Median number or percentage (%)	Interquartile range (IQR)
<b>Provider degrees</b>	Medical Doctor (MD)	4	3-6
	Doctor of Osteopathy (DO)	1	1-1
	Physician’s Assistant (PA)	1	1-3
	Nurse Practitioner (NP)	2	1-4
<b>Provider specialties</b>	Family Medicine	7	4-9
	Pediatrics	4	3-5
	Internal Medicine	1	n/a
<b>Payer</b>	Medicaid	25%	12-30%
	Medicare	26%	9-33%
	Commercial	32%	18-40%
	Tricare/Military	1%	0-2%
	Self-pay	5%	2-10%
<b>Patient race/ Ethnicity</b>	American Indian or Alaskan Native	0%	0-3%
	African American/Black	3%	0-5%
	Caucasian/White	83%	63-89%
	Asian	0%	0-0%
	Native Hawaiian or Pacific Islander	0%	0-0%
	Other	7%	2-12%
	Latinx	7%	3-16%
<b>Median number of patient visits per ½ day</b>		9	8-10

White. The mean age was 19.6 years. Two central themes emerged from the qualitative interviews on how practice care teams can better engage young adults in conversations about vaping. First, young adults were open to confidential, non-confrontational interactions with trusted providers and highly supported the use of a 2-page resource, questionnaires about vaping, and information in waiting rooms. Second, young adults wanted prevention and cessation resources to be age-appropriate, include medical facts from a trusted source, and be disseminated via social media platforms used by young adults. We describe these themes in detail and provide illustrative quotes from the participants.

**Theme 1: Young adults were open to confidential, non-confrontational interactions with trusted providers and highly supported the use of the 2-page resource, questionnaires about vaping, and information in waiting rooms.**

Most interview participants in our study reported a willingness to communicate information about vaping in the context of an ongoing trusted relationship with a provider. Specifically, many participants conveyed personal experiences with their provider. *“At least with my doctor, I’m pretty comfortable. I basically had the same doctors [for as] long as I can remember.”* Only participants with an established patient-physician relationship reported feeling comfortable talking about their vaping use. *“I’m pretty comfortable with my primary care doctor, but that’s because we’ve had a longer relationship. If I were ... in a situation of urgent care or a provider that I’m not as used to ... I think I would see less of a point of sharing that [vaping] information.”* Furthermore, some participants reported never being asked about vaping or only being asked about tobacco use, which they did not consider to be equivalent to being asked about vaping. *“I feel like when I have gone to the doctor ... knowing that I vape, it’s been like once*

**Table 2.** Number of EHRs With Vaping/Tobacco-Related Functions of Interest

<b>EHR functions regarding vaping and/or tobacco use</b>	<b>Absolute number of practices' EHRs out of 10 different* EHR's with noted function</b>
Required field/question(s) about if young adults use e-cigarettes/vaping products	0/10
Optional questions about if young adults use e-cigarettes/vaping products	5/10
No questions about e-cigarette use	5/10
EHR prompts providers to offer tobacco/e-cigarette use counseling in adolescent/young adult population	5/10

\* Types of EHRs: General Electric's Centricity Practice Solution 12, Athena AdventHealth, eClinicalWorks 11e, Aprima, Athenanet, Epic, Cerner Powerchart, Resource and Patient Management System (RPMS ), Athena 20.11.

*out of a few times ... actually been brought up. And besides that ... I've never been asked. It's usually just about smoking cigarettes.”* While the majority of our participants described high vaping prevalence among their peers, “... I'm in high school, so I'd probably say [I see] 70 to 75% [vaping] from my personal experience,” they also reported limited knowledge of the consequences and contents of vapes. “I personally have no clue. I couldn't tell you anything that would be in a JUUL pod ..., but I think most people don't know what's in it at all,” and “I think I've looked it up before and seen like, ... vegetable glycerin or like other kind of carrier things. ... But, I definitely don't know exactly what's in it and that's one of my biggest concerns about it.”

