IMPLEMENTING SBIRT IN THE ADULT TRAMA POPULATION ADMITTED BY NORTHEAST ACUTE CARE SURGERY AT CHS NORTHEAST

by

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ABSTRACT

MALLORY RAGAN ROYALL: Implementing SBIRT in the Acute Care Trauma Population admitted by Northeast Acute Care Surgery at Carolinas Healthcare Center Northeast. (Under the direction of DR. ALLISON BURFIELD)

Background: Abuse of alcohol and illicit drugs demonstrate exponential growth each year on a national and global scale. The increasing rate of addiction is negatively disproportionate when compared to the rate of individuals seeking treatment. Patients with substance abuse are often unreached by the appropriate healthcare resources leading to many problems socially, physically, and psychologically, thus yielding high rates of death and mortality. Especially known for high rates of substance abuse are patients admitted for trauma. The Substance Abuse and Mental Health Services Administration (SAMHSA) took action on intervening with providing substance abuse screening as part of routine health care in 2003. The Screening, Brief Intervention, and Referral to Treatment (SBIRT) tool is a public health model designed to provide screening and intervention for individuals with substance abuse issues that can be used in multiple different healthcare settings.

Purpose: The purpose of this project was to implement improved detection of alcohol and substance abuse through the implementation of the SBIRT screening tool in the trauma patient population admitted by Northeast Acute Care Surgery at Carolinas Healthcare System Northeast. This process has the potential to facilitate increased provider assessment and an improved mechanism for identification of alcohol use. The American College of Surgeons is requiring Level III trauma centers to demonstrate

screening and intervention for trauma patients with substance abuse. This study evaluated the implementation of a protocol to assist with meeting those requirements, with the potential to improve overall patient outcomes.

Methodology: The target population for this project included all patients classified as trauma alert, code I, or code II that are admitted under either observation, or inpatient status to NE ACS at CHS Northeast. The sample were a convenience sample and with no control group. The inclusion criteria included English speaking adult patients only, eighteen years and older with the exception of individuals who have a designated healthcare power of attorney due to inability to independently make health related decisions. The SBIRT screening tool defines unhealthy alcohol consumption, utilizes the AUDIT-C and AUDIT tool for screening, and suggests brief intervention conversations. The tool also screens for illicit drug abuse in which any identification of use is considered unhealthy. The patients were screened on admission and if the screen is positive received a brief intervention and referral to treatment. The patient's score and brief intervention and/or referral to treatment was recorded and compared to rescreening data achieved at the follow up appointment, or via follow-up phone call after discharge.

Results: Over a three-month time period of screening trauma patients with the SBIRT tool at CHS Northeast, 93 patients were admitted and 31 of those patients were tested and/or screened positive for alcohol abuse, drug use, or both. Five patients were considered positive for Substance Use Disorder (alcohol), 28 were positive for drug use, and 2 patients were positive for both. The age-range of positive screens was between 18 years old and 80 years old. 71% were male, 29% female. Of that population, 6% of the patients accepted referral to treatment and 6% of those patients received documentation

of substance withdrawal. Patients reported their willingness to change on a scale of 0-10 with about one third of those patients rating their willingness to change at 10. Of the patients with positive screens, 6 of those refused brief intervention. Only four patients were reached for follow up, two patients remained abstinent from substance use and two patients continued to use. Of note, one of the patients that continued use of illicit drugs was reported to be for medical reasons. Unfortunately, limitations of the study included poor follow-up attributed to time frame for follow-up and a lack of reliable contact, or incorrect phone numbers. Twenty-three patients opted not to proceed with referral to treatment. Further limitations may include patient transparency regarding drug and alcohol use as most of this information is subjective.

Implications: Screening for substance abuse and subsequent intervention remains a crucial need in the healthcare arena, especially the inpatient setting. A third of the patients in this study screened positively for substance abuse, therefore supporting the recommendation for screening and intervention tools to be continued in practice. In the future, the focus should be on preparing the patient with resources available to them during the single admission (referral, resources, phone numbers, treatment centers etc.) as follow-up was unreliable. The two patients that did choose referral to treatment were discharged to rehabilitation facilities. This warrants consideration for implementation of addiction services at those facilities as well. Additionally, ease of data collection and continuity of care could be improved if the screening tool is incorporated into the electronic medical record (EMR) for easy access among healthcare providers.

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DEDICATION

I would first and foremost like to recognize the good Lord above for His provision and guidance; with Him nothing is impossible. This Doctoral Scholarly Project is dedicated to my father; you are and have always been my hero. Your testimony fills me with pride and joy and fuels my passion behind the hours of endless work. To my mother and my father, your limitless words of encouragement, support, and endless prayers have made this endeavor a reality. Thank you for always believing in me. To my brother, you will never know the worth or your pep talks, no matter how short and how sweet. Last but most definitely not least, to my husband. You have been patient, kind, not self-seeking, not angered, trustworthy, truthful, hopeful, persevering, and your love has never failed. Thank you.

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LIST OF ABBREVIATIONS

ACOS	American College of Surgeons
AUDIT-C	Alcohol Use Disorders Identification Test- Consumption
AUDIT	Alcohol Use Disorders Identification Test
BI	Brief Intervention
CDC	Center for Disease Control and Prevention
CHS NE	Carolinas Healthcare System Northeast
DNP	Doctor of Nursing Practice
ED	Emergency Department
EMR	Electronic Medical Record
HIPPA	Health Insurance Portability and Accountability Act
IRB	Institutional Review Board
LPN	Licensed Practice Nurse
NE ACS	Northeast Acute Care Surgery
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NN	Nurse Navigator
NP	Nurse Practitioner
MD	Doctor of Medicine
RN	Registered Nurse
RT	Referral to Treatment
SAMHSA	Substance Abuse and Mental Health Services Administration

SBIRT	Screening, Brief Intervention, and Referral to Treatment
UNCC	University of North Carolina at Charlotte
US	United States
USPSTF	U.S. Preventative Services Task Force
WHO	World Health Organization
WTC	Willingness to Change

CHAPTER 1

Introduction/Background

According to the Center for Disease Control and Prevention (2014), it is estimated that 38 million adults drink unsafe amounts of alcohol in the United States; furthermore, the effects of alcohol consumption account for 88,000 deaths annually. In the year 2006, an estimated $224 billion represented the economic burden that alcohol demanded from the U.S. economy (CDC, 2014). The Substance Abuse and Mental Health Services Administration National Survey on Drug Use and Health released data from a report in 2011 that 22.5 million Americans used an illicit drug in the month prior to the survey. Of those 22.5 million individuals, 20.6 million could be classified with substance dependency or abuse (Slain et al., 2014).

In 2006, 1.2 million visits to the emergency department were the result of excessive alcohol use, and in a six year time frame from 2004 to 2010, an estimated 5 million visits to the emergency department were related to illicit drug use (Slain et al., 2014). Unfortunately, statistics demonstrate that only 1 in 6 people have ever had a conversation with a healthcare provider about substance abuse (Center for Disease Control and Prevention, 2014). D'Onofrio and Degutis (2010) report the abuse of alcohol and illicit drugs are major risk factors for multiple injuries, which necessitate visits to the emergency department. The study further states that 23% of the included patients identified no primary care provider or routine health care, thus placing the emergency department as a crucial connection to care.

Data reported by the World Health Organization (2015) describes that on a global scale, 3.3 million deaths annually can be attributed to the harmful use of alcohol. When this number is put in perspective, this accounts for 5.9% of all deaths worldwide. The global burden of disease and injury related to alcohol involvement measures 5.1%. Additionally, WHO (2015) reports data of 15.5 to 38.6 million users of illicit drugs worldwide, and attributes 99,000-253,000 deaths to abuse and misuse. Alcohol and substance abuse and misuse take a detrimental toll with a direct correlation to the burden of disease, society, and the economy (World Health Organization, 2015).

Currently a lack of resources and support stand as barriers to effective primary care for patients suffering from substance abuse. Additionally, treatment rates are low compared to the rising need of patients with substance abuse (Ross et al., 2015). Glass et al., (2015) report that approximately 17.6 million adults were classified as having alcohol use disorder after reporting the amount of alcohol they consumed in the previous year. Unfortunately, only 6% of those patients sought a treatment source and only 11% stated that they acknowledged the need for assistance in correcting alcohol usage. Bernstein and D'Onofrio (2013) report that given the acuity and volume of substance abuse seen in the emergency department, this patient population is typically not effectively diagnosed or treated. Attribution of this problem is given to lack of provider training and available resources.

McKnight-Ealy, (2011) reports data regarding The U.S. Preventative Services Task Force (USPSTF) and their recommendations for alcohol misuse screening and counseling to address the exponential alcohol abuse rates. Additionally, these screening services are covered by many insurance plans due to the implementation of the

Affordable Care Act (McKnight-Ealy, 2011). In regards to USPSTF recommendations for screening for illicit drugs, this organization actually reports the need for further research of standardized questionnaires in practice settings to attest to validity.

The National Guideline Clearinghouse has also published guidelines for screening recommendations for alcohol abuse. It is estimated that the utilization of screening and brief intervention can save the hospitalized patient $1,000 per admission. The utilization of the tool can also save the actual facility $4 for every $1 spent on the implementation process (National Guideline Clearinghouse, 2011).

In 2003, the Substance Abuse and Mental Health Services Administration (SAMHSA) established the Screening, Brief Intervention, and Referral to Treatment (SBIRT) grant program. The goal of this program was "to identify, reduce, and prevent problematic use, abuse, and dependence on alcohol and illicit drugs among individuals who would not typically seek treatment" (Kaiser & Karuntzos, 2016, page 21). This tool serves as a public health model to incorporate substance abuse as a part of routine health care by providing these services in settings in which a high-risk population may seek care (Kaiser & Karuntzos, 2016).

The CDC lists recommendations for the federal government, healthcare organizations, and healthcare professionals to emphasize a focus on diagnosis and treatment to reduce the incidence and prevalence of alcohol use and abuse in the U.S. The most important common denominator of suggestions is screening and counseling (CDC, 2014). This is an intervention that can be completed on all levels, through all facets of meeting patients' needs. SBIRT also incorporates screening for other substances within the tool as well in which the same conversations and interventions can

be applied (SBIRT, 2012). The goal was to present a Doctoral Scholarly Project including the problem statement, purpose, literature review, objectives, and conceptual framework encompassing substance abuse screening in the trauma population with recommendations for improved screening and overall care.

Problem Statement

Abuse of alcohol and illicit drugs demonstrate exponential growth each year on a national and global scale. The increasing rate of addiction is negatively disproportionate when compared to the rate of individuals seeking treatment. Patients with substance abuse are often unreached by the appropriate healthcare resources leading to many problems socially, physically, and psychologically. Screening and intervention for substance abuse currently represents an underserved need in the inpatient setting, specifically with the trauma patient population.

Purpose of the Project

The purpose of this project was to facilitate improved detection of alcohol and substance abuse through the implementation of the SBIRT screening tool in the trauma patient population. This process may facilitate increased provider assessment and an improved mechanism for identification of alcohol use. The SBIRT screening tool defines unhealthy alcohol consumption, utilizes the Alcohol Use Disorders Identification Test (AUDIT) tool for screening (Appendix A), and suggests brief intervention conversations. This tool also screens for illicit drug abuse in which any identification of use is considered unhealthy (SBIRT, 2012).

Significance

The risks of abusing illicit drugs and alcohol contribute too many problems socially, physically, psychologically, thus yielding high rates of death and mortality (The National Center on Addiction and Substance Abuse, 2017). The SBIRT proposes an opportunity for early intervention that focuses on individuals consuming unsafe amounts of alcohol and use of illicit drugs. Furthermore, this intervention offers strategies for effective implementation of interventions before the disease of addiction worsens to the point of needing extensive treatment or even death (SBIRT, 2012).

Initially SBIRT was geared towards recognizing alcoholism and alcohol abuse as a disease as opposed to personal poor decision-making. Further acceptance of this concept in healthcare subsequently warranted improved identification of this patient population in the setting of harmful and hazardous use of alcohol. In 1982, the WHO established a universal screening test for unhealthy alcohol consumption, which prompted the development of AUDIT. This test is now widely accepted in use and supported by a wide variety of evidence and research (Babor, Del Boca, & Bray, 2017). Babor et al., (2017) further emphasized the need for improved identification of substance abuse and innovative implementation of intervention for this population

Due to the aforementioned findings, the development of SBIRT was established in the United States by SAMHSA's Center for Substance Abuse Treatment in 2003. Initial implementation was funded by grants from SAMHSA to provide data and information regarding the utilization process, outcomes, and even monetary value of utilizing the tool. After evaluation of this program, findings revealed success of the

program to serve the medical field with an innovative tool to identify and manage substance abuse orders in medicine (Babor et al., 2017).

