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## Changing the Trajectory of Substance Use and Depression beyond the Formative Years: The Virginia Screening, Brief Intervention, & Referral to Treatment Project

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## Changing the Trajectory of Substance Use and Depression beyond the Formative Years: The Virginia Screening, Brief Intervention, & Referral to Treatment Project

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**Changing the Trajectory of Substance Use and Depression Beyond the Formative Years:  
The Virginia Screening, Brief Intervention, and Referral to Treatment Project**

### Abstract

Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an important secondary prevention strategy to address substance use and depression risk beginning in youth and continuing across the lifespan. Ten healthcare settings in Virginia implemented the SBIRT model between 2017 and 2020. A total of 65,315 participants ages 18 and older were universally screened to determine the severity of their substance use and depression and offered a risk-informed intervention. 12.7% of individuals endorsed some level of risky substance use and 4.5% screened positive for depression overall (11.1% in the outpatient setting). 10% of all brief intervention recipients were enrolled for follow-up screening 6 months later. Younger adults had significantly greater prevalence of risky drug use and depression compared to older age groups while middle-age adults displayed higher prevalence of moderate to severe alcohol risk, highlighting the need for early intervention among younger adults. Significant reductions were observed in risky alcohol use (52.2%), as well as illicit drug use (44.7%) and depression (63.0%).

## **Changing the Trajectory of Substance Use and Depression Beyond the Formative Years: The Virginia Screening, Brief Intervention, and Referral to Treatment Project**

### **Introduction**

Preventing onset of substance use before the age of 18 is critical to reducing rates of substance use disorders (SUDs) and other subsequent problems later in life.<sup>1-3</sup> The early years of a child's life, including early adolescence, are formative and can influence a child's behavior, including substance use, throughout adulthood.<sup>4</sup> Despite primary prevention strategies targeting youth, not every child or adolescent refrains from use. In 2019, almost 30% of 12<sup>th</sup>-graders reported using alcohol over the last month, and almost 24% acknowledged illicit drug use.<sup>5</sup>

As youth transition into young adulthood and beyond and work to become contributing members of society, their journey through young, middle-age, and older adulthood remains susceptible to the onset and intensification of substance use and psychiatric conditions. Over 50% of adults 18 and over endorse having consumed alcohol within the past month. Nearly half of these individuals engaged in binge drinking, and almost 25% of young adults and 10% of adults 26+ used illicit drugs during the past month.<sup>6</sup> Substance use in our nation now accounts for 3 of the top 10 public health problems rated by the Centers for Disease Control and Prevention (CDC).<sup>7</sup> Tobacco is the single largest preventable cause of death in the US, with approximately 1 person dying every 9 seconds from a tobacco-related disease and costs of over \$300 billion annually.<sup>8</sup> An estimated 88,000 people die from alcohol-related causes annually, making alcohol the third leading preventable cause of death in the US with an associated cost of \$249 billion annually.<sup>9</sup> In 2018, 8.1 million Americans were diagnosed with an illicit drug use disorder and over 67,000 drug overdose deaths occurred.<sup>10,11</sup>

Depression, a common comorbidity of substance use, affects 20.6% of Americans at some point in their lifetime, with the highest prevalence (14.4%) seen in transitional-aged youth 18-25.<sup>6</sup> Nearly 58% of individuals experiencing depression have also experienced a SUD.<sup>12</sup> Given the impact of substance use and depressive disorders on individuals, families, and society, the U.S. Preventive Services Task Force now recommends routine screening for alcohol, drug use, and depression along with behavioral intervention for risky alcohol use in those 18 and over.<sup>13</sup>

Across these behavioral health indicators, risk is known to emerge at critical time points across the lifespan, with the young adult years being recognized as a critical at-risk period.<sup>14</sup> While significant resources have been provided by federal, state, and local agencies to address the prevention and treatment of substance use and depressive disorders, the prevalence of these conditions has remained fairly stable or risen in recent years.<sup>6</sup> To turn this tide, we must expand efforts by bridging the gap between primary and tertiary prevention. A secondary substance use and depression prevention net for all life stages beyond the formative and adolescence years is vital to identifying and intervening at the onset of risk to 1) enable these individuals to live their fullest lives and 2) support them in their development as a possible future parent or family member for our next generation.

Secondary prevention in the field of substance use and mental health is characterized by the early identification of problematic use and mental health dysfunction paired with a risk-stratified

intervention. The ability to accurately identify emerging substance use and depression risk allows healthcare providers the opportunity for early intervention targeting risk reduction, potentially offsetting the significant costs and multidimensional consequences of substance use and depressive disorders.

