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Screening, Brief Intervention, and Referral to Treatment for Alcohol Misuse in Primary Care

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SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT FOR ALCOHOL MISUSE IN PRIMARY CARE

by

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Sai-Han Ackerman Yu MSN, RN, PHN

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Abstract

An annual average of 88,000 deaths in the United States from 2006 to 2010 has been attributed to alcohol misuse, defined as risky or heavy alcohol consumption. Heavy or risky alcohol use for all adults aged 65 and older and for women aged 18 and older is defined as consuming more than 7 drinks per week and/or 3 drinks per day. For men aged 18 to 65 years of age, heavy or risky alcohol use is defined as consuming more than 14 drinks a week and/or 4 drinks a day. Chronic alcohol misuse increases the incidence of heart problems, cognitive decline, hypertension, liver problems, and cancer. It is recommended to screen and treat patients for alcohol misuse in the primary care setting. The purpose of this project was to increase alcohol misuse screening and intervention for adults aged 18 years and older in an internal medicine practice. A screening and treatment protocol was established to align with the United States Preventive Services Task Force clinical recommendation guidelines. This protocol consisted of screening using the Alcohol Use Disorders Identification Test, brief intervention, and referral to treatment. During project implementation, 420 patients were screened and of those screened, 18 patients (4.3%) were positive for alcohol misuse. Of those that screened positive, 9 patients (50%) received brief intervention and verbal education in which 3 patients (33.3%) received educational handouts. Two patients were considered severe risk and both received brief intervention, refused the recommended referrals for psychiatric care, and considered follow-up treatments with the primary care physician. This project demonstrates that screening for alcohol misuse and providing brief intervention is feasible to implement in the primary care setting. Alcohol misuse awareness allows primary care providers to empower patients with the right tools to make informed decisions to their health.

Keywords: alcohol misuse, primary care, AUDIT, SBIRT, internal medicine

Alcohol consumption is a modifiable risk factor that contributes to a myriad of chronic health conditions and is responsible for economic losses in the United States of $249 billion (Centers for Disease Control and Prevention [CDC], 2018a). Alcohol misuse is defined as a range of unsafe alcohol use behaviors including alcohol abuse, alcohol dependence, and hazardous or risky use (Moyer & U.S. Preventive Services Task Force [USPSTF], 2013). Alcohol misuse increases the risk of chronic problems, such as liver cirrhosis, alcohol dependence syndrome, alcohol abuse, hypertension, and stroke (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). There is also an increase in social problems, such as healthcare expenses and reduced work productivity (CDC, 2018a), motor-vehicle accidents, fetal alcohol spectrum disorders, and intimate partner violence (CDC, 2018b).

Primary care providers can treat symptoms of alcohol misuse, but they are also facilitators who can educate patients about alcohol misuse impacting acute and chronic health problems and social issues. Alcohol misuse screening is an essential, recommended screening in the primary care setting (Moyer & USPSTF, 2013). Healthcare providers can use an approach such as *screening, brief intervention, and referral to treatment* (SBIRT) for patients with alcohol misuse (Substance Abuse and Mental Health Services Administration [SAMHSA], 2017). Providers educating patients about alcohol misuse present patients with the necessary tools to make an informed decision about their care.

Statement of the Problem

At-risk or heavy consumption of alcohol is a modifiable risk factor that can be addressed by a primary care provider to prevent health problems, alcohol use disorders, injuries, and birth defects (U.S. Department of Health and Human Services [HHS], National Institutes of Health [NIH], & National Institute on Alcohol, Abuse, and Alcoholism [NIAAA], 2016). Screening for

alcohol misuse is an essential, recommended component of a routine healthcare exam (Moyer & USPSTF, 2013). A South Texas internal medicine practice needed a standard protocol to screen adults annually for alcohol misuse, provide initial intervention, and/or provide referrals to a treatment specialist.