Importantly, most participants expressed wanting to hear about the consequences of vaping. “I would like more information provided from...a medical perspective if they had it. And ... could I get nicotine poisoning? ... Like the popcorn lung thing?” One participant mentioned providers should be up to date on which vaping products young adults use. “I think it would be helpful for doctors to understand ... what products people are using. I find it kind of embarrassing ... if they ask, ... what I use, do I use a JUUL or whatever. I don't like talking about it or like describing it. ...if they kind of like understood what most people are using and could like be more informed ...so that the conversation isn't so awkward.” Many participants revealed the need to be approached in

**Table 3.** Characteristics of Young Adult Interviewees

		<b>Number</b>
<b>Total number of interviews</b>		<b>7</b>
Interview type	Prevention	4
	Cessation	3
<b>Total number of interviewees</b>		<b>17</b>
Gender	Male	7
	Female	10
Race	Asian	1
	African American/Black	1
	White	14
	Other	1
Ethnicity	Hispanic/Latinx	3
	Non-Hispanic/Latinx	14
Average age		19.6 years

a non-judgmental fashion, *"I think, specifically, there needs to be a lot of caution in terms of establishing a non-judgmental space before asking the questions,"* while almost all participants reported concerns about confidentiality and their need to be confident that the provider would not disclose information to parents/legal guardians. One participant suggested, *"... reminding us that it's confidential and that they can't really tell anyone else our medical history,"* when asked what would make conversations with providers more comfortable. Additionally, they acknowledge how young adults may not answer honestly if their parents can hear the conversations with providers, *"... I've gone to urgent care visits where they've asked things like, are you sexually active, are you smoking, are you drinking, with my mom in the room, which would discourage I think almost anyone from answering truthfully if the answers were yes."*

Overwhelmingly, participants reported the 2-page resource on vaping/e-cigarettes was attention-grabbing, novel, and provided relevant information that is effective in preventing vape use.<sup>27</sup> *"I think this is a very, very important ... paper because it actually lets you realize how much nicotine it is compared to cigarettes, and how dangerous it is actually for your body. And I think most young people, or even older people don't even know about the actual effect,"* and *"That's actually scary, because to be completely honest, I had no idea of these kind of statistics because, like I said earlier, a lot of the stuff that they show you, they don't really show you the contents in the comparison of vaping and cigarettes ..."* Participants believed having this resource available on a provider website would not be useful; however, most participants thought having it at a provider's office would be beneficial. *"I don't think teens would like go on that website to find that, I think it's better to just have it ... when you go into doctor's offices."* Participants offered helpful suggestions for the 2-page resource including adding pictures of disposable products. *"I do use disposables and I don't use any of the ones that are listed,"* and addressing more proximal risks, like how vaping may change their appearance, *"... helpful to have a little section that does talk about health and cosmetic impacts."*

Moreover, many of our interviewees were in favor of resources being placed in the provider

waiting room, if presented in a non-coercing manner. *"... If it's too much in your face and it's plastered all over the walls, it could come across as, if you share with us that you're vaping, we're going to tell you it's awful and you need to stop and blah blah blah, and we're going to get on your case about it,"* or *"I did like the concept of the questionnaire and I feel like I would like to see that in doctors' offices just because it gives a non-confrontational solution for kids."* Participant lists of acceptable provider resources included posters/pamphlets with QR codes to scan for more information, online questionnaires, and direct conversation with providers using specific language that clearly asks about vaping behaviors. *"I think maybe an online survey would be easier ... and then, if you have any further questions, you can specify that you want to talk to your doctor about something on the survey, ... versus just going through a list during your visit."*

**Theme 2: Young adults wanted prevention and cessation resources to be age-appropriate, include medical facts from a trusted source, and be disseminated via social media platforms used by young adults.**

Our participants widely believe that their visits to providers' offices are infrequent. *"Yeah, I might ask my doctor. But I honestly just don't go to the doctor's office enough."* This initiated a discussion around the need for credible and trusted vaping prevention and cessation resources in spaces other than the provider's offices. *"Yeah, I think it would be helpful to have the resources be more public. I know where to refer people if they're using drugs, like opioids or marijuana, ... but for nicotine, ... it was a lot harder to find peer support counseling or resources specific to tobacco use or vaping,"* and *"I would definitely make use of the social media platforms, like Instagram, Snapchat, TikTok, Twitter, um, 'cause most young people are online daily and see if there's a new post or a new advertisement."*