The evidence-based Screening, Brief Intervention, and Referral to Treatment (SBIRT) model is a public health, secondary prevention strategy providing quick assessment of risk, conversations promoting behavior change, and facilitating access to specialty care. SBIRT is a widely recognized strategy for early identification and intervention of substance misuse with firm evidence for its effectiveness.<sup>15</sup> While the most robust support for SBIRT exists for reducing and ceasing alcohol and tobacco use,<sup>16,17</sup> there is good and growing support for its effectiveness with illicit drugs.<sup>18</sup> SBIRT outcomes specific to depression are promising yet preliminary.<sup>17</sup> The purpose of this paper is to describe the risk of substance misuse and potential impact of SBIRT implementation on substance use in 11 healthcare settings across 2 regions of the Commonwealth of Virginia in a project titled Virginia SBIRT, which was funded by the Substance Abuse and Mental Health Services Administration.

## Methods

The mission of the Virginia SBIRT project was to change the trajectory of substance use and depression management through early identification and management, preventing the onset of negative sequelae for those in the beginning stages of substance misuse and mitigating further harm for those in more advanced stages. Eleven healthcare settings spanning rural and urban regions in high-intensity drug trafficking areas integrated SBIRT between 2017 and 2020. Settings included 2 emergency departments, 1 urgent care center, 2 federally qualified health clinics, 1 family practice, 1 student health clinic, 2 sexually transmitted infection clinics in health departments, and 2 free clinics. Criteria for setting selection included 1) location in a high-need region of Virginia, 2) interest in adopting SBIRT as an organizational strategy for substance use prevention and management, and/or 3) serve a population at higher risk for substance use including sexually transmitted clinics or higher education students. The Virginia SBIRT Project was funded by the Substance Abuse and Mental Health Services Administration.

Virginia SBIRT medical settings integrated SBIRT into clinical workflows and electronic health records through 5 sequential practice transformation phases: orientation, sustainability, training, implementation, and evaluation. Sites were oriented to the rationale behind the importance of SBIRT, and organizational champions were identified. Early strategic conversations occurred around the best model for SBIRT sustainability within each site to inform clinical workflow development. Multilevel and ongoing training prepared behavioral health (counselors, social workers) and medical staff (physicians, nurse practitioners, physician assistants, nurses) to develop SBIRT proficiency. The comprehensive training program included an experiential workshop followed by ongoing coaching (observation with feedback), booster training sessions, and optional participation in a monthly teleECHO clinic promoting case sharing with feedback. The SBIRT framework was then implemented in a pilot phase that included a consistent and systematic Rapid Cycle Quality Improvement and evaluation process assessing program impact and provider experience.

Adults ages 18 and over were universally screened for substance misuse (alcohol, marijuana, illicit drugs, prescription drugs, tobacco/nicotine) and depression. Universal screening items consisted of the 3-item US Alcohol Use Disorders Identification Test Consumption screen (US AUDIT-C), 4 questions on drug use (1 for marijuana, 2 for prescription drugs, 1 for illicit drugs), 1 question on tobacco/nicotine use, and the 2-item Patient Health Questionnaire (PHQ-2) for depression. Exceptions to universal screening were specific to emergency departments and included: 1) triage into a rapid assessment unit, 2) medical instability, 3) psychiatric crisis, and 4) workman's compensation visits. In addition, within emergency departments, individuals presenting with mental health symptoms were triaged to the behavioral health team, bypassing the SBIRT process. The US AUDIT, 10-item Drug Abuse Screening Test (DAST-10), and PHQ-9 were used as secondary screens for alcohol, drugs, and depression.

Total scores from secondary screens were stratified into low, moderate, and severe risk categories. Risk-informed interventions were delivered based on risk category. The low-risk intervention included a 5- to 15-minute Brief Intervention (BI) designed to enhance awareness of the consequences of the risk behavior, provide personalized feedback related to this behavior, elicit intrinsic desire and commitment for behavior change, and support individuals ready to make a change in developing a plan in support of that change. The moderate-risk intervention included a BI and offer to return to the medical setting for Brief Treatment (BT), which comprised up to 12-15 individual therapy sessions using motivational enhancement and cognitive behavioral therapy to support behavior change. The severe-risk intervention included a BI designed to elicit commitment to engage in higher levels of care (eg, intensive outpatient, residential, detoxification) and Referral to Treatment (RT), or active care coordination and follow-up, to facilitate treatment engagement at specialty substance abuse/mental health treatment facilities.

Participants were eligible to participate in the 6-month follow-up evaluation if they scored positive for substance use risk and received an intervention of at least a BI. Recruitment occurred at the time of initial screening and BI delivery. Participants were assured their decision to participate would have no impact on current or future services and they would receive a \$20 gift card for completing the interview. Each site was required to recruit 10% of eligible participants and was requested to do so using quasirandom methodology (eg, selecting every 10<sup>th</sup> person who received an intervention for recruitment). As part of the continuous quality improvement process with sites, data were reviewed monthly to examine 6-month follow-up recruitment to ensure that a) at least 10% of eligible individuals were recruited, and that b) participants at varied levels of risk and receiving varied levels of interventions were recruited.

