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## Evaluation of an Intervention to Improve Screening for Substance Misuse among 12-21 year-old Patients in a Rural Emergency Department

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Running head: EFFECTS OF SBIRT ON SCREENING RATES OF SUBSTANCE MISUSE

Evaluation of an Intervention to Improve Screening for Substance Misuse among  
12-21 year-old Patients in a Rural Emergency Department

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University of Kentucky College of Nursing

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### **Abstract**

Background: In 2014, over two million children between the ages of 12-17 years of age admitted to using illicit drugs (2.3 million) and alcohol (2.9 million) in the past month. The younger a person begins misusing substances the more likely they are to have serious health consequences. It is imperative that we screen, detect, and intervene early to decrease the burden of substance misuse and addiction. Screening Brief Intervention and Referral to Treatment (SBIRT) is an evidence-based strategy used to identify adolescents who misuse substances. The CRAFFT tool is recommended for screening adolescents for substance misuse.

Purpose: The goal of this project was to improve screening and documentation for substance misuse in adolescents between the ages of 12-21 in a rural community hospital emergency department.

Methods: A pre/post-test design was used to examine changes in provider knowledge, self-efficacy, and perceived rate of screening for substance misuse in adolescents using the CRAFFT tool. Providers completed an educational module on the screening portion of SBIRT using the CRAFFT tool. A retrospective/prospective chart review was used to assess the frequency of documentation of substance misuse before/after the CRAFFT education.

Results: There were statistically significant increases in provider knowledge, self-efficacy, and perceived rate of screening ( $p < .001$ ) following the educational module. Documentation of screening for tobacco, alcohol, and illicit drugs use increased significantly 5.9% to 29.3% ( $P < .001$ ).

Conclusion: Providers felt more confident in screening for substance abuse in adolescents and had increased knowledge on how to properly screen for substance misuse in this age group. There was increase in documentation of screening for tobacco, alcohol, and illicit substances

after the implementation of the CRAFFT tool. It is recommended that providers continue to screen adolescents using the CRAFFT tool and implement strategies to further improve screening rates.

## Introduction

Substance misuse is one of the most serious public health and safety issues that the United States is working to address (Cowell & Dowd, 2015). In the U.S., approximately 2.3 million individuals aged 12-17 admitted to using illicit drugs in 2014. Furthermore, 2.9 million adolescents were found to have used alcohol in the past month (Alayan & Shell, 2016).

Substance misuse typically starts in seventh grade at the beginning of adolescence (Alayan & Shell, 2016). Substance misuse occurring between the ages of 12-17 often leads to increased rates of mental health disorders such as anxiety and depression with increased rates of morbidity and mortality (Levy et al. 2014). Screening and behavioral counseling for substance abuse is in the top five out of 25 preventive services recommended by the United States Preventative Services Task Force (Bacidore, Letizia, & Mitchel, 2017). Unfortunately, only 16.7 percent of patients have ever talked with their healthcare provider about substance misuse (Bacidore et al. 2017).

The Substance Abuse and Mental Health Services Administration (SAMHSA) recommends utilizing screening, brief intervention, and referral to treatment (SBIRT) to identify and intervene with adolescents who abuse prescription drugs, illicit substances such as hallucinogens/stimulants, and alcohol. The SBIRT method is efficient and cost-effective (Pringle et al. 2018). Screening is used to identify people with a disease, condition, or symptom (Levy et al. 2011). The brief intervention is a response to the screening that encourages a patient to make healthy choices and personal behavior changes in relation to risky behavior. Referral to treatment is the process in which patients needing more evaluation and treatment are granted access to appropriate facilities (Levy et al. 2011). The screening portion of the tool should only take five minutes to administer, should guide further decision-making, and determine if the adolescent has

used alcohol or other drugs in the previous twelve months (Levy et al. 2011). The screening portion of SBIRT must consist of a tool that is practical, and easy to administer, score, and remember.

The CRAFFT tool is the recommended screening tool by the American Academy of Pediatrics for adolescent individuals (Agle et al, 2015). The CRAFFT tool is a mnemonic acronym in which each first letter represents a key word in the six screening questions (See Figure 1). There are two parts to the CRAFFT screening tool. The provider begins by asking three specific opening questions. The purpose of the first three questions (Fig. 1) is to establish whether the adolescent has used drugs or alcohol in the last twelve months (Levy et al. 2011). If the answer to all three opening questions is “no,” the only question of the CRAFFT tool that is asked is the “CRA” question. However, if an adolescent answers “yes” to any of the first three questions they will be asked all six CRAFFT questions (Levy et al. 2011) If a patient receives a score of 0-1 they do not need an intervention. A score of 2 or higher warrants a brief intervention (McPherson et al. 2018). The CRAFFT tool is also recommended because of its high sensitivity. In a study conducted by D’Amico et al, the CRAFFT tool had a sensitivity of 0.98 compared to 0.97 for the Problem Severity Scale on the Personal Experience Screening Questionnaire (PESQ-PS) and 0.70 for the Alcohol Use Disorders Identification Test (AUDIT; 2016).

### **Problem Description**

According to McPherson et al. (2018) a survey of health professionals demonstrated that approximately 33-43% of pediatricians and 14-27% of family practitioners screened adolescents for substance use on a regular basis. It is estimated that only one out of six people has discussed alcohol use with a health care provider in any setting (Bacidore et al. 2017). Without the use of a

screening tool, approximately 67% of adolescents who misuse alcohol are not identified (Levy et al. 2016).