Background and Significance

Alcohol misuse is defined as a range of unsafe alcohol use behaviors including alcohol abuse, alcohol dependence, and hazardous or risky use (Moyer & USPSTF, 2013). Alcohol abuse and alcohol dependence were previously defined as psychiatric diagnoses in the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV (American Psychiatric Association [APA], 2000). In 2013, the DSM-V combined these terms into a single disorder called alcohol use disorder, which is generally defined as compulsive alcohol use, loss of control over alcohol intake, and negative emotional state when not using alcohol (APA, 2013; HHS, NIH, & NIAAA, 2017). Under DSM-V, patients that meet at least two of the 11 criteria within a 12-month period would receive a diagnosis of alcohol use disorder with a classification of mild, moderate, or severe (APA, 2013) (Table 1).

Risky or hazardous use refers to consuming an amount of alcohol that can lead to a higher risk of health problems (Moyer & USPSTF, 2013). Alcohol consumption contributes to three of the five leading causes of death in the United States including cancer, cerebrovascular diseases, and unintentional injury (CDC, 2014). According to the CDC (2013), excessive alcohol use led to an annual average of 88,129 deaths in the United States between 2006 to 2010.

Table 1

DSM-V Criteria for Alcohol Use Disorder

Severity Levels	Symptoms
Mild: Presence of 2-3 symptoms Moderate: Presence of 4-5 symptoms Severe: Presence of 6 or more symptoms	• Problems with drinking intention • Inability to control alcohol intake • Hangovers • Withdrawal symptoms • Failure to perform in family, school, or work obligations due to intoxication • Endangering one's life or being sexually risky • Having legal problems • Drinking alcohol interferes with relationships with friends and family • Cravings

Adapted from American Psychiatric Association, 2013, *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*. (5th ed.). Washington, D.C.: American Psychiatric Association.

Binge drinking, a risky type of alcohol consumption, is defined as consuming five or more alcoholic drinks for men or four or more alcoholic drinks for women on a single day within a 30-day period (CDC, 2012). Heavy or at-risk drinking is categorized as men consuming more than four alcoholic drinks a day and/or 14 drinks a week and for women and all adults aged 65 years or older consuming more than three alcoholic drinks per day and/or seven drinks per week (HHS, NIH, & NIAAA, 2016). One in six adults in the United States binge drink alcohol approximately four times a month and/or consume eight drinks on a single day (CDC, 2012). According to Kerr, Mulia, & Zemore (2014) greater than half the alcohol sold in the United States was consumed while binge drinking.

With these high numbers of alcohol drink consumption, the USPSTF has a grade B recommendation for clinicians to screen for alcohol misuse in adults ages 18 or older (Moyer &

USPSTF, 2013). A grade B recommendation indicates moderate net benefit such that there is sufficient evidence that alcohol misuse screening and brief counseling interventions in the primary care setting for adults aged 18 years and older have preventive benefits to health outcomes (Moyer & USPSTF, 2013). To become a grade A recommendation, there needs to be more research studies representing primary care populations with consistent findings (Moyer & USPSTF, 2013). SBIRT is an evidence-based practice approach to detect and provide early intervention for alcohol use disorders (SAMHSA, 2017). The *Alcohol Use Disorders Identification Test* (AUDIT) is a tool, which can be used in a clinical setting to screen for alcohol misuse to decrease risks associated with alcohol overconsumption (Centers for Medicare & Medicaid Services [CMS], 2011; Babor et al., 2001). Other approved tools include the abbreviated AUDIT-Consumption and the single-question screening asking "How many times in the past year have you had 5 (for men) or 4 (for women and all adults older than 65 years) or more drinks in a day?" (Moyer & USPSTF, 2013, p.212). To reduce alcohol misuse, clinicians should provide adults who screen positive for risky or unsafe drinking practices with brief behavioral counseling (Moyer & USPSTF, 2013).