Analyses included Chi-square tests to examine group differences by gender, age group, race, and ethnicity. T-tests, generalized linear modeling (GLM), and regression were used to examine changes over time in alcohol, drug, and depression risk. Outcome variables measuring risk included the scores on the US AUDIT, DAST-10, and PHQ-9 as well as changes in risk category membership (no, low, moderate, and severe risk).

## Results

### Risk Prevalence

The project screened 65,315 unique, predominantly white and non-Latino individuals age 18 and over, and 15.7% of individuals screened positive for at least one of the following behavioral health risks: risky alcohol use, other drug use, and/or depression. 12.7% of individuals endorsed some level of risky alcohol and/or drug use with 73.3% scoring as low risk, 17.1% moderate risk, and 9.6% severe risk. 14.2 percent of those positive for alcohol or drug risk endorsed polysubstance use. Cannabis and alcohol were the most common substances endorsed. Four percent of people screened positive for depression risk ( $\geq 5$  on the PHQ-9), a rate limited by the triaging of mental health-related presenting problems in emergency settings, thereby bypassing SBIRT screening. Notably, when excluding the emergency department setting, the risk prevalence rate for depression increased to 11.1%. There were several important demographic differences across the 3 risk areas: alcohol, other drug use, and depression (Table 1).

**Age.** Across all behavioral health indicators, age was associated with level of risk. Younger adults were at greatest risk for illicit drug use (ages 18-34) and depression (ages 18-24) whereas middle-aged adults 34-65 displayed the highest levels of alcohol risk. 49.1% of those who endorsed any alcohol and/or drug risk and 48.3% of those who endorsed any depression were in the 18-34 age group.

**Other Demographics.** Males displayed higher levels of risk for alcohol and illicit drugs compared to females. Notably, individuals who identify as transgender/nonbinary had significantly higher levels of risk for alcohol (7.1%), illicit drugs (24.5%), and depression (21.2%) among all gender categories. Racial and ethnic minority status was also associated with risk. Individuals who identify as American Indian/Alaskan Native/Hawaiian showed higher levels of risk across all 3 risk indicators. Black/African American individuals also displayed higher levels of illicit drug risk, and individuals who identified as Hispanic/Latino and Asian had higher rates of depression risk.

### Intervention Delivery Rate

We examined the extent to which individuals identified as at risk received the appropriate risk-stratified intervention. Individuals were most likely to receive the clinically indicated intervention when they screened into the low risk range (BI, 56.8%) followed by referral to specialty treatment (RT, 53.7%) and on-site brief treatment (BT, 13.4%). In examining intervention delivery by demographic characteristics, a BI was the most commonly received intervention across all age groups. Receipt of BT also remained stable across age groups. Individuals were most likely to receive RT if they were older than 25 ( $X^2=10.0$ ,  $p<.04$ ). Regarding gender, males were more likely to receive an intervention ( $X^2= 488.5$ ,  $p<.0001$ ) and individuals who identified as Black/African American and American Indian/Alaskan Native/Hawaiian were almost twice as likely to receive an intervention ( $X^2= 232.8$ ,  $p<.0001$ ). Individuals who identified as Hispanic or Latino also received interventions at a higher rate than non-Hispanic individuals ( $X^2= 111.6$ ,  $p<.0001$ ).



## Intervention Outcomes

402 individuals (10.0%) who received an intervention for risky alcohol and/or drug use were recruited into the 6-month follow-up evaluation. Overall, the majority of individuals recruited into follow-up were low risk and received a brief intervention (57.6%), followed by moderate risk (23.1%) and severe risk (19.3%). Importantly though, within the moderate and severe risk categories, a higher proportion of individuals consented to follow-up (20.1% and 15.5%, respectively) compared to those at low risk (8.6%).

273 individuals (67.9%) who consented to follow-up completed a 6-month outcome evaluation (eg, completers). This follow-up reassessed substance and depression risk, allowing comparisons to risk profile changes at intake. The primary reason for not completing follow-up was an inability to contact the individual due to invalid contact information or a lack of response. We examined differences in levels of risk and intervention received among those eligible for follow-up who did not enroll (eg, not recruited), those who consented to but did not complete the 6-month follow-up (eg, nonresponders) and completers. There were no significant differences between individuals not recruited for follow-up and completers. Interestingly, nonresponders were more likely to have greater risk and have received an RT compared to the other 2 groups.

Table 2 describes changes in alcohol, drug, and depression risk over time. One of every 2 (52.2%) individuals receiving an intervention for alcohol were either within recommended drinking limits (36.6%) or had decreased their risk level (15.6%) 6 months later (n=147) (Table 2). Regression analyses demonstrated an overall effect of US AUDIT scores significantly decreasing over time for an average of 5.8 units in a given individual's score ( $F(1)=45.4$ ,  $p<.001$ ). As age increased, individuals demonstrated greater decreases in their US AUDIT scores over time ( $F(1)=8.2$ ;  $p<.01$ ).