Parker, Libart, Fanning, Higgs, and Dirickson (2012) describe SBIRT as a tool that is comprehensive, integrated, and a public health approach to deliver substance abuse services to the general population. Through the utilization of this tool and education of this patient population, the possibility of improved patient outcomes could be exponential. An important aspect of provider adoption of the protocol is when the SBIRT tool is used correctly, the provider can actually bill for reimbursement. This may further validate the time the provider will spend with the patient because reimbursement and billing could justify time spent, promote sustainability, and increase utilization of the SBRIT tool (SBIRT, 2012).

Clinical Question

In the adult trauma population admitted at Carolinas Healthcare System Northeast (CHS NE), does the implementation of the Screening, Brief Intervention and Referral to Treatment (SBIRT) while hospitalized affect, or change the rating of AUDIT, or use of illicit drugs at two week follow up appointment when rescreened by utilizing the same tools?

Project Objectives

In 2016, there was the development of a Northeast Acute Care Surgery (NE ACS) for the urgent, emergent, surgical, and trauma needs at CHS NE. Currently, there is no set protocol hospital wide for substance abuse screening and intervention aside from gathering social history within the electronic medical record. The objective of this Doctor of Nursing Practice (DNP) Scholarly Project was to promote and facilitate

improved detection of substance abuse by increased utilization of the SBIRT screening tool by NE ACS trauma team. This included screening of all patients identified as trauma alerts, trauma level 1, and trauma level 2 admitted by NE ACS. A goal of this process was to facilitate increased provider assessment and an improved mechanism for identification of alcohol and illicit drug abuse (SBIRT, 2012). The focus was on adequate and holistic intervention for the patient with substance abuse and eventual overall improvement of health status and quality of life.

As a level III trauma center, the objective was to enforce a new standard of care for all patients. The goal was to identify and initiate conversation about alcohol and substance use with patients. The ambition was improvement in promoting substance abuse screening as a standard of practice in this patient population. Additionally, this tool presented the potential to decrease stigma through education and potentially lead to an intervention for patients who choose to receive help (Ragan, 2016).

CHAPTER 2:

Literature Review

A comprehensive review of the literature was conducted to identify research based on the utilization and implementation of SBIRT in the adult trauma population. Literature selected included those that revealed effectiveness and of motivational interviewing, brief intervention, and potential referral to treatment in patients identified to use/abuse alcohol and illegal substances. The databases utilized for article evaluation and collection included CINAHL, PubMed, EBSCOhost, Cochrane, Google Scholar, national and global websites such as American College of Surgeons (ACOS), WHO, CDC, as well as review of references of authors and similar titles from previously gathered articles. Search terms used are as follows; SBIRT, screening, trauma, inpatient, primary care, emergency department, alcohol abuse, substance abuse, and illicit drugs.

Initially, the date was set as 2010 for the oldest articles to be identified however, some articles were pulled from the author list of articles meeting the inclusion criteria and date back to 2007. All articles included were peer reviewed and all levels of evidence were accepted. The focus group is adult trauma patients, however, some articles including the pediatric population were included for implementation practices and electronic medical record (EMR) recommendations. Also included were articles for inpatient, outpatient, and emergency department settings for comparison purposes. All articles address alcohol abuse, substance abuse, or both. The articles were not limited to the United States alone, as some articles represented data on an international level. Exclusion criteria include articles that do not screen utilizing SBIRT.

The initial searches yielded close to 250 articles based on the various search terms. The initial process included reading titles and abstracts of the articles. Once an article was deemed pertinent to the objectives and focus of the current study, these were saved to a folder within the respective search engine or to a pdf file on a personal computer. A total of 45 articles were retrieved. Fourteen of these were utilized for factual references and 31 articles were utilized for reference and analysis of the objectives and criteria for this project.

This literature review includes three systematic reviews which all support effectiveness of utilization of SBIRT for alcohol abuse (Glass et al., 2015; Kaner et al., 2009; Keurhorst et al., 2015). Five studies included randomized controlled trials. Three articles spoke to the effectiveness of SBIRT for alcohol abuse (Cherpitel et al., 2010; Kaner et al., 2013; Mertens et al., 2015). Bogenschut et al., 2011 address the effectiveness of SBIRT administered to patients with substance abuse problems including alcohol and illicit substances. Woodruff et al., 2014 report effectiveness of SBIRT implementation for patients documented to abuse illicit drugs only.

Additional articles describe the effectiveness of SBIRT implementation including qualitative/descriptive studies, longitudinal studies, retrospective studies, quasi-experimental studies, quantitative studies, and cross-sectional designs (Akin, Johnson, Seal, & Kuperminc, 2014; Babor et al., 2017; Bernstein et al., 2007; Desy, Howard, Perhats, & Li, 2010; D'Onofrio & Degutis, 2010; Gormican & Hussein, 2017; Kaiser & Karuntzos, 2015; Murphy, Bijur, Rosenbloom, Bernstein, & Gallagher, 2013; Parker, Libart, Fanning, Higgs & Dirickson, 2012; Vaca, Winn, Anderson, Kim & Arcila, 2011; Wagner, Garbers, Lang, Borgert, & Fisher, 2016)

The only article that commented that SBIRT was ineffective was an expert opinion in the primary care setting (Bernstein & D'Onofrio, 2013). The reasons the authors stated SBIRT was ineffective was because they found the tool was not sufficient for the population that is at highest risk for substance abuse. The article also stated this was secondary to lack of insurance, socioeconomic disparity, and homelessness. However, the same expert opinion by Bernstein & D'Onofrio (2013) reported that SBIRT implementation is effective in the emergency department (ED) given data that in 2011, 5.1 million patients presented to the ED for injuries related to substance abuse.

Gormican & Hussein (2017) speak specifically to using the Alcohol Use Disorders Identification Test – Consumption (AUDIT-C) in which a brief intervention was conducted by a social worker including a follow up telephone call after discharge. The aforementioned demonstrated that 13 scores decreased (68%), 8 patients reported setting drinking limits, 6 patients drank slower, and overall results revealed participants drinking less in general. This study was beneficial because the patients were pleased that providers were spending more time with them. Additionally, better outcomes were demonstrated with the booster phone calls after discharge and after referral to the primary care provider at discharge.

Goplerun (2012) addressed the 2011 recommendations from Joint Commission recommending inpatient screening for alcohol use, brief intervention for those with increased risk of unsafe use, and referral to treatment if indicated. Follow up is also an important concept for this population. This article reports that only 10% of the 2.5 million individuals with alcohol and substance abuse issues received care for their substance abuse in the last year.

In another study by Wagner et al. (2016) an inpatient trauma division implemented SBIRT in patients greater than 12 years old utilizing the EMR with coordination with "wellness specialist" or social worker. Findings supported increased effectiveness of the screening if follow up contact is made; 52% of patients in this study completed follow up compared to 21% in the control group. Another study was in the inpatient setting was on a pediatric trauma unit. Out of 534 qualified patients, 32 screened positive and brief intervention was administered by a social worker and referral to treatment if needed. Mckenna et al., (2013) reported that inclusion of the screening into the EMR was overall well accepted and the staff had positive contributions to the change. Ninety-two of the patients were excluded secondary to acuity and 30 were not screened due to employee error (McKenna et al., 2013).

A longitudinal study by Vaca et al. (2011) discussed an important concept regarding patient willingness to change as a predictor of change. This was a study of a convenience sample of ED patients who screened and considered at risk for alcohol abuse by computerized SBIRT. This included AUDIT questions and recommendations based on National Institute on Alcohol Abuse and Alcoholism (NIAAA). Out of 221 participants, 20% chose that they were not ready to change, 13% chose little readiness, 32% gave an ambivalent response, and 35% gave what they labeled as a positive response. At the six month follow up 47% of the patients no longer exceeded the NIAAA recommendations.

Regarding the amount of time necessary for implementation, one study provided a total breakdown of time from start of the process to finish (Cowell, Dowd, Landwehr, Barbosa, & Bray, 2016). Generally, the average patient would receive the pre- and full-

screen, as well as brief intervention in less than 15 minutes; however up to 20 additional minutes are sometimes utilized on patient support. Medicaid reimburses provider time in 15 minute increments for providers, and non-physician time is billed under facility code. A comparison of times for SBIRT administration between different healthcare settings is demonstrated by Cowell et al. (2016) in Table 1:

TABLE 1: Differentiation of times between different healthcare settings

Setting	Pre-Screen	Full Screen	Brief Intervention	Referral to Treatment
Emergency Department	1:18 minutes	4:30 minutes	5:56 minutes	6:28 minutes
Inpatient	2:14 minutes	5:34 minutes	9:50 minutes	1:55 minutes
Outpatient	1:12 minutes	3:53 minutes	6:49 minutes	N/A

Cowell, Dowd, Mills, Hinde, & Bray (2017) recommend eliminating the prescreen element and screening universally. Additionally, they discuss that differences in time to administer services is secondary to the difference in acuity of the settings. Meeting patient flow budgeting quotas will assist with equaling or exceeding costs; therefore, ideal implementation setting is a facility functioning at or above average patient flow.

Regarding costs and revenue, previously mentioned in this proposal, are recommendations from the SBIRT (2012) tool, as well as by Cowell et al. (2016) regarding Medicaid reimbursement for SBIRT services. Bernstein & D'Onofrio (2013) report that primary care is ineffective for SBIRT, as it does not suffice the need of substance abuse/misuse population. Their report states that in 2011 5.1 million patients presented to the ED for substance abuse. By taking this number of patients into

consideration, there is anywhere from $3.81 to $5.60 saved for every dollar spent in early screening and identification of substance abuse.

Specific costs of screening utilizing SBIRT in inpatient settings is $6.31, BI $9.07, and RT $8.03 (Barbosa, Cowell, Landwehr, Dowd, & Bray, 2015). Seventy-three percent of these costs are attributed to labor costs as there is not significant capital equipment involvement. Additionally, these costs do not vary more than $5.00 across all patient settings. Generally, the average cost to provide BI or RT for every positive screen for one year is approximately $400 (Barbosa et al., 2015).

One facilitator to the utilization of SBIRT include a multidisciplinary team. A specific strength of SBIRT is in the mild to moderate ranking alcohol consumption Vendetti et al., (2017), provider knowledge (Ross et al., 2015), time, and training (Broderick, Kaplan, Martini, & Caruso, 2015). Barriers included the generalized perception that the utilization will not help the population with substance abuse illness. Additionally, lack of time and training produced a negative effect on the implementation of SBIRT (Broderick et al., 2015). Patient identified barriers include socioeconomic and co-occurring mental illness. Provider identified barriers included knowledge, willingness to treat, and contradicting one's own beliefs (Ross et al., 2015). Also important is the recognition of lack of available treatment disposition options (Vendetti, Gmyrek, Damon, Singh, McRee, & Del Boca (2017).

Regarding follow up care after the screening, BI, and RT, as indicated, there are two articles that specifically speak to the importance of follow up whether it is in person or via telephone. Glass et al. (2015) report that their research actually revealed the need for telephone follow-up and consistent contact. The same recommendations are reported

by Gormican & Hussein (2017) who report support in the literature for improved outcomes with follow up phone call or office visit.

The administration of SBIRT can be done by any member of the healthcare team including the medical office assistant, Licensed Practical Nurse (LPN), Registered Nurse (RN), Nurse Practitioner (NP), or Medical Doctor (MD). In fact, Ross et al., (2015) actually suggest that the utilization of a multidisciplinary team is the most effective for implementation. According to two examples from the literature, effective studies have been published with RN administration of screening and social work providing the brief intervention (Gormican & Hussein, 2017; McKenna et al., 2013).

Three specific studies implemented screening by the RN as well as BI (Barbosa et al., 2015; Desy, Howard, Perhats, & Li, 2010; Slain et al., 2014). Each of these revealed effective results after implementation. In fact, Desy, Howard, Perharts, & Li (2010) found that there was a decrease in re-screening data numbers even in their control group in which they hypothesize that screening alone may suffice as a modified intervention. Barbosa et al. (2015) suggest that initially health administrators can utilize results from the studies to compare how sites are reimbursed for SBIRT. Utilizing the RN as screening and initial Brief Intervention (BI) may be a good indicator of time and resources and assist with determining budgeting and how to implement a provider into the process for billing purposes.