Participants in our study were presented with prevention or cessation resources depending on their current vaping status. Non-vaping participants reviewed and commented on Smokescreen (ie, video game) and Catch My Breath (ie, school-based intervention). Several participants had negative reactions to the

video game; they felt it was not appropriate for their age group. *"I don't think it would be as influential maybe, per se, for high schoolers or college students, just because ... I feel like they'd probably see it as, oh, they're making us do this, whatever. But I think maybe showing this to a younger audience like middle schoolers would have a good effect."* The school-based intervention was well received, *"... I think advertising [Catch My Breath] in schools would be the most helpful."* Interestingly, some participants commented that vaping prevention should start in childhood when they are willing to listen and adults still have influence over their behavior. *"It [Catch My Breath] would be ... better aimed at people that are slightly younger, like maybe eighth grade, just because high school is when everything goes sideways I guess.... I didn't really have the information to prepare me for what [vaping] was, how prevalent it was going to be ..."* One participant even vocalized an important barrier for prevention resources that encouraged selecting non-vaping friends, *"... if 75% of high schoolers and college students are vaping, you're probably going to have friends in your circles that are [vaping] and it feels very unrealistic to be like, oh, I'm just going to cut these people out of my life. And I think a lot of video games like this just tell you to avoid these things rather than how to deal with them ..."* Another participant criticized resources for having fun games or dramatic advertisements rather than providing factual, direct communication about vaping. *"For me ... at least the one that I've been seeing most recently, was a little bit too like dramatized. I feel like ... it wasn't really as effective to me because it wasn't really like straight up enough about what the risks are. I just feel like some of the ones I've seen have tried to like make it really cool and interesting to watch, but I just kind of end up ... thinking it's cheesy and not as effective."*

Participants who currently vaped commented on resources from the Truth Initiative, Teen-SmokeFree.gov, and The Real Cost. Our participants who vaped seemed optimistic about the effectiveness of these resources but did not believe they would work for them, *"... I know that I ignore a lot of notifications on my phone. [So], I don't know if it'd work for me, but I think it's a good idea,"* and *"... I think if I wanted to quit, I would probably look at something like this to scare myself. But I've scared myself a lot and*

*I don't think that's necessarily enough to make me quit."* Regardless of vaping status, the majority of our participants mentioned using social media platforms such as Instagram, TikTok, and Snapchat to disseminate vaping ads and messages. *"I'm personally probably on Instagram the most out of all platforms. And, I think Instagram has an efficient way of having ads pop up in your feed to where you look at them if you're scrolling through your feed. And then I think TikTok is clearly a great way to spread information now."* One participant recalled messages on these platforms from physicians (ie, skin improvement ads) and thought this made the information more credible. *"I know I've seen a lotta doctors post about like what's best for skin care or something and I watch that because I trust the doctor posting something about skin-care on TikTok, so I'd probably trust the doctor posting something about vaping on TikTok."*

Overwhelmingly our interview participants described strategies for linking vaping information with young adults by reaching them at school, in communities, and through social media platforms, especially messages from trusted sources like physicians. *"I know there was a time where there were a couple of videos that I would see that kind of blew up in terms of people talking about literally being hospitalized for JUULing and I think seeing actual teenagers rather than adults speak about why they quit or why they're trying to quit was helpful ... just because I feel like that's [TikTok] the biggest influence for our generation and the younger generation."* The type of information participants thought would be compelling on social media platforms included testimonials about trying to quit vaping, straight talk about health effects, and the financial cost of vaping. *"I think it's been really helpful for me to see people going through the process of cutting down ... definitely is discouraging to see ... people are still having to spend a lot of money on vapes even when they don't want to just to maintain what is now an addiction."*

## Discussion

We collected EHR data from 10 primary care practices to better understand whether EHR systems prompt providers to ask patients about vaping. Additionally, qualitative data were collected from 17 young adults to hear

how they think their provider and practice teams could better inform young people about vaping.

Notably, we found EHR systems surveyed in our study were not designed to capture vaping among young adults, which aligns with previous research.<sup>10</sup> Specifically, in one study of 508 adolescent well-child checks, researchers found that providers assessed cigarette and smokeless tobacco use in 92% and 51% of visits, respectively, but there were no records documenting assessment of vaping.<sup>10</sup> EHR prompts that only capture smoking behavior may create missed opportunities to uncover vaping behaviors and identify knowledge gaps in young adults. Vaping prompts in EHRs as required data entry fields could prompt discussions, serve as learning opportunities, and inform decision-making. Patient population level data could also help providers assess the frequency and trends of vaping, which could catalyze people and communities to take action to reduce vaping use among young people.