There are a number of reasons screening does not occur by health professionals including lack of training in their designated program about screening for substance misuse, discomfort discussing substance abuse, time constraints, and perceived patient resistance (McNeely et al. 2018). Neushotz and Fitzpatrick (2008) discussed numerous obstacles to screening that included the perception that patients are dishonest when they report their substance use, a lack of standardized screening tools, not enough referral resources, and the stigma associated with substance use. In the emergency department (ED) providers cite not screening due to lack of collaboration among different teams, cost and reimbursement issues, concerns about patient privacy and confidentiality, lack of patient cooperation, and not enough dependable leadership (Vendetti et al, 2017). Venkat et al. (2017) discussed nurses' views on implementing a SBIRT program into the ED and identified that working in the ED was already challenging, so the additional time necessary to provide care and compassion to patients dealing with addiction was a barrier to screening (Venkat et al. 2017)

It is not surprising that there were over 136.9 million ED visits reported in 2014 since the ED is often the only setting in which individuals seek medical care in the United States (Bacidore et al. 2017). The ED is typically the area of healthcare that deals with consequences of at-risk substance use behavior first (Venkat et al. 2017). There was a 38% increase in the number of patients seen in the ED for alcohol related injuries and illness from 2001 to 2010 (Bacidore et al. 2017). A person's ED visit has the potential to serve as a teachable moment to discuss harmful substance misuse. Health care providers working in the ED have a unique opportunity to help patients associate their illness/injury with hazardous substance use. In addition, providers

are able to motivate patients to decrease or abstain from tobacco, alcohol, and illicit substance use (Bacidore et al. 2017).

Although there are barriers to achieving this, screening for substance misuse is essential. Screening for substance misuse is particularly important in adolescents because it can easily go undetected due to developmental crises, rebellion, fear of seeking help, and lack of knowledge (Alayan & Shell, 2016). Screening should be easy to administer, valid, brief (5 minutes or less), and assess quantity, frequency, and consequences of use (McPherson et al. 2018). Screening for substance misuse in adolescents is the standard of care because adolescents have the highest risk of suffering acute and chronic health problems related to substance use (Levy et al. 2013).

### **Available Knowledge**

According to the World Health Organization, substance misuse is defined as the harmful or hazardous use of chemical substances that alter brain function leading to a change in perception, cognition, mood, and behavior (Substance Abuse, 2017). Substances of misuse include tobacco, alcohol, and illicit/prescription drugs. In 2014, 88,000 deaths including all ages, race, and ethnicities were attributed to alcohol, which is the third leading cause of preventable deaths following tobacco and poor diet/physical activity in the United States (Gonzales et al. 2014). The 2013 Monitoring the Future (MTF) National Survey on Drug Use reported that 28% of eighth graders and 68% of twelfth graders admitted to trying alcohol in the past year (McPherson et al. 2018). Illicit drug, tobacco, and alcohol use is of concern in the adolescent population; however, alcohol use is more common in this population. The MTF National Survey on Drug use found that approximately four out of ten high school seniors reported drinking some alcohol in the last month and greater than two out of ten high school seniors reported “binge drinking,” defined as a short period of excessive consumption within the past two weeks

(McPherson et al. 2018; See table 1). According to the National Survey on Drug Use and Health, ten percent of adolescents between the ages of 12-17 living in the United States admit to using illicit drugs in the last 30 days (Mitchell et al. 2013). Out of all high school students in the United States 48% will have used illicit drugs prior to graduating (Mitchell et al. 2013).

Use of illicit drugs, alcohol and tobacco is dangerous/damaging for anyone but particularly for the adolescent whose brain is still developing. The use of illicit drugs, tobacco, and alcohol is associated with death, motor vehicle crashes, hepatitis, HIV infection, teen pregnancy, violence, criminal behavior, school failure, and family issues (Mitchell et al. 2013). In 2009, 1.8 million adolescents between 12 and 17 years of age should have received substance abuse treatment, but only 150,000 adolescents received treatment (Mitchell et al. 2013). Furthermore, the National Survey of Drug Use and Health (NSDUH) reports that 1.7 million people between 12-17 are not getting the treatment they need (McPherson et al. 2018). There is an overall rate of unmet need for intervention for adolescents under the age of 15 of 96.3% (McPherson et al. 2018).

One reason SBIRT is recommended by SAMSHA is because it is brief and can be administered in a short period of time. A study conducted by Cowell et al. (2016) reported that the mean service time for a pre-screen in the emergency department was one minute and eighteen seconds and four minutes and thirty seconds for a full screen. Another reason SBIRT is recommended by SAMSHA is because it is cost-effective. In one study total health care costs declined by 21% in one year after the implementation of SBIRT (Pringle et al. 2018). Furthermore screening is mandated through statutes. For example, in all states Medicaid-eligible children have to receive early periodic screening diagnosis and treatment for substance use (McPherson et al. 2018)

### **Rationale**

The National Center on Addiction and Substance Abuse reports that 90 percent of individuals who meet the criteria for addiction started smoking, drinking, and or using other drugs prior to turning eighteen (McPherson et al. 2018). In addition, the report found that 25% of Americans who started misusing addictive substances before the age of eighteen have a substance use disorder, whereas only 4% of Americans who started using at twenty-one years of age or older had a substance misuse disorder (McPherson et al. 2018).