One trauma department actually utilized a wellness specialist to deliver BI and motivational interviewing. This study included a control group of an exercise physiologist with traditional methods. At the completion of the study, the follow up rate

after discussion with the wellness specialist was 52%, whereas the control group was 21% (Wagner, Garbers Lang, Borgert, & Fisher, 2016).

Broaderick, Kaplan, Martini, and Caruso (2015) report that the patients presenting to the emergency department for care propose a crucial opportunity to implement SBIRT. This is supported by the data reporting a significant proportion of patients seeking emergency care present with alcohol/substance abuse related injuries. Utilizing this opportunity, the identification of patients can be established by screening admitted trauma patients and ensuring follow up.

There are multiple strategies for implementation of SBIRT; however, the process has been challenging. A systematic review of the literature (Williams et al., 2011) utilized a broad conceptual model of implementation and the Consolidated Framework for Implementation Research to identify domains addressed in each specific program. The research revealed that by utilizing the different domains of implementation higher rates of screening were realized. Key mechanisms within these successful programs are within the infrastructure aligned with the evaluation of the screening tool (Williams et al., 2011).

At the completion of this project another literature review was performed to search for articles relating to the use of SBIRT in the inpatient setting. This review yielded one article published in May 2017. This article studied alcohol use only (Turner, McCann, Dunn, Darnell, Beam, Kleiber, et al., Fukunaga, 2017).

This study evaluated 189 injured patients that screened positive for alcohol on admission. The study revealed a predominately male population at a mean age of 40. Of the 189 total patients, 115 received intervention. Reasons that patients did not receive

intervention were secondary to cognitive impairment, catastrophic injury, unwillingness to cooperate, or patient was deceased. Other obstacles included short length of stay or weekend/holiday admission.

Essentially 60% of the injured patients received brief, motivational counseling from licensed psychologists and/or supervised psychology and psychiatry residents. Turner et al., (2017) recommends that by providing additional staffing resources, the provision of SBIRT services could be improved. This includes the recommendation to allow for SBIRT practices to be continued in follow up care settings.

An article previously listed in the literature review by Gormican and Hussein (2017) discussed screening inpatient trauma patients on admission using the AUDIT-C tool of SBIRT. Follow up was conducted via phone call survey in which 79 patients met follow up criteria but only 19 were successfully contacted. Of those that were contacted, 68% had a lower score on the AUDIT-C than when they were inpatients. Recommendations from these authors include optimization of timing of SBIRT and implementing a follow up system. Additionally, their literature review suggested that a SBIRT "booster" increased the effectiveness of the brief interventions.

A further question that is proposed after this literature review is regarding the lack of literature and data on the implementation in the inpatient setting. Another gap in the literature is management of the patient in the acute setting until BI or Referral to Treatment (RT) can occur. The strengths of the literature certainly point to the effectiveness of SBIRT regardless of the setting. However, the majority of

implementation sites are ED or outpatient settings. Additionally, the literature supports the use of a multidisciplinary team and universal screening.

Theoretical Framework

Lewin's Change Theory was initially developed in 1947 by Kurt Lewin, also referred to as the "3 Step Model". These three steps conclude a dynamic process to facilitate change by utilizing three different steps: unfreezing, changing, and refreezing (Brisson-Banks, 2009). The process within these three stages includes: 1.) reducing the forces surrounding existing attitudes (unfreezing), 2.) development of new attitudes for implementing the change (changing), and 3.) implementing the change at a new level through reinforcement and support (refreezing), (Kritsonis, 2005).

An additional facet of this change theory is a specific methodology for analyzing change referred to as "field force analyses" (Brisson-Banks, 2009, pg. 244). In developing a transition to the implementation of a new practice, analyzing and identifying restraining or motivating forces will take into consideration both the views of support and resistance from the individuals within the organization. The next step is assessing the degree to which these forces have the potential to affect the process and identifying both the positive and negative potentials. Once these factors have been identified, the change process should facilitate optimizing the positive forces and minimizing the negative forces (Brisson-Banks, 2009).

Kaminski (2011) suggests that Lewin's change theory is a reliable theory that has proved its potential over time for personal, group, and organizational change. While change may encompass chaos, orchestrating a planned change is the key to successful implementation. The use of this theory when applied to implementing the change in

current admission protocols utilizing SBIRT facilitated a structure to disperse the information and plan for a controlled transition.

The first step of unfreezing was the initiation of the new protocol including identifying the weaknesses and shortcomings of current practice (Kaminski, 2011). For the purposes of this project, this included in-services and discussion during daily huddles for the nursing staff on two inpatient nursing units that care for step-down trauma patients. These in-services lasted about fifteen minutes a piece to discuss the weaknesses of old practice and the strengths of new practice. The mechanisms behind this force were the provision of education, transparency of the plan, and establishing goals to gain the support of the affected employees.

The next step of the change process was when the actual implementation of the new structure and processes occurred. During this phase, the opinions of the individuals affected by the transition were considered and addressed. This included recognizing both challenging and supportive viewpoints voiced by individuals and utilizing positive reinforcement to continue through with implementation (Kaminski, 2011).

For the current practice at CHS NE, the nursing staff completes a social history portion of an admission history addressing alcohol and substance abuse. Unfortunately for patients that may abuse these substances, the information does not go further unless communicated by the nursing staff. This new protocol utilized a new segment of the admission history using the AUDIT tool of SBIRT to screen the patients; upon a positive screen a task was generated to social work as well as the NP within the NE ACS service. From there, the NP or NN for the group administered the BI and social work assisted to provide resources as appropriate for referral to treatment.

The third phase of refreezing was establishing this change as the new normal within practice. The importance of this phase is support and maintenance of the change to prevent negative transition to prior routine (Kaminski, 2011). Representation from leadership, support from protocol champions, and motivation should be in place to sustain the change.

For this phase, the NP enlisted the help of staff nurses to become SBIRT champions to provide support to staff with screening. The social work team supported nursing and the NP by supplying further resources to the patients if they screen positive or are willing to accept further information. Additional consideration in this phase was an evaluation period to review the process and ensure positive results (Kaminski, 2011).

Barriers are with any change process and encompass the process of establishing a new normal and the breaking of habits. In regards to barriers, this theory identifies potential barriers through the restraining forces portion of the force field analysis. This process includes the factors that act to restrain or decrease the driving forces behind the momentum of the new practice change. This can include anything that negatively affects productivity, attitudes, or the refreezing period of the change (Kaminski, 2011).

For the purposes of this project, the hypothesized barrier included educating about one hundred staff nurses on a new screening tool. On a busy unit caring for trauma patients, time constraints are often a large barrier. While the amount of time should not be more than about three additional minutes, it was hypothesized that there would be some admissions in which this will not occur. Another factor considered was the potential for provider stigma associated with caring for this patient population as this can strain communication between patients and members of the healthcare team.

The driving forces within the force field analysis of this theory served as the resolutions for this project and practice change. These factors helped to motivate the staff through the change and maintain forward momentum. It was important to have presence of the leadership, champions, and positive support to encourage positive behavior (Kaminski, 2011).

With the ease and similarity of the screening process, the transition was not expected to be difficult. The simple fact of a change of routine can be resolved with consistency and similarity within the documentation. Additionally, there is a role for positivity in beliefs and personal expectations within the theory. Regarding stigma relating to patients with substance abuse problems, this process helped to provide a mechanism for open communication and support for the nurse to initiate with the patient to further provide holistic patient care. An additional motivator of support from the providers was early identification of a patient that may need more specific care and early management of withdrawal.

The equilibrium is the portion of the force field in which the driving forces equal the restraining forces. In order to offset the equilibrium, additional changes or accommodations must be made to shift the process into the appropriate phase to refreeze (Kaminski, 2011). This was placed in the resolution section because it gives the leadership team an opportunity to reflect on the implementation of the process and identify factors to finalize a positive change. Addressing the factors affecting the equilibrium of the process should were made transparent throughout the process as a crucial portion of each stage of the change.

CHAPTER 3:

Setting

The setting for this project was CHS NE located in Concord, North Carolina. This is a four hundred and fifty-seven bed not-for-profit regional hospital with a Level III Trauma Center. NE ACS was established as the trauma team for this facility officially in May 2016 and is comprised of five surgeons, two physician assistants, and one nurse practitioner. NE ACS is responsible for responding to all Trauma code I and code II in the emergency department, as well as Trauma Alerts if indicated. Refer to Appendix B for trauma classifications. ACOS requires that screening and brief intervention for alcohol abuse is implemented in all level I and II trauma centers, and it is recommended that level III trauma centers incorporate screening and intervention services as part the care provided to the trauma patient (Wagner et al., 2016). For CHS Northeast, there is currently no implemented protocol for screening for substance abuse in the trauma population.

Population

The target population for this project encompassed all patients classified as trauma alert, code I, or code II that were admitted under either observation or inpatient status to NE ACS at CHS Northeast. This was a convenience sample and there was no control group. The inclusion criteria included English speaking adult patients only, eighteen years and older with the exception of individuals who have a designated healthcare power of attorney due to inability to independently make health related

decisions. The patient was screened and given appropriate brief intervention or referral to treatment once condition was deemed stable by NE ACS. All patients were considered regardless of gender, racial or ethnic group, marital status, socioeconomic status, and level of education.

The trauma practice is designed for patients requiring urgent and emergent care. Traumatic injuries may include any of the following, which is often not a planned occurrence for the victim or the trauma service providing care: falling from a standing position ranging to significant height; motor vehicle collisions in which patients sustain minor bruising and lacerations to major injuries including intra-abdominal bleeding, neck injuries, and broken bones; gunshot wounds, stab wounds, burn victims, head trauma from altercations or sports injuries; motorcycle accidents, crush injuries from large heavy objects, and even assault victims.

The needs of this patient population vary from emergent surgery, rapid blood transfusion, and mechanical ventilation to being discharged home from the emergency room with ibuprofen. Given the nature of this pilot study and unpredictable character of the trauma service, the sample size collected during the three-month implementation period was considered as appropriate for this facility, location, and nature of service.

Prior to project implementation approval was obtained from the institutional review board (IRB) from CHS Northeast, as well as University of North Carolina at Charlotte (UNCC). Patient anonymity was maintained. CHS IRB nor UNCC IRB required informed consent for this project.

Marketing Plan

Regarding marketing of this project, the primary goal was obtaining support from the stakeholders. NE ACS providers were all in agreement with the plans in place and assistance as needed with implementation. Primary sources were the NP, NN, and the LPN. Also, the social worker for the applicable nursing units agreed to assist with the dispersion of resources as appropriate. An in-service was provided to the bedside nursing staff amongst two nursing units that care for post trauma patients prior to discharge. The in-service was in 15-minute increments for nurses in person, emails and handouts were provided if face-to-face discussion was not feasible. Informational pamphlets were placed on each mobilized computer on the nursing unit. Given that screening was already supposed to be implemented into admission history, the time and resources were allotted into the unit budget.

Regarding billing and reimbursement, the patient received the appropriate diagnosis (alcohol/substance use/misuse/dependence) in the chart. The clinical documentation specialists that review the EMR could use this data in potentially increasing days allotted for post trauma recovery given the presence of a co-morbidity. Also, length of stay was evaluated with the diagnosis of substance abuse/withdrawal addressed early. Further discussion of screening results was included during multidisciplinary rounds, which were already established. The discussion by the NP and NN ranged from approximately 10-15 minutes each, which is generally already addressed during daily rounding or follow-up rounding. Therefore, there was no added time, funding, or training required for the implementation of this process.

This project was hypothesized as enticing to CHS for two reasons. First of all, the ACOS recommends that all trauma centers have a screening and intervention program in place for the trauma patient population; currently CHS Northeast does not (Wagner et al., 2016). Additionally, the Joint Commission has recently listed substance abuse and screening as an accreditation contributor (Parker, Libart, Fanning, Higgs, & Dirickson, 2012). In the era of healthcare innovation, the renovation of the implementation of guidelines already supported by evidence in an underserved population presents considerable opportunity.