One of every 3 individuals (34.3%) receiving an intervention for drug use were abstinent, and another 10.5% had decreased their risk level 6 months later (n=181) (Table 2). No age effects were observed in response to interventions for drug use. A greater proportion of Black/African American individuals decreased to no drug use or abstinence compared to white individuals ( $X^2=8.5$ ,  $p<.05$ ) with Black/African American individuals 2.2 times more likely to decrease to no drug risk compared to white individuals (95% CI: 1.0–4.6;  $p<.05$ ). Regression analyses demonstrated significant decreases in DAST10 scores over time ( $F(2) = 34.1$ ,  $p<.001$ ), and demographic variables were not significant, indicating that none of those factors predicted any decreases in drug risk.

Three of every 5 individuals (63.0%) receiving a depression intervention were either at no risk (44.4%) or had decreased their level of risk (18.6%) 6 months later (Table 2). GLM models for depression would not converge due to the small sample size of those with depression risk at intake (n=32).

When evaluating patient satisfaction at follow-up, over 71% of individuals agreed or strongly agreed that they thought differently about their substance use, understood more about the physical health effect of substance use, and planned to make changes to their substance use.

Table 1. Virginia SBIRT Alcohol, Drug, and Depression Risk by Demographic Characteristics (N=65,315)

Select Individual Characteristics	US AUDIT Risk				DAST10 Risk				PHQ9 Risk			
	Any risk	Low	Mod	Sev	Any risk	Low	Mod	Sev	Any risk	Low	Mod	Sev
Gender												
Male	<b>9.6%*</b>	5.9%	2.3%	1.3%	<b>10.8%*</b>	8.7%	1.4%	0.7%	<b>3.9%</b>	1.8%	0.9%	1.1%
Female	<b>3.6%</b>	2.6%	0.6%	0.4%	<b>6.3%</b>	5.3%	0.6%	0.4%	<b>5.1%</b>	2.0%	1.4%	1.7%
Other	<b>7.1%*</b>	4.5%	1.9%	0.6%	<b>24.5%*</b>	15.5%	7.7%	1.3%	<b>21.1%*</b>	6.6%	4.6%	9.9%
Age Group												
18 to 24	<b>5.6%</b>	4.6%	0.7%	0.3%	<b>15.9%*</b>	12.5%	2.9%	0.4%	<b>7.1%*</b>	2.7%	1.8%	2.6%
25 to 34	<b>6.7%</b>	4.7%	1.3%	0.8%	<b>14.4%*</b>	11.5%	1.6%	1.3%	<b>6.0%</b>	2.4%	1.6%	1.9%
35 to 44	<b>7.5%*</b>	4.2%	2.0%	1.4%	<b>10.2%</b>	8.5%	0.8%	1.0%	<b>5.4%</b>	2.4%	1.3%	1.7%
45 to 54	<b>8.2%*</b>	4.6%	2.0%	1.6%	<b>6.7%</b>	5.9%	0.5%	0.3%	<b>5.5%</b>	2.3%	1.4%	1.9%
55 to 64	<b>8.1%*</b>	4.6%	2.1%	1.3%	<b>4.9%</b>	4.5%	0.3%	0.1%	<b>4.4%</b>	1.9%	1.1%	1.4%
65 years or older	<b>3.7%</b>	2.7%	0.8%	0.2%	<b>0.7%</b>	0.7%	0.0%	0.0%	<b>1.3%</b>	0.6%	0.4%	0.3%
Race												
American Indian/Alaskan Native/HI	<b>8.2%*</b>	7.2%	1.0%	0.0%	<b>18.7%*</b>	14.4%	4.3%	0.0%	<b>10.7%*</b>	1.9%	3.9%	4.9%
Asian	<b>3.1%*</b>	2.5%	0.5%	0.1%	<b>6.2%</b>	4.6%	1.5%	0.1%	<b>7.6%*</b>	2.5%	2.0%	3.0%
Black/African American	<b>6.2%</b>	4.4%	1.4%	0.5%	<b>15.7%*</b>	13.6%	1.8%	0.3%	<b>4.5%</b>	1.3%	1.3%	1.9%
White	<b>6.0%</b>	4.0%	1.3%	0.8%	<b>7.1%</b>	6.0%	0.7%	0.4%	<b>3.9%</b>	1.8%	0.8%	1.2%
Ethnicity												
Non-Latino/Latina	6.1%	4.1%	1.3%	0.7%	8.2%	6.8%	0.9%	0.4%	<b>3.8%</b>	1.7%	0.9%	1.3%
Latino/Latina	7.1%	5.2%	1.3%	0.6%	10.9%	8.5%	2.1%	0.3%	<b>8.6%*</b>	3.1%	2.3%	3.2%

Notes. Individuals could elect not to answer questions on race and ethnicity; 38% of individuals elected not to answer questions about race while 34% elected not to answer questions about ethnicity. Emergency departments triaged individuals with mental health concerns to their behavioral health unit and therefore are not included in the risk prevalence rates. Any risk refers to the total percent of individuals with low to severe risk. Mod = moderate risk; Sev = severe risk.