Prior to this study the rural community emergency department that served at the study site did not have a standardized tool to screen for substance use in adolescents. In addition, providers were not educated on how to screen adolescents for substance misuse. Many providers reported not screening because it was not a part of their charting requirements. An effective screening approach such as SBIRT is necessary to identify substance abuse by adolescents to prevent adverse consequences and the progression to more severe levels of substance misuse (Mitchell et al. 2013). As a result, the primary investigator initiated this study to provide education on an evidence-based screening protocol.

The RE-AIM (Reach, Efficacy, Adoption, Implementation, and Maintenance) framework was utilized for this project. This specific model was chosen because it takes into account what is needed for widespread adoption and change (Glasgow, Vogt, & Boles, 1999). In addition, the framework considers how feasible, costly, and acceptable a project idea will be. The “reach” for this project was all providers working in the emergency department.

### **Specific Aims**

The goal of this project was to improve screening and documentation for substance misuse in adolescents between the ages of 12-21 in a rural community hospital emergency

department. The specific aims included (1) baseline assessment of screening rates and practices related to screening for substance use; (2) evaluate the effect of intervention on provider pre/post knowledge, self-efficacy, and perceived rate of screening; (3) post-intervention assessment of screening rates and practices related to screening for substance use

## **Methods**

### **Context**

A rural community emergency department was the setting chosen for this project. The medical center is part of a hospital system, which consists of 89 hospitals within 30 states. The rural community emergency department consists of 15 beds including 12 acute care beds and three trauma/critical beds.

The primary investigator initiated an SBIRT educational program and screening protocol for adolescents between the ages of 12 and 21. Prior to implementing the screening protocol several meetings were held with project stakeholders to build a team to aid in the implementation process. The chief supporters and resources for this project included the ED nursing director, ED manager, ED case management, nursing staff, and SBIRT expert mentors. SBIRT expert mentors who had implemented a similar protocol in the past suggested to implement and evaluate the screening portion of SBIRT first. As a result, this study did not include the brief intervention and referral to treatment components of SBIRT.

The participants for the educational portion of this project included registered nurses, certified nursing assistants, physician assistants, nurse practitioners, and physicians. The participants for the retrospective and prospective chart review included all ED patients receiving care, who met inclusion criteria.

### **Nurses, CNAs, PAs, APRNs, and Physicians**

The providers working in the ED played a vital role in implementing the screening protocol developed by the primary investigator. The primary investigator introduced the new screening protocol and informed them of the web-based training they were expected to complete on their own. After the staff meeting the providers were sent an email through research electronic data capture that included a pre-test and web-based educational module on SBIRT using the CRAFFT tool. The providers were given two weeks after receiving the email to complete the pre-test and educational module. After the provider had completed the pre-test and educational module they were sent a post-test. The providers were given two weeks to complete the post-test as well. The educational module was made up of fifty-four slides. The first twenty-eight slides discussed SBIRT and why providers should use the approach. Slides twenty-nine through fifty-four were about screening using the CRAFFT tool.

The nurses' role in the process was to screen participants using the CRAFFT screening tool. The CNAs were responsible for making sure the screening was completed and documented in the correct area of the chart. The physicians, APRNs and PAs used the screening to guide their treatment plans and had the ability to screen patients as well if the tool was not completed by the nurse.

### **Patients Presenting to the ED**

Patients included for the chart reviews were between the ages of twelve and twenty-one and had an emergency severity index (ESI) of three, four, or five. There are five levels of ESI. A level one means the patient needs a lifesaving intervention and a level two means the patient is a high-risk case. Subjects were excluded if they were under the age of 12 or over the age of 21,

and if their ESI was a one or two. Non-English speaking individuals were included with the help of a language line.

## **Interventions**

This quality improvement project consisted of three phases. The first phase was a baseline chart audit on all charts from the month of July, 2018 that met the inclusion criteria. The second phase was an educational intervention for the providers. The providers were sent an email containing a pre-test on SBIRT and an educational module on SBIRT. Once the providers took the pre-test they were emailed the post-test. The providers took the pre/post test and educational module through research electronic data capture (REDCap). The third phase was the post intervention chart review. This chart review consisted of all charts one month after the educational intervention that met inclusion criteria. The primary investigator visited the emergency department several days a week at different times to encourage screening, made cards for providers' badges with CRAFFT screening tool, and encouraged staff to review educational module.

## **Measures**

The first phase of the project measured provider knowledge, self-efficacy, and perceived rate of screening prior to and after the educational module. This was measured by provider scores on the pre-test compared to scores on the post-test. Both the pre and post-tests included ten knowledge-based questions, one question dealing with self-efficacy, and one related to perceived rate of screening. Self-efficacy was measured to determine a person's ability to implement the screening. Response options ranged from 0 "cannot do at all" to 100 "highly certain can do." Perceived rate of screening was measured to determine how successful a person

would be with screening. Response options ranged from 0 “not at all confident” to 100 “extremely confident.”