Intervention

Once the trauma patient had been interviewed and examined by a member of NE ACS, their inclusion in the intervention began upon admittance to CHS NE either as observation or inpatient status. The project was implemented on the medical-surgical units in which the patients do not require any life supporting measures such as mechanical ventilation. The patient was deemed stable when they were alert and oriented, no longer under the influence of any illegal substances or intoxicated, as well as independently maintaining their vital signs and respiratory status. After the patient was deemed stable by NE ACS, the bedside RN admitting the patient proceeded with screening utilizing AUDIT and one question inquiring of use of illicit drug in the last month as outlined by SBIRT. There were two segments of each of these screening tools. Ideally, a portion of the EMR would have been developed in the setting of this project to perform the primary AUDIT and drug screening. This was not plausible at the time of implementation. Therefore, once the screen was completed the hard copy of the tool was

scanned into the EMR and accessible to all care providers. The nursing staff was instructed to consult social work at the identification of a positive screen.

When the NP was available, the NP administered BI or RT as indicated. On days when the NP was not in house, the NN with NE ACS provided the BI and RT in place of the NP, as the NN was also trained on the SBIRT tool. The NP and social worker collaboratively developed an electronic reference for local substance abuse support opportunities and resources for easy retrieval and usage.

The NP developed a Powernote form specific to the BI and/or RT to allow for easy data collection and analysis that was also visible to other providers for reference. At the completion of the provision of appropriate resources the patient was given the opportunity to continue to work with the SBIRT resources throughout the hospitalization. At the time of discharge, SBIRT reinforcement was included in the discharge instructions if applicable.

If the patient required follow-up with NE ACS, the patient would be rescreened at the beginning of the follow up appointment. Without reference to prior screening, the LPN in the outpatient office of NE ACS would re-screen the patient using the AUDIT and drug screen again via hard copy SBIRT tool. If the patient did not require follow up, the LPN or NP followed up with a telephone call and entered the appropriate information if applicable. The data was then gathered and analyzed by the NP at the completion of the three-month time frame.

In general, the provider was able to utilize the tool to identify patients who screen positively as using unsafe amounts of alcohol and any usage of illicit drugs as part of the

patient's social, physical, and mental health assessment. For the patient population that did not drink routinely, the screening presented an example of excessive or dangerous drinking in which the provider could recommend/establish limits. Positive reinforcement was also offered for individuals who choose to not utilize illicit drugs. The target patient population was the patients that screened positively for at-risk alcohol use, substance use disorder, and illicit drug use. Through the utilization of this tool, the provider was given the opportunity to communicate the dangers of alcohol use/binge/dependency or drug use for each patient. The patient had the opportunity to further engage in conversation, accept further resources, or do nothing at all (SBIRT, 2012).

SWOT Analysis

The **strengths** of this project were the implementation of a guideline that is already evidence-based. SBIRT is supported by the level I evidence recommendations, as well as ACOS, WHO, and CDC (please refer to full literature review). The uniqueness of this project was the implementation of the tool in the inpatient setting, as the majority of previous studies have taken place in the outpatient setting or emergency department. The bedside nursing staff members were competent in screening information for the protocol. The BI and RT portions were implemented by two individuals to decrease bias in difference of intervention.

Weaknesses for this project include the lack of a control group. Additionally, this was a pilot project implemented at a level III trauma center, as the majority of the settings are Level I and II trauma centers. This had the potential to limit sample size for this project. There was no power analysis performed as this was performed as a pilot study. Threats to project success included time constraints reported by nursing staff in

administering the screening information. Consideration was provided related to potential stigma surrounding substance abuse and negative perceptions towards this patient population as it could have potentially negatively affected communication.

Regarding **opportunity**, the goal was the development of a protocol that can be implemented system wide at various trauma centers. Currently there is a high number of reported abuse and overdose on illicit substances, which posed a great opportunity for a project to focus on this population. Additionally, early screening and intervention provides much opportunity for the patient to initiate healthy coping mechanisms. This further contributes to the dispersion of education on unsafe alcohol consumption and importance in refraining from the use of illicit substances in a patient population often unreached by primary health care. There was the opportunity to reduce the length of stay for patients, or add days to length of stay quotas to accommodate for appropriate reimbursement. The Joint Commission has also acknowledged substance abuse as a focus for accreditation for different hospitals subsequently offering the facility an opportunity for recognition (Parker et al., 2012).

Threats for this project included resistance to change in current practice in the setting of already pre-imposed time constraints. Also, this patient population was not always open to discussion of this topic, further limiting sample size and data. Another threat was the variability of the admission rates in the trauma population. Important to consider are the instances in which a patient left against medical advice, thus further limiting data collection.

Method of Data Collection

Collection of data involved multiple different methods. The EMR (CERNER) utilized at CHS NE was the primary method to obtain the data. Within this EMR there was a specific location to document the Social History in which one could access the information gained after screening. Additionally, the provider may have chosen to update the social history within their documentation. For the purposes of this project, the bedside nurse was primarily responsible for updating the information based on screening requirements within the social history. From there, the nurse practitioner could easily access and translate the data into the SPSS and Redcaps system.

Additionally, CERNER provides Powernote, which the NP and NN utilized for documentation purposes. Once the patient was admitted and substance usage was documented, the next step of implementation was evaluation for BI or RT. A specific Powernote for BI/RT was developed and saved as a blank template for documentation of above. Once BI/RT was completed, the NP or NN documented the conversation into this portion of the EMR. This provided documentation of the conversation, time spent, as well as feedback from the patient. This was documented in daily rounding as well as accessible to the clinical documentation specialists for purposes of length of stay evaluation. The establishment of the aforementioned template also provided topics included for motivational interviewing. Furthermore, the social worker had specific documentation already available within their portion of the EMR for any resources they had to offer the patient.

The demographic information and outcome measurements were entered and encrypted through Redcaps for later translation into SPSS and/or Excel. Data entry was

performed only by the NP. The demographic information was broken down into brackets of gender, race, age, and insurance. Analysis was not completed until the data collection process was finished to ensure adequate utilization of the data collected at that time.

Measurement Tool

The measurement tool utilized for this project was based on quantitative and qualitative data, a mixed-methods approach. Additionally, this study served as a pilot study for potential system wide opportunity for implementation of substance abuse screening in trauma patients. Data collection was based on a convenience sample and there was no control group. SPSS and Excel were utilized for data analysis and demographics were included for further research purposes within Redcaps.

Outcomes

The first outcome evaluated the number of patients screening positive using the full AUDIT and one question drug screen as defined in the SBIRT. This was further broken down into subcategories of alcohol use to include no risk, risking drinking behavior, and substance use disorder. These scores were demonstrated through a frequency diagram. This outcome also included demographic breakdown of age range, gender, and insurance via pie chart.

The second outcome demonstrated the number of patients that received BI. The only patients that did not receive BI were those that refused. Nominal data was used and the data was measured as a percentage for positive screen via pie chart.

The third outcome reported the number of patients that were offered RT compared to the patients that accepted RT. This was demonstrated by a percentage. The

percentage was calculated to demonstrate the patients accepting RT compared to the entire sample, as well as the percentage for only positive screens.

The fourth outcome discussed the number of patients admitted that were diagnosed with clinical documentation of "Withdrawal". The number of patients that were diagnosed with withdrawal was compared to the number of patients with a positive screen. This data was demonstrated as a percentage.

Outcome five addressed patient willingness to change rated on a 1-10 scale, this was addressed as part of the BI. This data was displayed two ways. The first is a frequency diagram demonstrated the number of patients reporting each respective score. Additionally, an ANOVA univariate test for differences between the categories was performed.

Finally, the sixth outcome was based on evaluating the SBIRT re-screen results performed at a 2-week follow-up appointment or by a phone call performed at the two-week time frame. The outcome data for this variable yielded a sample size too small for statistical testing as the results would be inconclusive.

In referring to Table 2, the variables used in the outcomes for this project are broken down to demonstrate a reference to each outcome and respective figure. This table displays the conceptual and operational definition of each variable. This also includes a comprehensive list of variable type, measurement, and metric.

TABLE 2: Definition of the Variables

Variable	Conceptual Definition	Operational Definition	Level of Measurement	Variable Type	Metric
No or low risk	Essentially no risk for alcohol misuse Defined as a negative screen No further screening	Men: less than 4 drinks/day AND less than 14 drinks/week Women: less than 3 drinks/day AND less than 7 drinks/week	Interval Histogram	Independent, exogenous	ACOS Joint Commission MDS rounds

At risk	Considered unhealthy Consuming amounts of alcohol that places the patient at risk for developing other consequences affecting their overall health.	Men: more than 4 drinks/day AND more than 14 drinks/week Women: more than 3 drinks/day AND more than 7 drinks/week Greater than age 65: Men and Women: more than 3 drinks in a day And more than 7 drinks in a week	Interval Histogram	Independent, exogenous	ACOS Joint Commission MDS rounds
Substance use disorder	Abuse of alcohol Dependency Unhealthy Medical diagnosis per DSM V	Defined by DSM 5 • Mild: two or three symptoms • Moderate: four or five symptoms • Severe: six or more symptoms	Ordinal Histogram	Independent, exogenous	ACOS Joint Commission MDS rounds Co-morbid condition
AUDIT-C	Brief *screening* including three questions to identify potential alcohol abuse/misuse If negative, encourage healthy decisions ***(Considered open access for use)***	Positive scores: • Men: > or = 4 • Women: > or = 3 • Proceed to AUDIT	Interval Histogram	Independent, exogenous	ACOS Joint Commission MDS rounds
AUDIT	Further screening for alcohol use to assess for severity In depth, 7 additional questions in addition to previously answered AUDIT-C questions ***(Considered open access for use)***	Risky use: • Men: <15 • Women: <13 • If positive, brief intervention Substance use disorder: • Men: > or = 15 • Women: > or = 13 • If positive, brief intervention and referral to treatment	Interval Histogram	Independent, exogenous	ACOS Joint Commission MDS rounds
Drug use	Single item drug screen to identify any time within the past year of using an illegal drug or prescription medication not prescribed to the patient. If negative, encourage healthy decisions ***(Considered open access for use)***	Considered positive if any use within the last year. Brief intervention and referral to treatment. Narcotics Heroin Crack/Cocaine Amphetamine Methamphetamine Marijuana	Nominal Histogram	Independent, exogenous	ACOS Joint Commission MDS rounds Co-morbid
Brief Intervention	Conversation between patient and provider in which the provider assists the patient to change their use of the	1. Understand the patient's views of use 2. Give information, feedback 3. Enhance motivation	Nominal Evaluating if the patient received the brief intervention;	Dependent, endogenous	Billing Patient satisfaction

(This brief intervention is utilizing the Brief Negotiated Interview developed by the BNI-ART Institute)	identified substance and encourage whatever small step the patient is willing to make. Utilizing motivational interviewing as outlined by SBIRT tool.	to change 4. Give advice and negotiate goal	yes/no.		
Referral to Treatment	Depending on screen results, patient may need to be referred to further treatment modalities to assist with substance abuse. Collaboration with social work team members for appropriate disposition planning.	-Counseling -Detox -Stabilization -AA -NA -Al-Anon -Helpline	Interval Evaluating the number of patients that receive referral to treatment vs. those that accepted.	Dependent, endogenous	Billing Patient satisfaction Decrease LOS MDS rounds
Follow up score	The patient identified by screening during hospitalization will be re-screened at follow up appointment or by phone call if their injuries do not require follow up.	Re-assess: AUDIT-C AUDIT Drug use	Interval Compare total number of screening for AUDIT Compare if utilized drug since screening in hospitalization that is not prescribed to them.	Dependent, endogenous	ACS Joint Commission Billing Patient satisfaction
Willingness to change	Assess the patient's desire to change current habits based on alcohol consumption or use of illicit drugs.	Scale of 1-10 1 is defined as no desire to change 10 is defined as desire to change	Interval ANOVA	Independent, exogenous	Patient satisfaction
Withdrawal	To anticipate the potential for withdrawal from substance.	Implement protocol Patient safety Medical prognosis Length of stay	Interval	Independent, exogenous	Decrease LOS Co-morbid Patient satisfaction

CHAPTER 4:

Project Findings/Results

During the three-month screening period, 93 trauma patients were admitted to CHS NE, and 31 patients screened positively for some type of substance abuse. Twelve patients of the total 93 were not included for not meeting inclusion criteria. Exclusions included 2 mortalities during hospitalization, 1 patient had a legal guardian, 1 patient was discharged to hospice and not cognitively able to participate, 1 patient with dementia, and 7 patients did not speak English. There were 6 Spanish-speaking patients and 1 Arabic patient. Refer to table 3 for patient admissions excluded and table 4 for patients meeting inclusion criteria but excluded. Refer to figure 1 for ultimate enrollment.