Values in bold and with an asterisk denote statistically significant differences among the categories for that demographic variable at  $p < .001$ .

Table 2. Virginia SBIRT Alcohol, Drug, and Depression Risk Over Time Among Follow-up Individuals

Change at Follow-up	Audit Score (n=147)		DAST10 Score (n=181)		PHQ9 Score (n=32)	
	n	%	n	%	n	%
No decrease	64	47.8%	95	55.2%	10	37.0%
Decrease to lower (but non-zero) risk	21	15.7%	18	10.5%	5	18.5%
Decrease to no risk	49	36.6%	59	34.3%	12	44.4%
Missing	13		9		5	

## Discussion

The Virginia SBIRT project demonstrated change in individual trajectories of substance use and depression across populations of all ages 18 and over and in a variety of settings in 2 regions of Virginia. The need for SBIRT as a public health strategy for reducing or ceasing illicit drug use was especially relevant to younger adults, who had a higher prevalence for drug use and depression compared to older age groups. Middle-age adults with risky alcohol use had a greater prevalence for moderate to severe risk of alcohol use highlighting the need to intervene earlier to prevent the development of greater levels of risk. Young adults are moving through a stage critical to personal and professional development, including academic preparation, career initiation, and marriage and family development, and early intervention can increase the likelihood of long-term success.

Notably, SBIRT also demonstrated reductions in illicit drug use and depression risk in addition to the already established effect it can have on alcohol. In addition, few research studies have examined the RT process and its subsequent outcomes. While intervention delivery rates varied across substance risk severity (BI, 56.8; RT, 53.7%; BT, 13.4%), it should be noted that these rates of RT and BT reflect situations in which the individual accepted RT. National estimates suggest that approximately 10.6% of individuals who need SUD treatment actually receive it.<sup>6</sup> Our findings highlight the importance of brief, motivationally informed interventions paired with a rapid referral system, support with social determinant needs, and systematic follow-up in acceptance of RT. Data presented in the current study were part of a community implementation effort. Thus, the design did not include a comparison or control group, thereby limiting the ability to draw a causal conclusion between the intervention and outcomes.

Another limitation of this study was that only 10% of individuals who received an intervention for risky alcohol and/or drug use were recruited for a 6-month outcome evaluation. While a greater proportion of individuals at moderate and severe risk were recruited into follow-up, fewer of these individuals completed the follow-up interview compared to those at lower risk. Thus, it is possible that those who participated in the outcome evaluation reflect a biased sample of individuals initially at lower risk. Lastly, because the focus of the outcome evaluation was on those who received intervention for risky substance, the number of those with co-occurring depression was small, further limiting conclusions for depression outcomes.

Beyond age, gender and ethno-racial status significantly influenced behavioral health risk prevalence, likelihood of receiving a clinical intervention, and intervention outcomes. While the core components of the clinical intervention do not vary, it is possible that provider biases related to gender and ethno-racial status may have informed which individuals were prioritized for receipt of an intervention and how the intervention was delivered. Upon receipt of an intervention, it is unclear why certain groups may have responded differently to the intervention. These are 2 areas that deserve future research.

It is also important to mention the potential influence of environment on the results of this project. All healthcare settings were located in high-intensity drug-trafficking areas where the supply of illicit substances and access to them are greater than in regions of the country with limited drug-trafficking opportunities. Other variables, such as overdose rates, within many of

these counties are higher compared to state averages, indicating greater morbidity in these areas.<sup>19</sup>

Prevalence for depression risk in this sample is lower than community prevalence rates due to triage processes at select high-volume sites (ie, emergency departments) that immediately triaged mental health-related presenting problems to a behavioral health intervention team, bypassing the SBIRT screening process. Additional limitations of this study include 1) nonrandomized selection of sites with a large portion of the sample coming from an emergency department setting and 2) inability to control for risk factors such as previous trauma, genetic contributions, and family and peer influence.

## **Implications**

### **Practice**

Results from the Virginia SBIRT project support SBIRT as a powerful strategy to enhance and expand substance use prevention nets in both rural and urban communities. SBIRT as a public health strategy is appealing in its capacity for flexible adaptation to fit unique target populations and settings. In addition to the standard SBIRT delivery model used in this study, variations targeting adolescents, pregnant and parenting women, and older adults have been established.<sup>20-22</sup> The common sources of variation among these SBIRT derivatives include population-specific screening tools, greater emphasis on involvement of caregivers or other support persons, mandated reporting requirements, unique strategies for adapting to population-specific settings (eg, schools, residential care facilities), and considerations for training a potentially more diverse set of interventionists across these settings. Substance-specific (eg, cannabis, opioids) considerations in effectively identifying and responding to risk are also emerging in SBIRT models.<sup>23-25</sup>

In support of SBIRT's expansion across the nation, the Substance Abuse and Mental Health Services Administration (SAMHSA) and other agencies have created and made publicly available a sizable number of resources to support SBIRT integration (eg, Addiction Technology Transfer Center Network, Centers for Medicaid and Medicare Services). Resources include implementation guides, guidance on facilitating the organizational change process, foundational knowledge and interactive clinical skills trainings, clinical tools to support provider service delivery, patient education materials to enhance awareness raising, and documentation and reimbursement guides.