The second phase of the project measured the frequency of screening for tobacco, alcohol, and drug use before and after the CRAFFT educational module. Individuals included in the chart reviews had to be between the ages of 12-21. In addition the patient’s age, gender, ethnicity, and ESI index was reviewed (See appendix B).

### **Analysis**

Descriptive statistics were used to summarize study variables. Differences in demographic characteristics, such as age, gender, and ethnicity were examined between the two cohorts of patients using the two-sample t-test, chi-square test of association or Mann Whitney U Test. Screening rates for tobacco, alcohol and drug use were compared pre- and post-education using the chi-square test of association. Provider knowledge, self-confidence and perceived rate of screening were compared using the paired samples t-test. All analysis was conducted using SPSS, version 25, with an alpha of .05.

### **Ethical Considerations**

The institutional review board approved this project through an expedited review. The data collected for this project was kept confidential and de-identified through research electronic data capture (REDCap). The project posed no safety risks to the staff or patients in the emergency department.

### **Results**

A pre-test along with an educational module was sent to a total of 54 emergency department providers. Fourteen (77.8%) full time nurses, three (21.4%) part-time nurses, three

(37.5%) certified nursing assistants, one (25%) physician assistant, one (50%) nurse practitioner, and two (25%) physicians took the pre-test and educational module (See table 2). A post-test was sent to all individuals completing the pre-test and educational module. Twelve full-time nurses, two part-time nurses, three certified nursing assistants, one physician assistant, one nurse practitioner, and no physicians completed the post-test. A total of seventeen completed both the pre and post-test.

There was a significant increase in provider knowledge, self-efficacy and perceived rate of screening following the education. Of a potential score of 0-10, the mean knowledge score was 5.2 in the pre-test and increased to 9.5 on the post-test (See Table 3). The self-efficacy and perceived rate of screening scores ranged from 0-100. The mean self-efficacy score was 40.2 in the pre-test and increased to 90.3 on the post-test. The mean perceived rate of screening score was 41.9 in the pre-test and increased to 84.9 in the post-test.

Both the pre- and post-education chart reviews included 222 patients. On average, patients were 17 years old, Caucasian and the majority an acuity score of four. There were significantly more males included in the post-education review. There was no change in rate of tobacco use screening over time (93.2% vs 95.5%, respectively), however there was an increase in alcohol and illicit drug use. During the pre-education, patients were screened 9% of the time for alcohol and 9% of the time for drugs, while in the post they were screened 29.7% of the time for alcohol and 30.2% of the time for illicit drugs. (See table 4).

## **Discussion**

### **Summary and Interpretation**

Substance misuse during adolescence is highly prevalent in the United States and contributes to a wide range of negative consequences. When adolescents misuse substances they

disrupt their development leading to an increase risk of job instability, crime involvement, and suicides (Agle et al. 2015). Adolescent drug and alcohol use has also been associated with hepatitis, HIV, cardiovascular disease, and death (Mitchell et al. 2012). Despite these serious threats to their health, adolescent illicit drug use increased by 1.3% in 2013 alone for 8<sup>th</sup>, 10<sup>th</sup>, and 12 graders. In addition 80% percent of high school seniors admit to drinking alcohol (Alayan & Shell, 2016). A routine standardized screening tool to assess for substance use in adolescents can help decrease the burden of addiction and substance-related morbidity (Levy et al. 2014). SAMHSA identifies Screening, Brief Intervention, and Referral to Treatment as the gold standard approach to identify and intervene with adolescents who misuse substances.

This study was able to accomplish the objective of assessing the frequency of documentation for substance use screening before and after the implementation of an educational module about SBIRT using the CRAFFT tool. There was an increase in screening for tobacco, alcohol, and drug use in individuals between the ages of 12-21 from 5.9% before the CRAFFT tool was implemented to 29.3% after the implementation of the CRAFFT tool. The CRAFFT tool was the screening tool of choice because it has been successful in diverse populations, has good sensitivity and specificity with new DSM-5 criteria, and is recommended by the American Academy of Pediatrics (D'amico et al. 2016).

One study recommended implementing interprofessional education and practice to make the intervention successful (Bacidore et al. 2017). In this study all health professionals working in the ED were included and were encouraged to aid in screening. For this project there appeared to be an association between increased documentation of tobacco alcohol, and drug use and providers who completed the SBIRT educational module. The goal was to have 100% of providers working in the rural community emergency department participate in the CRAFFT

educational module. However, only 44.4% of providers participated. In 2017, a similar study was conducted in which 86% of providers completed a SBIRT educational module (Bacidore et al. 2017). An action plan was developed by the department to help increase participation in the future and to aid in increasing the remaining providers screening compliance (Bacidore et al. 2017).

There was an expected increase in post-test scores after the CRAFFT educational module. The low mean scores on the pre-test for knowledge, self-efficacy, and perceived rate of screening may be due to lack of education and familiarity with screening. According to Venkat et al. (2017), training for substance misuse screening should be ongoing and tailored to the individual department and nurses from that same study said they supported the development and implementation of a screening program because it is a part of patient-centered care. The nurses in this study agreed that training for substance misuse screening should be ongoing and appreciated the education because this type of training had never been a part of their annual competencies. As a result, education on SBIRT should be provided in a web-based module during the annual competency time.