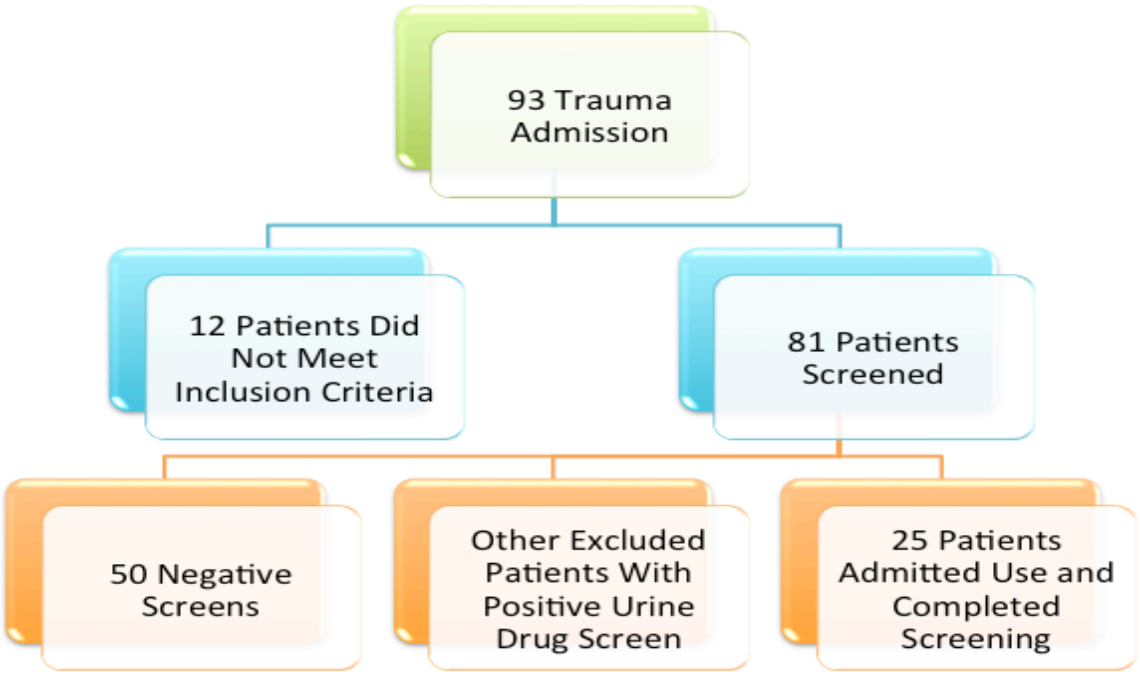
TABLE 3: List of exclusions

Exclusion Reason	Number of Patients
Deceased	2
Discharged with Hospice	1
Not English Speaking	7
Legal Guardian	1
Dementia diagnosis	1

TABLE 4: Patients excluded with positive urine drug screens

Exclusions with positive UDS	Number of Patients
Refused BI	2
Left against medical advice	2
Denied use	2

FIGURE 1:

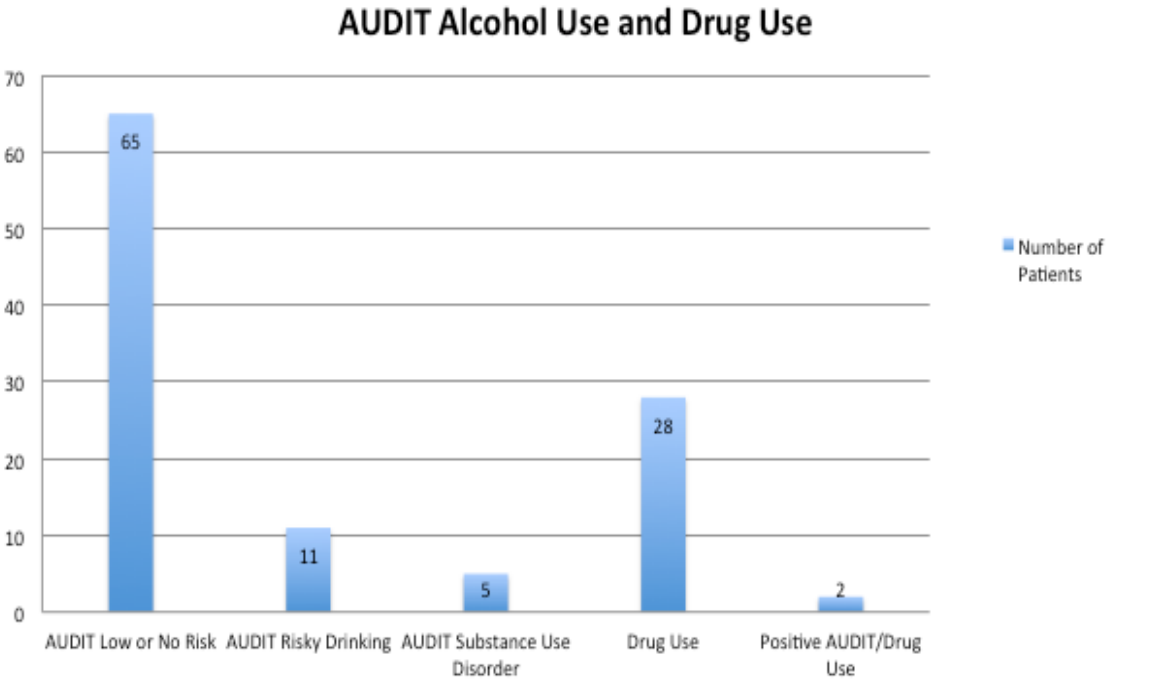


Enrollment

The first outcome evaluated the number of patients that received the SBIRT initial screening. From there the data will be broken down into division of alcohol, substance abuse, or both. The alcohol scores will be analyzed by low or no risk, risky use, and substance use disorder. This is based on a numerical screening system outlined by SBIRT. Additionally, the drug screen will be recognized as use or no use within the

previous year. This will be demonstrated via bar graph figure 2. Of the 31 positive screens, 5 patients were positive for substance use disorder (alcohol), 28 patients were positive for drug use, and 2 patients were positive for both substance use disorder and drug use.

FIGURE 2:

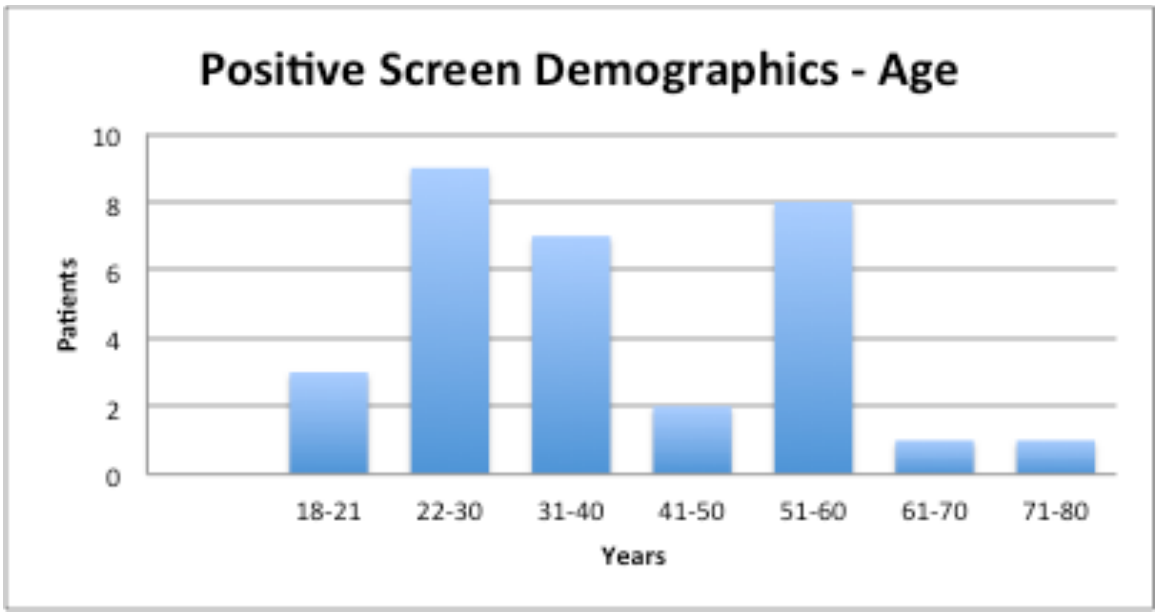


Outcome 1: Number of patients screening positive using the full AUDIT and drug screen as defined in SBIRT

Important demographic variables are demonstrated by figure 3, 4, and 5 for age, gender, and insurance respectively. Demonstrated by a bar graph, the age range with the most positive scores were those within 22-30 years of age, accounting for 9 patients total. The second greatest age range was 51-60 years of age with 8 patients, and third greatest age range was 31-40 years old with 7 patients. Together these three account for 24 of the 31 patients, demonstrating 77% of positive screens between 22-60 years of age. The

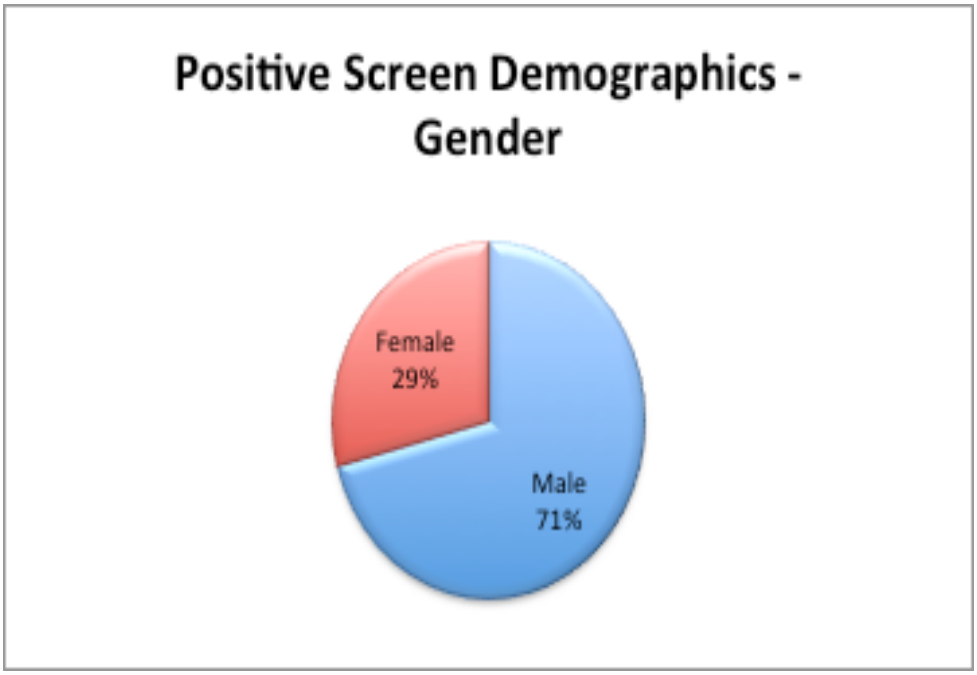
oldest patient was 71 years old and admitted to using marijuana. The three patients within the 18-21 years of age range were positive for drug use; two with marijuana only, one with urine drug screen positive for amphetamines and marijuana.