The results of our study highlight the large proportion of young adults ages 18-34 scoring positive for alcohol, drug, and depression risk, particularly in the low to moderate risk categories. Severity of risk increased with age with a higher representation of moderate and severe risk in the older population. Therefore, thoughtful and innovative approaches to reaching the young adult population are warranted. Organizations more likely to interface with the young adult population during activities unique to this age range include parenting organizations, obstetrics/gynecology clinics, career centers, institutions of higher education, places of employment hiring new graduates, and others. They may be natural places to identify substance use risk.

Alcohol, drug, and depression risk in those identifying as transgender/nonbinary is remarkably high in our study among all gender variables. These findings are in line with previously established higher prevalence rates of abuse and addiction in these gender categories<sup>26-28</sup> A number of emerging provider education opportunities to increase awareness of gender diversity and to learn strategies for more competent care can be accessed through the CDC.<sup>29</sup>

## Policy

Early intervention for substance use is recommended by a number of federal agencies. The most recent National Drug Control Strategy, produced by the Office of National Drug Control Policy in February 2020, addresses the importance of early identification and intervention for risky substance use to help “interrupt the trajectory toward more chronic substance use disorders” and recommends that screening opportunities to identify risky behaviors be “widespread.”<sup>30</sup> The Surgeon General of the United States recognizes screening for substance misuse in healthcare settings as the “first step” in identifying risky behaviors.<sup>31</sup> SAMHSA and the Health Resources and Services Administration (HRSA) have funded SBIRT activities in different ways since 2003.<sup>32</sup> Screening adults for substance is recommended by the U.S. Preventive Services Task Force national guidelines.<sup>33</sup>

In alignment with these federal recommendations, this paper highlights the impact of secondary prevention efforts on reducing or ceasing substance risk and the need for SBIRT programs targeting young adults. Efforts are underway nationwide to examine the value of extending SBIRT into adolescence, with promising results demonstrating the program’s effectiveness within this age range.<sup>21</sup> To date, the American Academy of Pediatrics, Maternal Child Health Bureau, and Society for Adolescent Medicine all recommend annual adolescent SBIRT screening.<sup>34</sup> Taking a lead on targeting SBIRT in youth, Massachusetts enacted a law requiring each city, town, regional school district, charter school, or vocational school to verbally screen students at 2 grade levels for substance use disorders and provide clinical interventions as indicated. Schools are required to notify students’ parents/guardians and provide an opportunity to opt out by written notification any time prior to the screening.<sup>35</sup> This approach demonstrates how schools are in a unique position to reach adolescents when they may not necessarily be connected with the healthcare sector to receive screening and intervention for substance use.

In support of SBIRT service delivery, reimbursement has been made available for screening and brief intervention (SBI) through commercial insurance, Medicare, and Medicaid.<sup>36</sup> The common commercial insurance and Medicaid current procedural terminology (CPT) codes for SBIRT cover screening and brief intervention services for 15 to 30 minutes (CPT 99408) or greater than 30 minutes (CPT 99409). Importantly, the Centers for Medicare and Medicaid Services (CMS) now supports states in providing any service covered by the state’s Medicaid plan to any student enrolled in Medicaid,<sup>37</sup> which opens doors for school-based SBIRT. To our knowledge, at least one state, Colorado, has also obtained legislative support for a budget line item to provide SBIRT training and technical assistance across the state (25.5-5-208 CRS).<sup>38</sup>

## Conclusion

SBIRT is an effective early intervention strategy for identifying and changing substance use and depression trajectories for youth, young adults, and beyond. The Virginia SBIRT project notably reduced or eliminated risk for illicit drug use (34%) and depression (63%) as well as alcohol (52%). Results related to young adults in the 18 to 34 age range and those identifying as transgender/nonbinary highlight demographic variables warranting continued and special attention from substance use and depression prevention and treatment policy. Continued and expanded funding for SBIRT within a variety of sectors is important. Federal, state, and local support of implementation of SBIRT is critical to addressing substance misuse in the nation.