Documentation of tobacco, alcohol, and illicit drug use among adolescents improved after the educational module and was statistically significant. To facilitate a successful screening program there should be a specific champion who delivers strong consistent messages regarding the importance of the program (Cowell & Dowd, 2015). For this project the primary investigator was the specific champion. However, improvements in screening still need to be made since less than half of the time patients are being screened for alcohol and drug use. Even after the educational module patients were screened significantly more frequently for tobacco use (95.5%) than alcohol (29.7%) or illicit drug (30.2%). This may be because the charting currently has a

hard stop for tobacco use screening. This means that in order to discharge the person from the emergency department, their tobacco-screening question must be answered. There is currently not a hard stop for charting alcohol or drug use, but the success for tobacco suggests that a similar hard stop could be equally effective.

### **Limitations**

One limitation of the study was the small sample size of providers that participated in the pre-test and educational module. The primary investigator made an initial visit to a staff meeting to explain the investigation, detail what would be expected of staff, and give a brief overview of what the CRAFFT tool entailed. Although, the primary investigator made several additional visits to the clinic to provide education and to encourage staff to take the CRAFFT tool educational module, many did not. Also this program was only implemented in the emergency department and lacked institutional support to make this project of high importance in the short and long-term. To help address this limitation it may be beneficial to have a visible clinical leader who motivates staff to perform the protocol and to represent the program with outside parties whose cooperation is necessary for success. At this time the Director of the emergency department sees the importance of screening for substance misuse in adolescents and was an advocate for the educational module.

Another limitation of the study was the lack of the screening tool on the electronic medical record. In order for staff to complete the CRAFFT screening tool they had to have it memorized, look at their badge card, or a flyer around the department with the screening tool displayed. To chart the individual's CRAFFT score the provider had to go to the social history part of the chart and manually free text the score. This was a limitation because some people could not remember where to chart the score. Charting that is required prior to discharge is

highlighted in blue on the electronic medical record. Several providers working in the department will only chart the required fields. At this time the CRAFFT tool is not a required field. According to Cowell and Dowd, integrating screening and other data collection tools into existing electronic medical records is beneficial (2015).

The screening program was implemented at a high volume ED. This causes several barriers to implementation in its self. One barrier is inadequate physical space with a lack of privacy. Another barrier was time constraints. Some provider's did not complete the tool because they felt the tool took too much time to complete and they needed to focus on more medically urgent issues. To help combat this barrier staff needs to be educated that the average time needed to implement the tool is one minute and eighteen seconds in the emergency department (Cowell & Dowd, 2015).

### **Implications**

In the future it would be essential to educate staff on the remaining portions of SBIRT to provide patients with optimal care. An emergency department in Pennsylvania implemented their SBIRT program in a step-wise approach (Bacidore et al. 2017). The Pennsylvania emergency department offered three one-hour long didactic lecture modules held at various time points from May 2010 to June 2011. Staff in the rural community emergency department would need an additional educational module on the use of motivational interviewing to provide a brief intervention. Another module would be necessary to educate staff on referral to treatment and proper protocols for completing hand-offs.

More research is imperative to increase the use of the CRAFFT tool and to improve adolescent substance use screening in general. This study showed a 23.4% increase in the number of adolescents screened for substance misuse after the implementation of the CRAFFT

tool. Despite this increase only 29.3% of adolescents were screened for substance misuse. As a result, future research is essential to recognize barriers to screening. To aid in the implementation of the CRAFFT tool it may be beneficial to identify a clinical leader to be the champion for the project (Vendetti et al. 2017). According to Vendetti et al. (2017) this person should motivate staff to perform the protocol and should deliver strong, consistent messages about program importance. In addition this person would assist in communication with key stakeholders.

A plausible next step after full implementation of SBIRT, would be to consider the cost of the intervention and determine its cost-effectiveness in the rural community emergency department. The information provided by this study may aid in encouraging staff to see the importance of screening and increase compliance of screening. A similar study conducted by Barbosa et al. (2016) found that the cost of implementing SBIRT cost \$8.63 less in the emergency department setting compared to the outpatient setting and led to 13.7% more patients drinking below threshold levels.

Lastly, since one of the barriers identified to implementation was time, it would be interesting to conduct a study evaluating how long it takes to screen using the CRAFFT tool. Currently other research presented displays a wide range in estimated time to perform a screening test. The screening time presented from other studies ranges from one to thirty minutes (Cowell et al, 2017).

### **Conclusion**

Overall, the goal of this research study was to implement an educational module and standardized substance misuse screening tool to improve adolescent substance abuse screening within a rural community emergency department. The CRAFFT tool was the evidence-based tool selected to implement in the department. After the implementation of the educational module and

CRAFFT screening tool data analysis revealed that screening for tobacco, alcohol, and illicit drug use was only documented 5.9% of the time before the intervention and 29.3% of the time after the intervention. Although, screening improved there is room for improvement with further research and feedback from providers to increase compliance.

Figure 1: Adolescent CRAFFT Screening Questions

**ADOLESCENT SBIRT OPENING QUESTIONS****During the past 12 months, did you:**

1. Drink any alcohol (more than a few sips)? 2. Smoke any marijuana or hashish? 3. Use anything else to get high (“anything else” includes illegal drugs, over the counter and prescription drugs, and things that you sniff or “huff”)

No to all

**Praise and Encouragement**

“You have made some very good decisions in your choice to no use drugs and alcohol. I would like for you to keep it up.”