FIGURE 3:



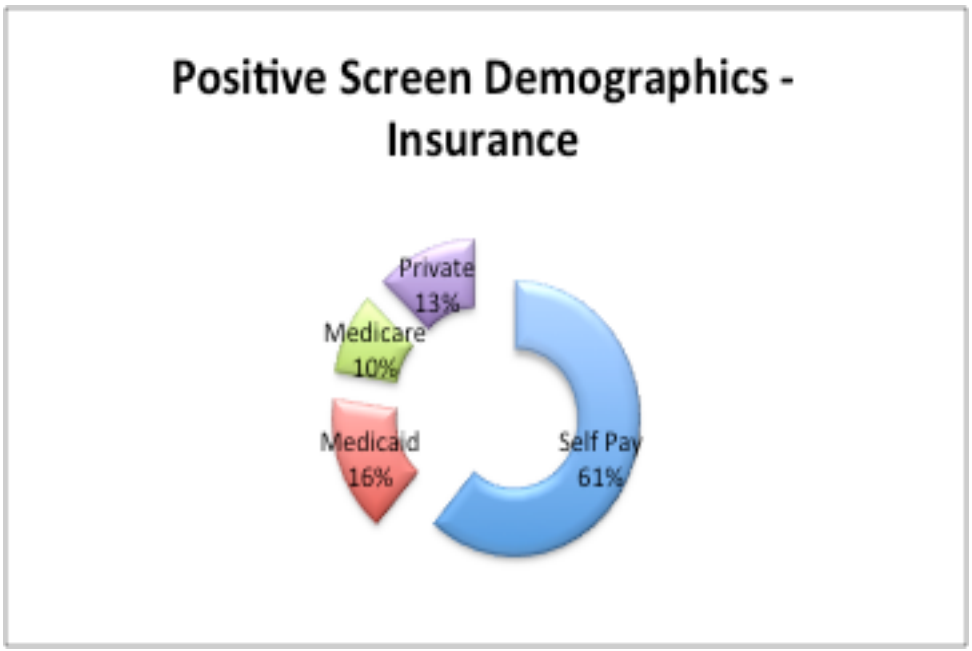
Positive screen demographics – Age

FIGURE 4:



Positive screen demographics – Gender

FIGURE 5:

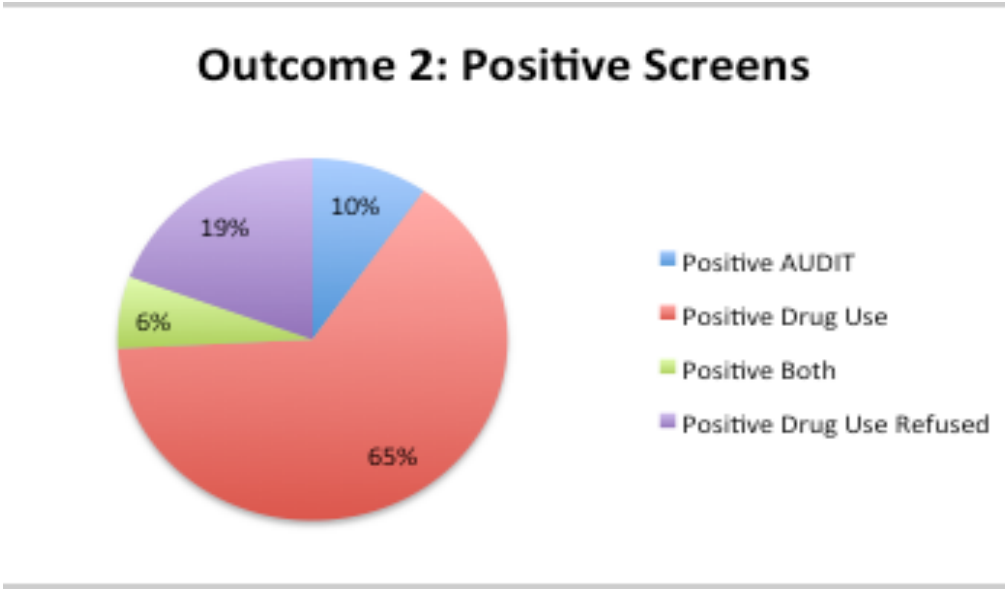


Positive screen demographics –Insurance

The demographic data collected regarding gender revealed 71% of positive screens were males, 29% of positive screens were females. Regarding type of insurance, 61% of patients were "self-pay" or without insurance. Medicare/Medicaid accounted for 26% of patients, and 13% of patients had private insurance.

The second outcome measure evaluated the number of patients with positive AUDIT results or positive drug screen that received the brief intervention. For this project, the only patients that did not receive BI were those that refused. Figure 6 demonstrates the percentage of each positive screen. Sixty-five percent of the patients screened positively for drug use. Also referenced in this figure are the 19% of patients that screened positive for drug use via urine drug screen, but did not admit to use and refused BI. Ten percent of patients screened positive for alcohol substance use disorder, and 6% of patients screened positive for both alcohol and drug abuse.

FIGURE 6:



Outcome 2: Positive screens

The third outcome evaluates the number of patients with positive screens yielding recommendations for referral to treatment. Of the 31 positive screens, 6 patients refused brief intervention and 23 refused referral to treatment. Only 2 patients accepted information for referral to treatment at the completion of this study. Unfortunately, both of the patients that chose to proceed with referral to treatment were actually discharged to an inpatient rehabilitation facility for further therapies related to their injuries. Follow up connections for those two patients were unable to be made.

Of the 23 patients that refused RT, some patients were open to the provision of resources by the social work team. This included hard copies with phone numbers to crisis centers, Alcoholics Anonymous and Narcotics Anonymous meetings, as well as helpful discharge information. Some of these patients specifically mentioned that they did not view their substance use problem as something that was out of their control or even routine use. Some patients also placed emphasis on "learning their lesson" after involvement in the event that caused hospitalization.

Outcome 4 demonstrated the number of patients admitted with substance use with diagnosis of withdrawal while hospitalized. This was included as an outcome as an important aspect to consider when admitting patients with substance abuse diagnosis and positive drug/alcohol screens is anticipating the potential for withdrawal. This could potentially worsen the medical prognosis or prolong length of stay.

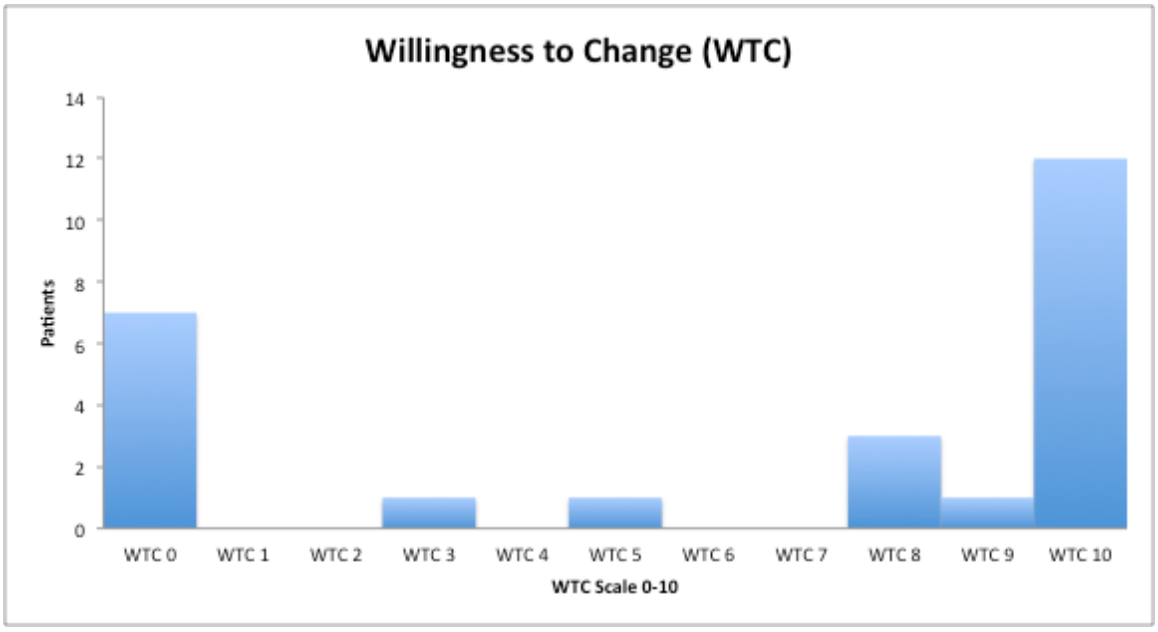
This outcome can assist with ensuring the hospitalization for the trauma patient with positive drug/alcohol screen is appropriately managed with incorporating withdrawal protocol into their plan of care. Two patients in this study received documentation of withdrawal by a provider and were initiated on the appropriate

protocol. One patient experienced withdrawal from alcohol, one patient experienced withdrawal from a drug called "Molly" which is commonly known as Ecstasy.

Outcome 5 demonstrates the subjective score the patient provided when asked about their willingness to change. Much of the research has spoken to the benefit of evaluating willingness to change (Vaca et al., 2011). Therefore, this was included in this project as it will be an important indicator to include when evaluating follow up scores. Willingness to change scores are measured on a scale of 1-10 with 1 signifying no desire to change 10 representing complete willingness to change.

Willingness to change was evaluated for patients screening positive for drug and alcohol abuse. Figure 7 demonstrates response rates via frequency diagram. There were 12 patients that rated their willingness to change at 10. On the opposite end of the spectrum, 6 patients reported their willingness to change was 0.

FIGURE 7:



Outcome 5: Willingness to change

Figure 8 demonstrates univariate ANOVA to compare the pretest values of willingness to change divided between alcohol use, drug use, and both. No significant difference was found ($F(2,22)=0.168902$, $p>.05$). The trauma patients from the three different groups (alcohol, drug, both) did not differ significantly in their follow up care. The statistically insignificant results could be attributed to small sample size. One could assume that the data could be beneficial for a larger sample size.

FIGURE 8:

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Alcohol	3	15	5	25
Drug	20	133	6.65	20.45
Both	2	13	6.5	24.5

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	7.11	2	3.555	0.168902	0.845677	3.443357
Within Groups	463.05	22	21.04773			
Total	470.16	24				

Univariate ANOVA willingness to change

The sixth outcome demonstrates the comparison of the initial score of AUDIT or drug screen versus the score at the two-week follow up appointment. This was initially set for evaluation of the potential effect that implementation of SBIRT had on the patient outcome during hospitalization. Another goal for this outcome was to offer re-education of safe amounts of alcohol for consumption and to emphasize the importance of avoiding all illicit substances.

Initially, the hypothesis for reaching follow-up for this patient population was that at least 75% would require office follow up for repeat imaging, lab work, suture removal, or refills of narcotic pain medications. In regards to patients with injuries that do not necessarily require outpatient office follow up, such as concussion; a follow up phone call was planned by the nurse practitioner or office licensed practical nurse for re-screening.

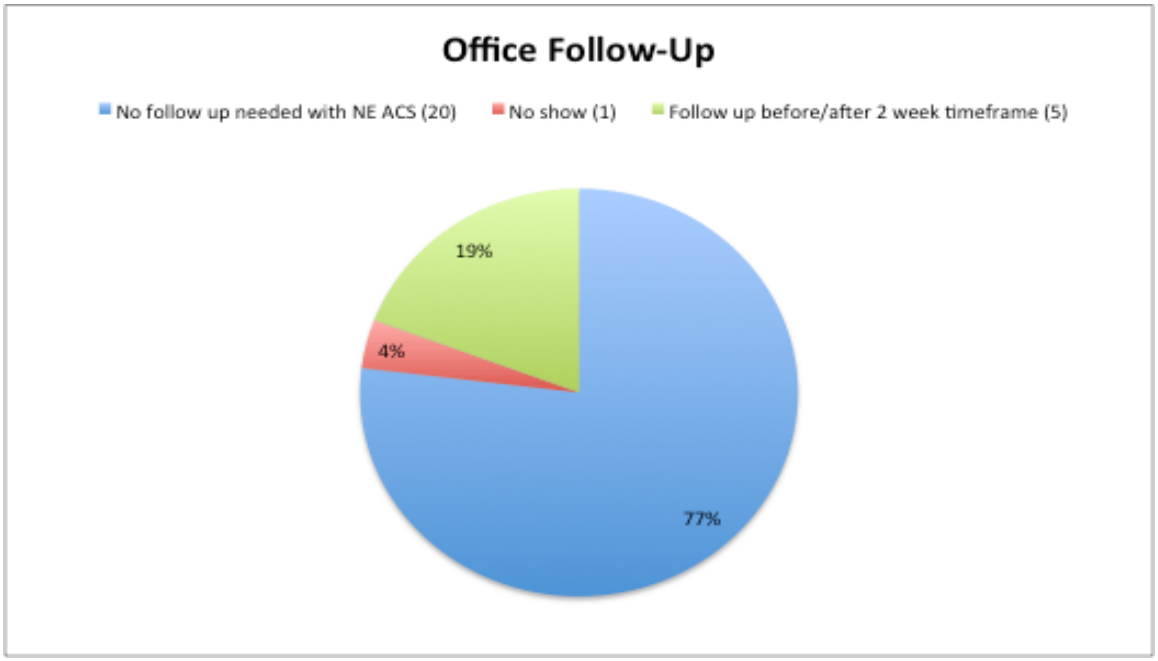
At the completion of this project, only four patients with positive screen results were amenable to follow up, with all four completed by follow up phone call two weeks after hospital discharge. Given the small sample size, there was no statistical testing performed for this comparison, as it would be inconclusive.