## References

1. Anthony JC, Petronis KR. Early-onset drug use and risk of later drug problems. *Drug Alcohol Dependence*. 1995;40(1):9-15. doi: 10.1016/0376-8716(95)01194-3.
2. Chen CY, Storr CL, Anthony JC. Early-onset drug use and risk for drug dependence problems. *Addict Behav*. 2009;34(3):319-322. doi:10.1016/j.addbeh.2008.10.021.
3. Ohannessian CM, Finan LJ, Schulz J, Hesselbrock V. A long-term longitudinal examination of the effect of early onset of alcohol and drug use on later alcohol abuse. *Subst Abuse*. 2015;36(4):440-444. doi:10.1080/08897077.2014.989353.
4. Cadet JL. Epigenetics of stress, addiction, and resilience: therapeutic implications. *Mol Neurobiol*. 2016;53(1):545–560. doi: 10.1007/s12035-014-9040-y.
5. Monitoring the Future study: trends in prevalence of various drugs. National Institute on Drug Abuse website. <https://www.drugabuse.gov/drug-topics/trends-statistics/monitoring-future/monitoring-future-study-trends-in-prevalence-various-drugs>. Updated December 17, 2020. Accessed January 29, 2021.
6. National survey of drug use and health. National Institute on Drug Abuse website. <https://www.drugabuse.gov/drug-topics/trends-statistics/national-drug-early-warning-system-ndews/national-survey-drug-use-health>. Updated 2018. Accessed January 29, 2021.
7. Prevention status reports. Centers for Disease Control and Prevention website. <https://www.cdc.gov/psr/>. Updated May 31, 2017. Accessed January 29, 2021.
8. Smoking and tobacco use. Centers for Disease Control and Prevention website. [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/fast\\_facts/index.htm](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm). Updated May 21, 2020. Accessed January 29, 2021.
9. Alcohol facts and statistics. National Institute on Alcohol Abuse and Alcoholism website. <https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/alcohol-facts-and-statistics>. Updated October 2020. Accessed February 1, 2021.

10. Lipari RN, Park-Lee E; Substance Abuse and Mental Health Services Administration. Key substance use and mental health indicators in the United States: results from the 2018 National Survey on Drug Use and Health. <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHNationalFindingsReport2018/NSDUHNationalFindingsReport2018.pdf>. Published August 2019. Accessed February 1, 2021.
11. Overdose death rates. National Institute on Drug Abuse website. <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>. Updated January 29, 2021. Accessed February 1, 2021.
12. Hasin DS, Sarvet AL, Meyers JL. Epidemiology of adult DSM-5 major depressive disorder and its specifiers in the United States. *JAMA Psychiatry*. 2018;75(4):336-346. doi:10.1001/jamapsychiatry.2017.4602
13. Recommendation: Depression in Adults: Screening. US Preventive Services Task Force website. [Recommendation: Depression in Adults: Screening | United States Preventive Services Taskforce \(uspreventiveservicestaskforce.org\)](https://www.uspreventiveservicestaskforce.org/Recommendation-Depression-in-Adults-Screening). Updated February 2021. Accessed February 1, 2021.
14. Substance use and sexual risk behaviors among youth. Centers for Disease Control and Prevention website. [https://www.cdc.gov/healthyyouth/factsheets/substance\\_use\\_fact\\_sheet-detailed.htm#:~:text=Although%20substance%20misuse%20can%20occur%20at%20any%20age%2C,substances%20during%20their%20teen%20and%20young%20adult%20years](https://www.cdc.gov/healthyyouth/factsheets/substance_use_fact_sheet-detailed.htm#:~:text=Although%20substance%20misuse%20can%20occur%20at%20any%20age%2C,substances%20during%20their%20teen%20and%20young%20adult%20years). Updated July 11, 2018. Accessed February 1, 2021.
15. Madras BK, Compton WM, Avula D, Stegbauer T, Stein JB, Clark HW. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple healthcare sites: comparison at intake and 6 months later. *Drug Alcohol Depend*. 2009;99(1-3):280-295. doi:10.1016/j.drugalcdep.2008.08.003
16. The Clinical Practice Guideline Treating Tobacco Use and Dependence 2008 Update Panel, Liaisons, and Staff. A clinical practice guideline for treating tobacco use and dependence: 2008 update: a U.S. Public Health Service report. *Am J Prev Med*. 2008; 35(2):158-176. doi:10.1016/j.amepre.2008.04.009.
17. US Dept of Health and Human Services; Substance Abuse and Mental Health Services Administration. Screening, brief intervention and referral to treatment (SBIRT) in behavioral healthcare [white paper]. Published April 1, 2011. Accessed February 1, 2021. [https://www.samhsa.gov/sites/default/files/sbirtwhitepaper\\_0.pdf](https://www.samhsa.gov/sites/default/files/sbirtwhitepaper_0.pdf).
18. Babor TF, Del Boca F, Bray JW. Screening, Brief Intervention and Referral to Treatment: implications of SAMHSA's SBIRT initiative for substance abuse policy and practice. *Addiction*. 2017;112(suppl 2):110-117. doi:10.1111/add.13675.