**CRAFFT “CAR” Question**

Yes to any

**Administer CRAFFT**

**C=** Have you ever ridden in a **CAR** driven by someone (including yourself) who was “high” or had been using alcohol or drugs?

**R=** Do you ever use alcohol or drugs to **RELAX**, feel better about yourself, or fit in?

**A=** Do you ever use alcohol or drugs while you are by yourself or **ALONE**?

**F=** Do you ever **FORGET** things you did while using alcohol or drugs?

**F=** Do your family or **FRIENDS** ever tell you that you should cut down on your drinking or drug use?

**T=** Have you ever gotten into **TROUBLE** while you were using alcohol or drugs?

Figure 2. **Percent of Patients Screened Before and After SBIRT using CRAFFT**

**Educational Module**

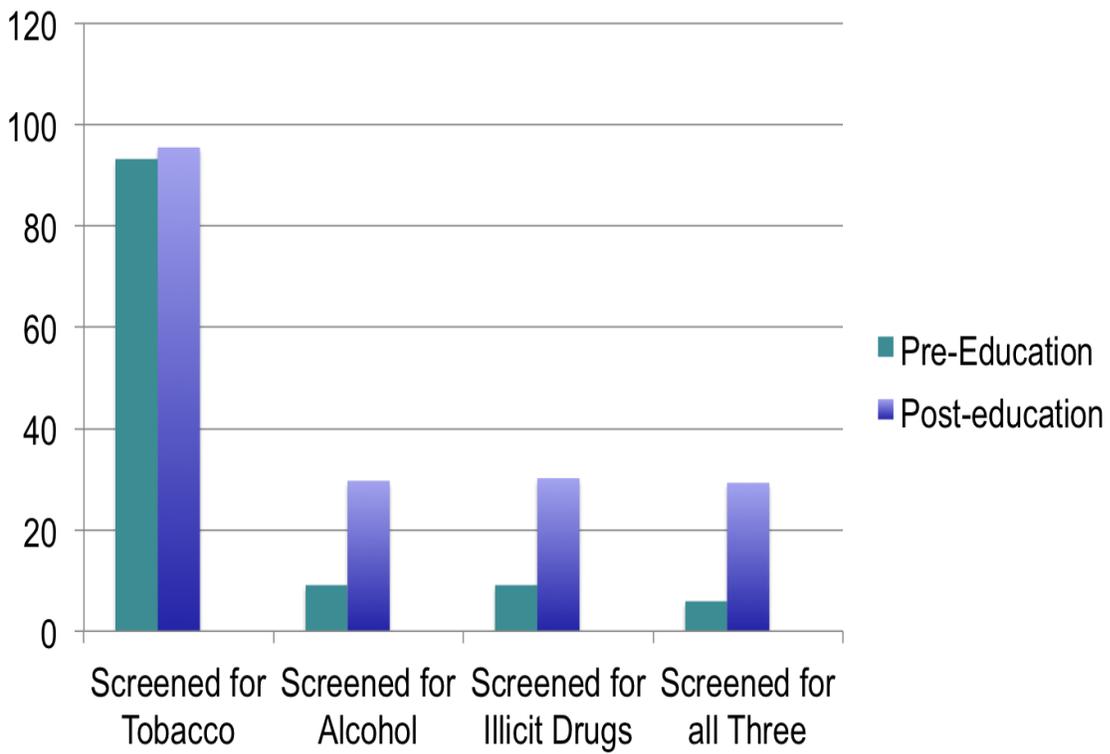
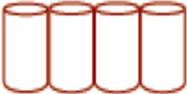


Table 1. Estimated Binge Drinking Levels for Youth

Estimated binge drinking levels for youth		
	Boys	Girls
Ages <b>9-13</b>	 3 drinks	
Ages <b>14-15</b>	 4 drinks	Ages <b>9-17</b>  3 drinks
Ages <b>16+</b>	 5 drinks	

Visual from: McPherson et al. 2018

Table 2. Demographic Characteristics

Type of position	Number of Individuals who complete the Pre-test/educational module N=54	Number of Individuals who completed the Post-test N=54
Full-time Nurses N=18	14 (77.8%)	12 (66.7%)
Part-Time Nurses N=14	3 (21.4%)	2 (14.3%)
Certified Nursing Assistants N=8	3 (37.5%)	3 (37.5%)
Physician Assistants N=4	1 (25%)	1 (25%)
Nurse Practitioners N=2	1 (50%)	1 (50%)
Physicians N=8	2 (25%)	0 (0%)

Table 3. Provider Scores before and after CRAFFT educational module

	Potential range	Pre-test score before educational module Mean (SD)	Post-test score after educational module Mean (SD)	p
Knowledge score	0-10	5.2 (2.3)	9.5 (1.3)	<.001
Self-Efficacy	0-100	40.2 (22.4)	90.3 (16.5)	<.001
Self-Confidence	0-100	41.9 (24.1)	84.9 (19.1)	<.001