- **Follow up patient 1:** Initially used marijuana, at the time of follow up he reported he had not used since discharge. WTC remains 10.
- **Follow up patient 2:** Initial AUDIT score 14 (risky use) but had not consumed alcohol since his accident. Continued to use marijuana, WTC remained 0.
- **Follow up patient 3:** Initially used marijuana, at the time of follow up he reported he had not used since discharge. WTC remains 10.
- **Follow up patient 4:** N/A → still used for medical reasons, reported prescription provided by PCP.

Figure 9 demonstrates factors contributing to poor office follow up. Of those, 20 patients did not require follow up with NE ACS and 1 patient was a no show for their appointment. Five patients did have office follow up, but not within originally set two-week time frame approved by IRB and therefore could not be included. In regards to the patients that did not require follow up with NE ACS, there were some patients that did

require outpatient follow up with other specialties such as neurosurgery or orthopedics, specific to resultant injuries. The patient that was a no show to the office appointment with NE ACS did not have insurance. The other patients that did follow-up were outside of the two-week time frame set for hypothesized time to evaluate change/re-screen.

FIGURE 9:



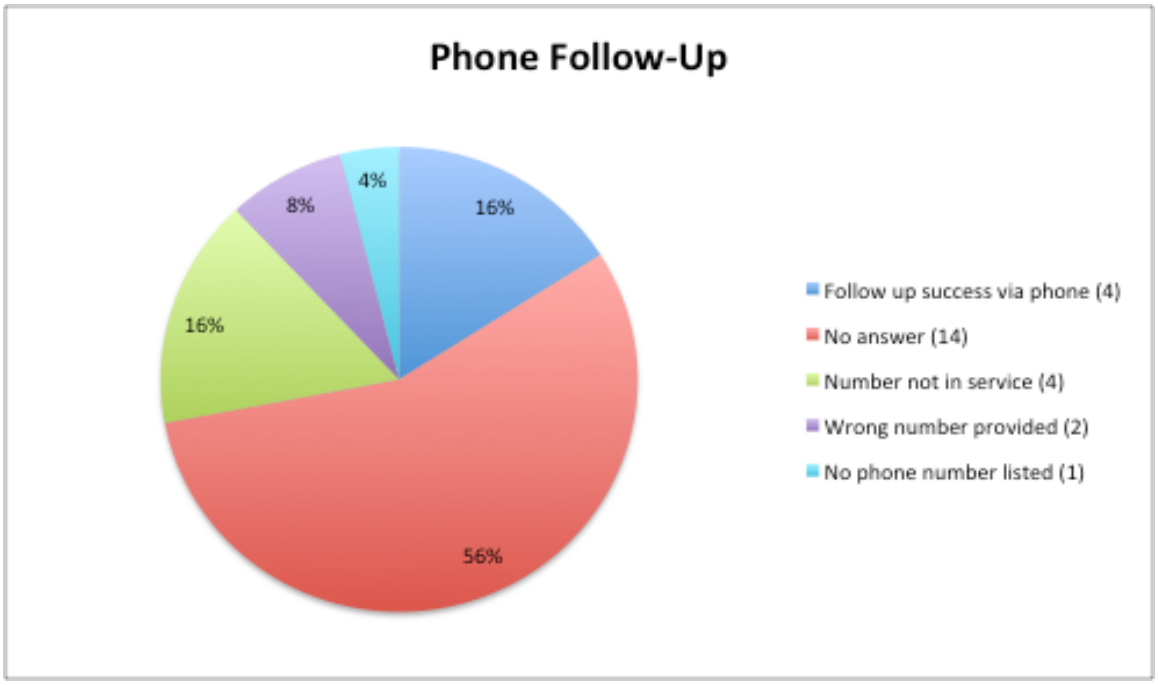
Outcome 6: Office follow-up

As mentioned previously, there were four patients reached at the two-week follow up point by telephone. All patients received follow up phone call, with the exception of the 6 patients that refused initial BI. To avoid bias, the patients were not made aware that they would be re-screened at follow-up appointment or phone call, therefore, patients were not asked for phone numbers during their hospitalization. If phone numbers were clarified at the time of initial screen, follow-up may have been more effective.

The reasons that follow up via phone call was not successful were tracked and are demonstrated in Figure 10. Fourteen patients did not answer when called, some with

unnamed voicemail or no voicemail at all. Messages were not left due to Health Insurance Portability and Accountability Act (HIPAA). Four patients had numbers that were no longer in service. Two patients provided wrong/made-up numbers on admission. One patient did not have a phone number listed for that admission.

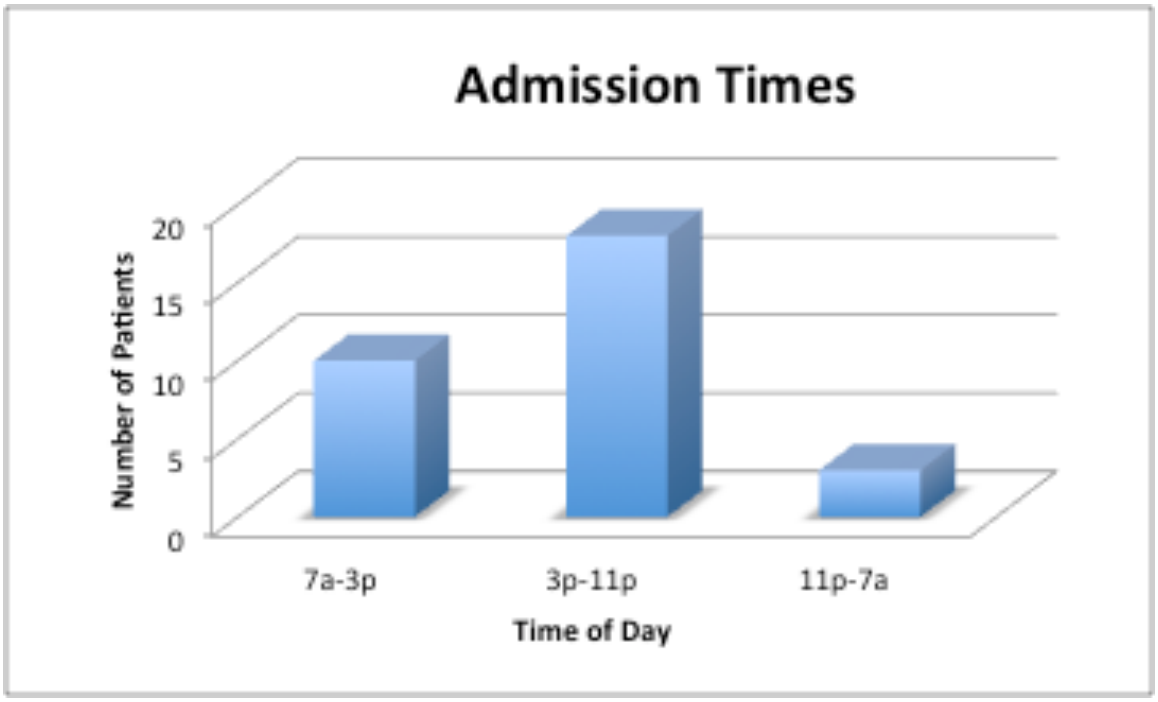
FIGURE 10:



Outcome 6: Phone follow-up

An additional piece of data gathered at the completion of this project tracked admission times of the trauma patients admitted with positive screens to assist with potential allocation of appropriate resources in the future. These findings are demonstrated in Figure 11. Admission times were broken down into three shifts, 7 A to 3 P, 3 P to 11 P, and 11 P to 7 A. The shift with the greatest admissions was 3 P to 11P with 18 patients. The next shift with the greatest number of admissions was 7 A to 3 P with 10 admissions. The shift with the least admissions of 3 patients was from 11 P to 7 A.

FIGURE 11:



Admission times

Confidentiality

Confidentiality was maintained by protection of HIPAA. As this project is considered quality improvement informed consent is not required, this was determined by all IRBs. For purposes of data collection, the tool did not include any patient identifiers, as the patient data will be entered into Redcaps for encryption. Demographic information will proceed with the encrypted identifiers and will not have any patient information. For purposes of follow-up screening, their information remained in the EMR and nowhere else.

Therefore, no data will be published with patient information. When entering data into SPSS it will be translated by nominal and interval data. The only individuals

managing patient information are employed by CHS and also respect patient privacy laws. Discussion of patient information in multidisciplinary rounds was protected by employees and confidentiality procedures. Prior to initiating the BI or RT, family members or friends in the room will be asked to leave to ensure accuracy of data collection.

Discussion of Findings

Screening for substance abuse is recommended to be standard practice, however this is not necessarily routinely performed. The environment of change to adapt SBIRT was accepted by staff as this intervention assisted to simplify routine practice. The culture of CHS embraces change and practice improvement. The bedside nursing staff was flexible in their work environment and comfortable with piloting this project. Members of the leadership team were represented by the unit nurse managers and were supportive during implementation. Additionally there was good stakeholder support and participation from the staff.

One beneficial aspect of the SBIRT tool is that it could actually replace and simplify current practice. Unfortunately the current EMR was unable to be changed to accommodate an electronic version of the SBIRT tool at the time of implementation. This meant that there was double documentation of patient substance use. This created an additional step for the nurses by having to scan the hard copy SBIRT into the EMR. If this screening tool could be included in the EMR this could eliminate two additional steps, saving nursing staff time and resources.

In previous practice, there were instances in which the documentation of drug and alcohol use was not adequately updated and sometimes overlooked. Regarding provider documentation, social history can be auto-populated into notes. This becomes challenging when the information is incorrect or has not been updated by nursing staff. If the provider does not update their note, the information can become unreliable. Additionally, the documentation of positive screens and appropriate consults following a positive screen are not routinely tracked. One reason for this is there is simply not sufficient provision of resources (time, knowledge, dedicated staff etc.).

Overall the project was successful. In total ninety-three patients were screened and thirty-one patients scored positive for alcohol use, drug use, or both. There were no trauma patients that were admitted that did not receive initial SBIRT screening unless they refused. All patients that screened positively were offered brief intervention and referral to treatment if indicated. Six patients refused brief intervention; the remaining twenty-five patients accepted the information amenably. The patients were receptive to the information and were provided with educational resources as appropriate based on screening scores.

When considered globally, the trauma patient population has demonstrated infrequently seeking routine medical care. As demonstrated in this study, 61% of the patients in this sample were without a payer sources. The implementation of this project allowed patients the provision of resources while hospitalized that may or may not have been made previously available to them.

Limitations of the project included the unpredictable nature of a trauma service. At times patients are kept in observation for less than 24 hours, some of this time accounts for inebriation clearance. This allowed a small window of time for screening, as the NP and the NN are daytime employees. Additionally, while the nursing staff was supportive, at times they needed reminders to screen patients that did not receive the screening on admission. There were no identified staff super-users to help track screening to ensure it was completed. Please refer to table 5 for the timeline of data collection.

TABLE 5: Timeline of data collection

March-July 2017	• Collaboration with computer resource team with Cerner for inclusion of AUDIT and one question drug screen into the EMR • Development of a Powernote template to enter discussion of BI and RT for NP and NN to use. • Collaboration with social work team to establish resource compilation for referral to treatment.
July 2017	• Completion of three in-services on different days and times for nursing staff of Post Surgical Care I and Post Surgical Care II of CHS NE. • NP present at shift huddles for information disbursement. • Disbursement of copies of the screening tools and explanation of use. This tool was placed underneath the clear sanitary mat that is present on all of the mobile computers that are used to obtain the admission history. • Informational email was dispersed with basic information and electronic copy of SBIRT for nursing staff to read. • NP personally met with clinical expert, NN, and LPN of the office staff to brief them on the tool and BI discussion.
August 1st 2017	• Beginning of implementation. • This included trauma patients admitted trauma patients that within that 24 hour day. • Follow up appointments began as early as two weeks after the first trauma admission. • During implementation time period, discussion of completion of SBIRT was discussed during multidisciplinary rounds.