Our participants were open to conversations with trusted providers as long as they were non-confrontational, non-judgmental, and confidential. This finding is important since young adults do not typically seek out information from their providers about vaping; instead, they often look to friends who vape for credible information.<sup>33</sup> Since some participants indicated that providers do not have sufficient knowledge about vaping and its changing nomenclature, it will be important for providers to keep up with the changing lexicon in order for youth to feel comfortable having these discussions. In line with recommendations from previous research, providers could review internet blogs, social media posts, and other resources to keep up to date on vaping trends.<sup>11,34</sup> Interviews also highlighted the need for providers to share clear facts about vaping ingredients, potential downstream health consequences, and quitting assistance. A recent study found knowledge of evidence-based health consequences from vaping was variable and low across physician groups, underscoring the need for curriculum development in medical education regarding e-cigarette use and its impact on health.<sup>12</sup>

As many young adults do not engage in regular visits with their primary care providers, our

interviews highlighted the role of social media and community-level resources for vaping prevention and cessation.<sup>35</sup> Young adults in our study called for improved access to vaping information online (via popular social media sites) and as part of school-based educational programs. Unfortunately, the social media landscape is dominated by pro-vaping messages with a noticeable silence from the public health sector.<sup>36</sup> There is a need for public health professionals to actively engage in social media dialogue to influence the conversation and create a balanced fact-based discussion. The young adults we interviewed also unanimously and enthusiastically supported the use of the 2-page flyer for its novel information on how vapes compare with combustible cigarettes. A review of current e-cigarette prevention and cessation programs largely found that the programs include effective components; however, they lacked evidence-based tools and resources.<sup>37</sup> Including key components, such as dedicated evidence-based tools and resources like the 2-pager, in e-cigarette prevention and cessation programs may increase the programs' ability to prevent the use of e-cigarettes among young people.

### Limitations

We noted several limitations to our study including a small sample size and limited geographic location. We used a variety of venues to invite young adults to participate in the interviews, but the results should not be generalized beyond the study population and setting. Ideally, future research could include a younger population, as well as a greater number and diversity of participants. Additionally, for the qualitative analysis, we did not dual code the interviews beyond the initial 2 transcripts. However, the inter-coder reliability Alpha suggests a high level of consistency between coders.

### Conclusions

Our study calls for a reassessment of EHR design to prompt discussions regarding vaping — specifically, required data entry fields to capture vaping are urgently needed. We also found that young adults expect primary care providers and care teams to serve as a key, but not sole, resource for the most accurate information about vaping and associated health

effects. As many young adults do not engage in regular visits with their primary care providers, social media and community-level resources serve as critical support for young adults. Providers, educators, and young adults themselves can use these stakeholder-informed resources to inform their communication methods and outreach plans going forward. Adding EHR functionalities and resources to prompt discussions and to capture vaping behaviors at the point of care across time may enhance the status quo and help youth make more informed and healthy decisions.

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### Statement of Data Availability

Please email a reasonable request to the corresponding author for access to the research data.

### Conflicts of Interest

The authors declare that they have no conflicts of interest.

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## Appendix A

### Semi-Structured Interview

**Interviewer:** The purpose of this interview is to understand how doctors and others in healthcare should ask about vaping and what kinds of advice they should give to young people in order to help them avoid starting to vape or how to stop vaping.

#### A. General Questions

1. Are a lot of people your age vaping? If you had to give a rough percentage, what proportion of people around your age vape at least once per week? Said differently, how many people out of every 10 do you think vape at least once a week?
2. What age were you when you first saw a person about your age vaping? If you vape, what age did you first try vaping?
3. What are some of the reasons that people your age vape?
4. What do vaping and cigarette smoking have in common? How are they different?
5. Do you know what is in JUUL pods and other vapes? If so please list some of the ingredients.
6. If you had a question about vaping, where would you look for information? Online? Friends? Family member? Doctor? Teacher?

#### B. Provider-Specific Questions

1. Has your doctor/nurse asked if you vape?
  - a. If so, did they ask in a conversation or through written questions on a document?
  - b. Were questions asked to you directly, or did the doctor/nurse ask a parent or guardian to answer for you?
2. Do you think doctors, nurses, or other people that work in doctor's offices should ask young people about vaping?
3. If people at your doctor's office are going to ask young people about vaping, would it be better to 1) ask you to share this information by having you fill out a questionnaire, 2) ask you questions directly during a conversation between you and your providers, or 3) have you respond to questions using an online survey that you fill out ahead of your doctor's visits?
4. How comfortable are you talking to your doctor/nurse and/or asking them questions about vaping? What could be done to make you more comfortable when talking about vaping with your doctor/nurse?
5. Do you wish your doctor/nurse would provide more information on vaping? What specific questions do you have for them?
6. Do you think there are ways doctors and nurses can help young adults who may be addicted to e-cigarettes reduce their use or quit altogether?
7. What else should we think about regarding how doctors and nurses should interact with young people regarding vaping?