Table 4. Descriptive summary of documentation of substance misuse

	Pre-education (n= 222) Mean (SD) or n(%)	Post-education (n= 222) Mean (SD) or n(%)	p
Age	17.7 (2.7)	17.3 (2.8)	.159
Sex			
Male	82(39.9%)	103 (46.4%)	.043
Female	140 (63.1%)	119 (53.6%)	
Race			
Caucasian	195 (87.8%)	193 (86.9%)	.775
African American	27 (12.2%)	29 (13.1%)	
Acuity			
2	11 (5.0%)	10 (4.5%)	.315
3	94 (42.3%)	77 (34.8%)	
4	114 (51.4%)	128 (57.9%)	
5	3 (1.4%)	6 (2.7%)	
Screened for tobacco			
NO			.303
YES	15 (6.8%) 207 (93.2%)	10 (4.5%) 212 (95.5%)	
Screened for alcohol			
NO	202 (91%)	156 (70.3%)	.000
YES	20 (9%)	66 (29.7%)	
Screened for illicit drug use			
NO	202 (91%)	155 (69.8%)	.000
YES	20 (9.0%)	67 (30.2%)	
Screened for tobacco, alcohol, and illicit drug			
NO	209 (94.1%)	157 (70.7%)	.000
YES	13 (5.9%)	65 (29.3%)	

## Appendix A. Pre/Post test

*This test is designed to measure providers' knowledge, self-efficacy, and perceived rate of screening related to utilizing Screening, Brief Intervention, and Referral to Treatment (SBIRT) with adolescents/young adults. Please complete the following pre test, educational module, and post test. If you submit the pre/post test, you are giving the primary investigator permission to use the results from the survey to analyze in aggregate. There will be NO identification of any individual participant.*

Pre/Post Test On Screening Brief Intervention and Referral to Treatment Utilizing the CRAFFT

### Screening Tool

**1. What does SBIRT stand for?** Screening Brief Intervention and Referral to Treatment

**2. SBIRT is all of the following except?**

A. A comprehensive, integrated, public health approach to the delivery of early intervention and treatment services for patients with a substance use disorder, as well as those who are at risk of developing them

B. A tool integrated only in primary care settings

C. Is utilized to identify potentially problematic substance use quickly

D. Is simple and cost effective

**3. How long should the screening aspect of SBIRT take?**

A. 5 minutes or less

B. 7 minutes

C. 10 minutes

D. 15 minutes

**4. The goal of screening is to assess the degree of risk True/False**

**5. What does a brief intervention entail?**

A. A change strategy to aid the adolescent to decrease or stop the use of tobacco, alcohol, or illicit drugs

B. Can take anywhere from one minute to thirty minutes to complete depending on the risk.

Little to know risk can take about 1-3 minutes and those at high risk may take 15-30 minutes

C. Can be several sessions and during a session a provider may provide feedback on risks of alcohol and drug use, explore the pros and cons of use, and ask if willing to make a change

**D. All of the above**

**6. All of the following are aims of SBIRT except?**

A. Increase early identification of adolescent and young adults at-risk for substance use problems

B. Motivate those at-risk to decrease unhealthy, risky use and adapt health-promoting behavior

**C. Motivate individuals to not seek help and decrease access to care for those with or at risk for a substance use disorder**

D. Link to more intensive treatment services for adolescents/young adults at high risk

E. Increase awareness and educate adolescents/young adults on U.S. guidelines for low risk drinking and the risks associated with substance use.

**7. What percentage of the population over the age of 12 drinks alcohol in the United**

**States?**

A. 10 percent

B. 20 percent

C. 45%

D. More than 50%

**8. All of the following are general patterns of substance use identified by the American Academy of Pediatrics except?**

A. Low Risk (Abstinence): Adolescents who report no use of tobacco, alcohol or other drugs and report they have not ridden in a car with a driver who has been using alcohol or other drugs

B. Driving Risk: Adolescents who report driving after alcohol or drug use or riding with a driver, who has been using alcohol or other drugs

C. Moderate Risk: Adolescents who have begun using alcohol or drugs (CRAFFT score 0 or 1)

D. High Risk: Adolescents who use alcohol or drugs (CRAFFT score greater than or equal to 2)

E. No risk: Adolescents who report use once in their lifetime

**9. In regards to confidentiality and screening individuals between the ages of 12-21 what is required of the provider?**

A. If the patient is under the age of 18 the parent must be present during screening

B. The provider can inform the patient that everything they tell them will be confidential unless they hear that the patient has a plan to harm himself or herself or someone else, or that the patient has been a victim of abuse

C. The confidentiality policy should be explained at the very beginning of the screening or assessment

D. Both B and C

E. All of the above

**10. All of the above are true about the CRAFFT tool except**

A. The CRAFFT tool is the most popular alcohol and drug use screening tool for adolescent 14-21 and is recommended by the American Academy of Pediatrics' Committee on Substance Abuse.