October 31st 2017		• Last trauma admission for inclusion of study.
November 2017		• Continue 2 weeks into November for completion of follow-up appointments. • Data analysis process started.

Significance

The SBIRT tool provided a practice to identify patients that screened positively for substance abuse with subsequent BI and/or RT. For this reason a recommendation for the future would be for implementation of this tool at trauma centers. Implementation would be especially beneficial at trauma level III centers given similar patient populations, hospital size, and similar staffing patterns.

In regards to process change in the future, this tool would be most beneficial if there was subsequent change of the EMR to accommodate this screening tool to eliminate double documentation and time/resource waste. The information would still be available to auto populate into documents. Additionally this evidence based screening tool would be available to all providers within the system. Change in care delivery would be the use of this effective tool to identify positive substance use screens in the trauma population. Additionally, as this would continue in the inpatient setting, a multidisciplinary team is available with resources applicable to the patient.

At this time there is not a required urine drug screen for all trauma patients admitted. Therefore, if patients are not asked about their drug use, this crucial information could go undetermined. With any patient using/abusing alcohol or illicit drugs, the provider has to be aware of the possibility of withdrawal as this can significantly increase morbidity and mortality. By using this screening tool on admission for trauma patients there is the potential for early identification of withdrawal.

A significant percentage of this population included patients without a payer source, which further contributes to a significant health disparity. The findings of this

study highlight individuals within the community needing medical attention but not seeking healthcare due to financial constraints. Some patients discussed that seeking healthcare is not a priority for them. The development of the growing disparity of substance abuse is disproportionately met with lack of funding for resources and availability of treatment centers. Additionally, the individual may not have transportation to these types of resources accompanied by lack of social support. This contributes to this portion of the population being left uninfluenced by the primary care system.

Unfortunately, while the number of patients identified with abuse was 30% of the sample, the follow-up was unexpectedly poor. For this reason, the follow-up data for repeat screens were low. Many of the injuries that the patients presented with did not require follow up within the NE ACS office. Additionally when a phone call was attempted the phone number was incorrect, disconnected, or there was no answer. Therefore, sufficient follow-up data was unable to be obtained for adequate comparison.

Despite the poor follow-up and lack of consistent telephone communication this project did identify some advantageous indications. While the patient was hospitalized, there is the opportunity for education and discussion surrounding identified substance use. There is the potential for provider transparency and open conversation. The patient can receive education and resources that previously may not have been sought out routinely. Furthermore, the lack of follow-up did identify the need to continue this process change and ensure all resources are provided while the patients are hospitalized as the provider cannot rely on follow up.

Strengths of this project were the success of the tool and the identification of 30% of the patients admitted with positive screen. This allowed brief intervention and referral to treatment if indicated along with the allocation and discussion of resources available to the patient. Additionally, the nursing staff received education on effective communication proficiencies to identify specifics relating to alcohol consumption and/or drugs used for adequate documentation. This also helped to motivate multidisciplinary discussion of the patient with identified use early in admission to allow for improvement of care and discharge planning with the consideration of other extrinsic social factors. Constructive discussion was initiated by the providers with goals of establishing patient-provider trust regarding substance use in a non-judgmental atmosphere.

There was no problems or failures identified. There were no harmful outcomes. There was no missing data. There were no confidentiality breeches.

Limitations

The following study limitations warrant mention. First, the significantly limited follow-up included both office follow-up and phone call attempts. Nineteen of the 31 patients did not require office follow up with NE ACS despite being admitted for injuries. Other sources of office follow-up were for specialty practices including neurosurgery and orthopedics. Twenty-one patients were attempted to follow up with a phone call, of which only 4 patients answered. Reasons for no phone follow up included provision of incorrect phone numbers, numbers not in service, or no identified voicemails. Of the patients screened only 2 patients were interested in referral to treatment.

Another limitation included the frequent need to remind nursing to screen the patient. At times, due to time constraints or busy days, screening was not completed. The NP or NN reminded the nursing staff when screening was not performed on admission, as this was the proposed timing of screening. Additionally, some patients were only observed for as little as 12-24 hours leaving a small time frame to complete the screen. Finally, some limitations of the study included patient transparency/honesty regarding drug use. Six patients refused to be screened or left the hospital against medical advice.

A power analysis was not performed, as this was not a research study but a quality improvement project with a finite period to implement. Enrollment included 93 patients and the results were evaluated as a pilot study. This translational research was completed to identify barriers as well as opportunities for future implementation. As there was no power analysis for this study to project enrollment for statistical significance and effect size, the information obtained from this study could provide a foundation for a bigger multi-site study in which a power analysis would be indicated.

Implications

Further implications align with the limitations as above. Screening/intervention should continue as a third of the patient population admitted screened positive. Given the poor follow up and the fact that 61% of the patients were self-pay, the focus should be on preparing the patient with the resources (pamphlets, referrals, lists of local rehabilitation centers) they need during the single admission as one cannot rely on follow up. One recommendation is for further studies to work to establish reliable means of follow-up with patients for rescreening. Additionally, this study highlighted the need for more

leaders or specific staff in the role of SBIRT interview, intervention, and arrangement of appropriate follow up.

On a system-wide level there are a few implications as well. The two patients that requested referral to treatment were discharged to rehabilitation facilities for their injuries. Unfortunately, they were lost to follow-up, as they could not be reached by phone. One suggestion would include arranging follow up to continue at acute rehabilitation facilities, especially for the poly-trauma patient. Also, other specialties such as neurosurgery or orthopedics could consider incorporating follow up education for substance abuse at their respective appointments.

Regarding the EMR, this process flow would be improved with incorporation of AUDIT and SBIRT. These screenings can provide more information compared to current practice. SBIRT is evidence based and could be completed efficiently and effectively if used to replace the current admission screening social history portion. This would facilitate improved practice for nursing by improving ease and hopefully compliance with performing the initial screen. The change in EMR would also eliminate double charting and time waste.

Summary

In summary, there is a significant need for an improved process regarding screening and intervention for patients with substance abuse problems in the inpatient setting. Considering the literature review completed for this project, there were minimal studies demonstrating processes/protocols for substance abuse management in place in the inpatient arena. Most studies performed in the hospital setting were in the emergency

department. Additionally, the majority of these studies focused primarily on either alcohol abuse or illicit drug use, but not both.

All 31 patients were screened and received brief intervention if they agreed to participate. There were 6 patients that refused brief intervention. There were 2 patients that requested formal referral to treatment. In total, 25 patients received some form of education and open discussion regarding their substance use. A primary projected outcome of this study was to evaluate and compare rescreening results at a two-week follow up. Unfortunately only 4 patients were reached at follow up.

Thus exhibits the importance of reaching this population, as over half of the patients included in this study did not have insurance and/or an established primary care physician. Hence, underlines a health disparity that needs open discussion regarding their substance abuse as well as the provision of education at the time of trauma admission without depending on follow up. The need to continue such practice improvement at this facility is a key need and further project development should continue. In order to be more effective, however, a beneficial process would involve a care team dedicated to administration of the brief intervention and arrangement of follow up.

Recommendations

As a recommendation of the ACOS, level III trauma centers should have a screening process in place with intervention provided to patients with positive screens. SBIRT provides a feasible improvement to practice that is based in the evidence. A future recommendation would be to designate SBIRT super users, members of the nursing team, case management team, and providers to be trained in SBIRT to reach all

patients. Further studies will be required to establish effective means of follow-up for this population.

Conclusion

The risks of illicit drug use and consumption of alcohol contribute to social problems, physical and psychological illness, as well as morbidity and mortality. Some of the effects are hidden to individuals with substance use disorder, and some of these consumers may not be aware of the safe recommended amounts of alcohol consumption (CDC, 2014). In closing, it has been established previously in this study that the trauma population is high risk for substance abuse. Moreover, a significant number of these patients often unreached by primary healthcare will present to the ED as a result of trauma with injury.

In fact, D'Onofrio and Degutis (2010) report that out of 22,534 adults screened at a level 1 trauma center in New York, 23% reported no usual source of primary care and less than 1% physician diagnosis of substance abuse was documented prior to implementation of their program. The effectiveness of SBIRT is supported by the literature yielding declines in drinking measures, improved outcomes, and long-term maintenance (Cerpitel et al., 2010). In regards to illicit drug use, Woodruff et al., (2014) found that out of 346 patients involved in their study, 42% of follow up was successful. While it is too soon to report that SBIRT cannot work for illicit drug use, the study emphasizes the need for future research.

This study provided focused evaluation of trauma patients with substance abuse problems. The patients were educated and received open conversation with their healthcare team regarding their use of those substances and resources available. While

follow-up was limited, this population was provided with tools they needed to start and/or maintain their journey to sobriety.

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Appendix A

AUDIT Questionnaire

1. How often do you have a drink containing alcohol?
    a. Never
    b. Monthly or less
    c. 2-4 times a month
    d. 2-3 times a week
    e. 4 or more times a week
2. How many standard drinks containing alcohol do you have on a typical day?
    a. 1 or 2
    b. 3 or 4
    c. 5 or 6
    d. 7 or 9
    e. 10 or more
3. How often do you have six or more drinks on one occasion?
    a. Never
    b. Less than monthly
    c. Monthly
    d. Weekly
    e. Daily or almost daily

AUDIT Questionnaire continued as needed from AUDIT-C

4. How often during the last year have you found that you were not able to stop drinking once you started?
    0. Never
    1. Less than monthly
    2. Monthly
    3. Weekly
    4. Daily or almost daily

5. How often during the last year have you filed to do what was normally expected from you because of drinking?
    0. Never
    1. Less than monthly

2. Monthly
3. Weekly
4. Daily or almost daily

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?
    0. Never
    1. Less than monthly
    2. Monthly
    3. Weekly
    4. Daily or almost daily

7. How often during the last year have you had a feeling of guilt or remorse after drinking?
    0. Never
    1. Less than monthly
    2. Monthly
    3. Weekly
    4. Daily or almost daily

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?
    0. Never
    1. Less than monthly
    2. Monthly
    3. Weekly
    4. Daily or almost daily

9. Have you or someone else been injured as a result of your drinking

    0. No

    2. Yes, but not in the last year
    4. Yes, during the last year

10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?

    0. No

    2. Yes, but not in the last year
    4. Yes, during the last year

Appendix B

Levels of Trauma

Differentiating between levels of trauma as defined by the American Trauma Society (2017), retrieved from http://www.amtrauma.org/?page=traumalevels

Level I

Level I Trauma Center is a comprehensive regional resource that is a tertiary care facility central to the trauma system. A Level I Trauma Center is capable of providing total care for every aspect of injury – from prevention through rehabilitation.

Elements of Level I Trauma Centers Include:

- 24-hour in-house coverage by general surgeons, and prompt availability of care in specialties such as orthopedic surgery, neurosurgery, anesthesiology, emergency medicine, radiology, internal medicine, plastic surgery, oral and maxillofacial, pediatric and critical care.
- Referral resource for communities in nearby regions.
- Provides leadership in prevention, public education to surrounding communities.
- Provides continuing education of the trauma team members.
- Incorporates a comprehensive quality assessment program.
- Operates an organized teaching and research effort to help direct new innovations in trauma care.
- Program for substance abuse screening and patient intervention.
- Meets minimum requirement for annual volume of severely injured patients.

Level II

A Level II Trauma Center is able to initiate definitive care for all injured patients.

Elements of Level II Trauma Centers Include:

- 24-hour immediate coverage by general surgeons, as well as coverage by the specialties of orthopedic surgery, neurosurgery, anesthesiology, emergency medicine, radiology and critical care.
- Tertiary care needs such as cardiac surgery, hemodialysis and microvascular surgery may be referred to a Level I Trauma Center.
- Provides trauma prevention and continuing education programs for staff.
- Incorporates a comprehensive quality assessment program.

Level III

A Level III Trauma Center has demonstrated an ability to provide prompt assessment, resuscitation, surgery, intensive care and stabilization of injured patients and emergency operations.

Elements of Level III Trauma Centers Include:

- 24-hour immediate coverage by emergency medicine physicians and the prompt availability of general surgeons and anesthesiologists.
- Incorporates a comprehensive quality assessment program
- Has developed transfer agreements for patients requiring more comprehensive care at a Level I or Level II Trauma Center.
- Provides back-up care for rural and community hospitals.
- Offers continued education of the nursing and allied health personnel or the trauma team.

Involved with prevention efforts and must have an active outreach program for its referring communities.