#### C. Resources – Prevent and Quit Vaping Questions

**Interviewer:** Now we want to ask you about some resources. Many groups have made videos, signs, infographics, commercials, and other ways to get the message across about vaping, the risks of vaping, and some of the misinformation about vaping.

1. In general, before we ask about the specific resources we asked you to review, what resources/platforms (websites, apps, YouTube, TikTok, Instagram, etc.) do you think would be most helpful in getting across to kids? Why?
2. Regarding resources to help young people quit vaping:
  - a. What did you think about the "Truth Initiative" approach to help kids quit? (prompt to

show image of truth initiative webpage – prompt: the texting resource “DITCHJUUL to 88709”) <https://truthinitiative.org/thisisquitting>

b. What about the Smokefree teen resources? (prompt to show image of webpage)?

<https://teen.smokefree.gov/>

c. What about the “real costs” initiative (prompts from <https://therealcost.betobaccofree.hhs.gov/>)

d. If you were to design one or more ways to help kids quit vaping, what would that look like?

e. What do you think about this 2-page tool a provider might use to talk to you about vaping?

3. Regarding general messaging to keep young people from trying vaping. (**SKIP FOR Interviews with e-cigarette users**)

a. What do you think about Smoke Screen (video game)? <https://www.smokescreengame.org/>

b. What do you think about Catch My Breath? <https://www.catch.org/bundles/23725>

c. If you were to design one or more ways to message to kids about keeping from trying vaping, what would you do?

d. **SHARE SCREEN:** What do you think about this 2-page tool a provider might use to talk to you about vaping? Have you heard of any of these products? Is there anything about this tool that’s surprising to you or that you don’t understand?

4. Our aim is to get some of these messages and resources into doctors’ offices.

a. Should any of these resources be mentioned by your doctor or others working in your doctor’s office?

b. Should any of them be shared on their practice’s website?

c. How else might doctors’ offices better link the best resources with kids to help them *never start* vaping (have videos and other messages available while people wait to connect with their doctors when using video visits, telemedicine experiences, Facebook pages, etc.)?

d. What about ways to link kids with resources to help them *stop* vaping?

Thank you for participating in this interview. Your answers will help us help providers talk with their 18-21-year-old patients about vaping.

Appendix B

### What vape(s) do you use?

Select the vape(s) you use most often.

<p><b>Vape Pen</b></p> 	<p><b>Box-Mod</b></p> 	<p><b>Disposables</b></p>  <p>STIG Mojo Posh</p>	<p><b>Pod Devices</b></p>  <p>Blu Phix</p>
<p><b>Dab Pen</b></p> 	<p><b>Sourin Drop</b></p> 	<p><b>Chronic/Dank Vapes</b></p> 	<p><b>Other Device(s):</b></p> <hr/> <hr/>

### How much do you use per week?

Fill out the line(s) most appropriate for your vape(s).

 <p>_____</p> <p><b>Pods or Cartridges</b></p>	 <p>_____</p> <p><b>Disposables</b></p>	 <p>_____</p> <p><b>Tank Refills</b></p>
<p><b>Other Amount:</b></p> <hr/>		<p><b>I Don't Know</b></p>

### What's in your vape?

Nicotine: **YES** **DON'T KNOW** **NO**  
 Amount: \_\_\_\_\_ mg **or** \_\_\_\_\_ %  
 \_\_\_\_\_  
 \_\_\_\_\_  
 CBD: **YES** **DON'T KNOW** **NO**  
 THC/Marijuana: **YES** **DON'T KNOW** **NO**  
 What type? Dab Hash Other: \_\_\_\_\_

Most-Used Flavor:  
 Minty Spicy Fruity Dessert Tobacco

Other Specific Flavor: \_\_\_\_\_



### Where'd you get it?

Friend Parent  
 Sibling Co-worker

I bought it in person  
 I ordered it online

Other: \_\_\_\_\_

## How much nicotine are you getting?



Equivalent #  
of Cigarettes



Equivalent # of  
Cigarette Packs

<b>DISPOSABLES</b>		
Puff Bar (original)	26-65	1-3
Puff Bar (plus)	160	8
STIG	72	3.6
Bidi Stick	84	4.2
<b>PODS</b>		
JUUL Pod	21-35	1-2
Blu Liquidpod	18-36	1-2
Blu Liquidpod Intense	38-60	2-3
Phix Pod	75	4
<b>E-JUICE (10 mL)</b>		
3 mg/mL (0.3%)	30	1.5
6 mg/mL (0.6%)	60	3
12 mg/mL (1.2%)	120	6
35 mg/mL (3.5%)	350	17.7
50 mg/mL (5%)	500	25

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