B. The questions of the CRAFFT tool can be changed so that they are easier to ask

C. It is a mnemonic acronym where each first letter represents a key word in the six screening questions

D. There are two parts to the CRAFFT tool. If patients answers no on all three opening questions of part one, only the "C" question of the CRAFFT should be asked. Part 2 consists of six CRAFFT questions. If the adolescent answers "yes" to any of the three opening questions, all six CRAFFT questions should be asked

**Testing Provider Self-Efficacy**

11. Rate your degree of confidence in screening individuals between the ages of 12-21 for alcohol, tobacco, and illicit drug use by recording a number from 0 to 100 using the scale given below:

0	10	20	30	40	50	60	70	80	90	100
Cannot do at all					Moderately can do				Highly certain can do	

**Perceived Rate of Screening**

Overall, how confident are you that you complete alcohol, tobacco, and illicit drug use screening on all patients seen between the ages of 12-21 using the scale given below:

Not at all Confident										Extremely Confident
0	10	20	30	40	50	60	70	80	90	100



### References

- Agley, J., Gassman, R., Jun, M., Nowicke, C., & Samuel, S. (2015). Statewide Administration of the CRAFFT Screening Tool: Highlighting the Spectrum of Substance Use. *Substance Use & Misuse, 50*(13), 1668-1677.
- Bacidore, V. M., Letizia, M., & Mitchel, A. (2017). Implementing interprofessional alcohol screening, brief intervention, and referral to treatment in the emergency department: An evidence-based quality improvement initiative. *Advanced Emergency Nursing Journal, 39*(3), 199-216.
- Barbosa, C. J., Cowell, A. W., Landwehr, J., Dowd, W., & Bray, J. (2016). Cost of Screening, Brief Intervention, and Referral to Treatment in Health Care Settings. *Journal of Substance Abuse Treatment, 60*, 54-61.
- Cowell, A., & Dowd, W. (2015). Financial sustainability of screening, brief intervention, and referral to treatment programs in emergency department settings (part of Economics of SBI symposium). *Addiction Science & Clinical Practice, 10*(S2), *Addiction Science & Clinical Practice, 12/2015, Vol.10*(S2).
- Cowell, A., Dowd, W., Landwehr, J., Barbosa, C., & Bray, J. (2017). A time and motion study of Screening, Brief Intervention, and Referral to Treatment implementation in health-care settings. *Addiction, 112*(S2), 65-72.
- D'Amico, E. J., Parast, L., Meredith, L. S., Ewing, B. A., Shadel, W. G., & Stein, B. D. (2016). Screening in Primary Care: What Is the Best Way to Identify At-Risk Youth for Substance Use?. *Pediatrics, 138*(6), e20161717. doi:10.1542/peds.2016-1717

- Glasgow, R.E., Vogt, T.M. and Boles, S.M. (1999) Evaluating the public health impact of health promotion interventions: The RE-AIM framework. *American Journal of Public Health*, 89, 1322-1327. doi:10.2105/AJPH.89.9.1322
- Gonzales, K., Roeber, J., Kanny, D., Tran, A., Saiki, C., Johnson, H., . . . Geiger, S. (2014, March 14). Alcohol-Attributable Deaths and Years of Potential Life Lost - 11 States, 2006–2010. Retrieved March 30, 2019, from <https://www.cdc.gov/Mmwr/preview/mmwrhtml/mm6310a2.htm>
- Knight JR, Sherritt L, Shrier LA, Harris SK, Chang G. Validity of the CRAFFT Substance Abuse Screening Test Among Adolescent Clinic Patients. *Arch Pediatr Adolesc Med*. 2002;156(6):607–614. doi:10.1001/archpedi.156.6.607
- Levy, S., Kokotailo, P., Williams, Janet F, Ammerman, Seth D, Sims, Tammy H, Smith, Vincent C, & Wunsch, Martha J. (2011). Substance use screening, brief intervention, and referral to treatment for pediatricians. *Pediatrics*, 128(5), E1330-E1340.
- Levy, S., Weiss, R., Sherritt, L., Ziemnik, R., Spalding, A., Van Hook, S., & Shrier, L. A. (2014). An electronic screen for triaging adolescent substance use by risk levels. *JAMA pediatrics*, 168(9), 822–828. doi:10.1001/jamapediatrics.2014.774
- Levy, S., Williams, Janet F, Ryan, Sheryl A, Gonzalez, Pamela K, Patrick, Stephen W, Quigley, Joanna, . . . Walker, Leslie R. (2016). Substance Use Screening, Brief Intervention, and Referral to Treatment. *Pediatrics*, 138(1), E20161210-e20161210.
- McPherson, T., Goplerud, E., Bauroth, S., Cohen, H., Joseph, H., Schlissel, A., Sarah, K., & Noriega, D. (2018). *Learner’s Guide to Adolescent Screening, Brief Intervention and Referral to Treatment (SBIRT)*. Bethesda, MD: NORC at the University of Chicago

- Mitchell, Shannon Gwin, Gryczynski, Jan, O&Apos, Grady, Kevin E., & Schwartz, Robert P. (2012). SBIRT for adolescent drug and alcohol use: Current status and future directions. *Journal of Substance Abuse Treatment, 44*(5), 463-472.
- Pringle, Kelley, Kearney, Aldridge, Dowd, Johnjulio, . . . Lovelace. (2018). Screening, Brief Intervention, and Referral to Treatment in the Emergency Department: An Examination of Health Care Utilization and Costs. *Medical Care, 56*(2), 146-152.
- Vendetti, J., Gmyrek, A., Damon, D., Singh, M., McRee, B., & Del Boca, F. (2017). Screening, brief intervention and referral to treatment (SBIRT): Implementation barriers, facilitators and model migration. *Addiction, 112*, 23-33.
- Venkat, A., Shank, G., Rickard-Aasen, S., Pringle, J., & Johnjulio, W. (2017). Screening, Brief Intervention and Referral to Treatment Implementation in the Emergency Department. *The Qualitative Report, 22*(3), 745-756.