19. Virginia Department of Health Office of the Chief Medical Examiner. Fatal drug overdose quarterly report. <https://www.vdh.virginia.gov/content/uploads/sites/18/2020/08/Quarterly-Drug-Death-Report-FINAL-Q1-2020.pdf>. Published July 2020. Accessed February 1, 2021.
20. Goler NC, Armstrong MA, Taillac CJ, Osejo MV. Substance abuse treatment linked with prenatal visits improves perinatal outcomes: a new standard. *J Perinatol*. 2008;28(9):597-603. doi: 10.1038/jp.2008.70.
21. Mitchell SG, Gryczynski J, O'Grady KE, Schwartz, RP. SBIRT for adolescent drug and alcohol use: current status and future directions. *J. Subst. Abuse Treat*. 2013;44(5):463-472.doi: 10.1016/j.jsat.2012.11.005.
22. Schonfeld L, Hazlet RW, Hedgecock DK, Duchene DM, Burns LV, Gum AM. Screening, Brief Intervention, and Referral to Treatment for older adults with substance misuse. *Am J Public Health*. 2015;105(1):205-211. Doi: 10.2105/AJPH.2013.301859
23. Turner W, Hyde J, Kamon J, Hancock G. SBIRT for cannabis use: improving clinical competencies for a changing cultural landscape. In: Cimini MD, Martin JL, eds. *Screening, Brief Intervention, and Referral to Treatment for Substance Use: A Practitioner's Guide*. Washington, DC: American Psychological Association; 2020.
24. Turner W, Hyde J, Seelig A, Kamon, J. A practitioner's guide for cannabis intervention. Montpelier, VT: Center for Behavioral Health Integration, LLC; 2018.
25. Seale PJ. SBIRT for opioids: Responding to the changing U.S. landscapes. Virtual presentation given at the Virginia SBIRT Grantee Summit; September 2020.
26. Hunt J; Center for American Progress. Why the gay and transgender population experiences higher rates of substance use. <https://www.americanprogress.org/issues/lgbtq-rights/reports/2012/03/09/11228/why-the-gay-and-transgender-population-experiences-higher-rates-of-substance-use/>. Published March 9, 2012. Accessed February 1, 2021.
27. Reback CJ, Fletcher JB. HIV prevalence, substance use, and sexual risk behaviors among transgender women recruited through outreach. *AIDS Behav*. 2014;18(7):1359-1367. doi:10.1007/s10461-013-0657-z.
28. Benotsch EG, Zimmerman R, Cathers L, et al. Non-medical use of prescription drugs, polysubstance use, and mental health in transgender adults. *Drug Alcohol Depend*. 2013;132(1-2):391-394. doi:10.1016/j.drugalcdep.2013.02.027
29. Additional resources for health care providers. Centers for Disease Control and Prevention website. <https://www.cdc.gov/hiv/clinicians/transforming-health/health-care-providers/additional-resources.html>. Updated April 1, 2020. Accessed February 1, 2021.

30. National Drug Control Strategy. Office of National Drug Control Policy.  
<https://legislativeanalysis.org/wp-content/uploads/2020/02/2020-ONDCP-National-Drug-Control-Strategy.pdf>. Published February 2020. Accessed September 1, 2020.
31. Office of the Surgeon General. Early intervention, treatment, and management of substance use disorders. <https://addiction.surgeongeneral.gov/executive-summary/report/early-intervention-treatment-and-management-substance-use-disorders>. Published 2016. Accessed February 1, 2021.
32. Screening Brief Intervention and Referral to Treatment (SBIRT) grantees. Substance Abuse and Mental Health Services Administration website. <https://www.samhsa.gov/sbirt/grantees>. Updated December 2, 2020. Accessed February 1, 2021.
33. US Preventative Screening Task Force. Unhealthy drug use: screening.  
<https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/drug-use-illicit-screening>. Updated June 9, 2020. Accessed February 1, 2021.
34. Levy S, Knight JR. Screening, brief intervention, and referral to treatment for adolescents. *J Addict Med*. 2008;2(4):215-221. doi:10.1097/ADM.0b013e31818a8c7a.
35. An Act Relative to Substance Use, Treatment, Education, and Prevention. Chapter 52, Massachusetts Laws (2016). <https://malegislature.gov/Laws/SessionLaws/Acts/2016/Chapter52>.
36. Centers for Medicare and Medicaid Services, Medicare Learning Network Booklet. Screening, brief intervention, and referral to treatment (SBIRT) services.  
[https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/sbirt\\_factsheet\\_icn904084.pdf](https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/sbirt_factsheet_icn904084.pdf). Published March 2020. Accessed February 1, 2021.
37. Healthy Schools Campaign. Healthy and ready to learn: recommendations for the next administration. <https://healthyschoolscampaign.org/policy/national-policy/>. Published September 2020. Accessed February 1, 2021.
38. State Health Care Policy and Financing Act. Colorado Statute § 25.5, Article 5-208 (2016).