In the United States, a study found that only one in six adults aged 18 and older reported that a healthcare professional discussed alcohol consumption despite clinical recommendations (McKnight-Eily et al., 2014). The primary practice setting would be an ideal place to screen for alcohol misuse since many patients see their primary provider annually. Unfortunately, not all primary care providers adhere to the recommended guidelines for alcohol misuse screening. A study by Tan, Hungerford, Denny, and McKnight-Eily (2018) found that 96% of primary care providers, which included internists, obstetricians/ gynecologists, family practitioners, and nurse practitioners, screened for alcohol misuse, but only 38% of these providers practiced with

USPSTF alcohol misuse approved screening tools. Another study found that out of 853 physicians (family medicine, obstetrics-gynecology, internal medicine, and psychiatry), 88% always screened for alcohol misuse in new outpatients (Friedmann, McCullough, Chin, & Saitz, 2000). Sometimes physicians would only screen for alcohol misuse based on clinician suspicion, which was less sensitive compared to an approved alcohol misuse screening protocol (Vinson, Turner, Manning, & Galliher, 2013). The gap between the recommended guideline versus the reality of screening and treating for alcohol misuse needs to be closed with compliance.

Assessment

The setting for the project intervention is an internal medicine practice with two locations in South Texas in areas of known low socio-economic status. Clinic A is located in an area of 26,119 people of which 92.1% are Hispanic/Latino origin, primarily Mexican descent (93%) with a median age of 32 years (U.S. Census Bureau, 2016a) with 31.9% of individuals living below poverty level and 74.7% having health insurance (U.S. Census Bureau, 2016b). Clinic B is located in a rural community populated with 47,710 people of which 63.0% are Hispanic/Latino origin, primarily Mexican descent (90.6%) (U.S. Census Bureau, 2016b). The median age in the Clinic B area is 35.4 years (U.S. Census Bureau, 2016c) with 15.3% of individuals living below poverty level and 81.6% having health insurance (U.S. Census Bureau, 2016d).

An analysis of 1,828 records for patients seen in Clinic A and Clinic B from January 1, 2016 to December 31, 2016 showed a racial/ethnic breakdown of 65% Hispanic/Latino, 26% White, 5% Black, less than1% Asian, and 4% of a non-disclosed race/ethnicity. The male/female patient ratio was 63% to 37%, respectively. Approximately 40.8% of the patients seen were between the ages of 50-69. Seventy percent of patients stated they did not smoke, 46% of

patients were obese with a *body mass index* (BMI) greater than 30 kg/m^2, and 30% of patients were overweight with a BMI of 25 to 29.9 kg/m^2.

Each clinic site was staffed with a receptionist and two medical assistants (MAs). The billing manager, office manager, and care manager coordinated services at both clinic sites. The billing manager performed coding and billing, while the office manager supervised and trained the MAs and requested insurance referrals to other specialties. The care manager updated the paper record, *electronic medical record* (EMR), coding, and tracked adherence to clinical measures and guidelines for the clinic. The physician split his time equally between both practices to provide care to both communities. Both clinics use the EMR system, Lytec MD, and created a paper record for each patient encounter.

At these clinics, the AUDIT screening tool was available using a paper record or EMR. Prior to this evidence-based quality improvement project, the physician used clinical judgment to order an AUDIT screen for selected patients. The MAs would ask the patient to complete the screening tool and the physician would interpret the findings. However, due to the limited and sporadic use of the AUDIT tool, the staff was inexperienced with the use of the tool. Prior to project implementation, only 16 of the 60 patients screened had an alcohol-related diagnosis or at-risk drinking requiring alcohol counseling or referrals in the previous year. Patients who scored positive were offered a physician's referral to see a treatment specialist.

As a member of an accountable care organization, the physician works with healthcare professionals, clinicians, and hospital systems to provide organized and coordinated care (CMS, 2015). The physician has provided preventive care and coordinated chronic disease management in accordance with the requirements of CMS in order to reduce healthcare spending costs, prevent emergency room and hospital visits, and optimize healthcare services (CMS, 2015). The

clinic has also been certified as a Patient-Centered Medical Home, which designates that the internal medicine practice is committed to patient-centered continuity care, evidenced-based patient care management, care coordination, quality improvement, set protocols for data management, and team-based care (National Committee for Quality Assurance, 2018). The clinic accepts private insurances, Medicare, Medicaid, and cash for payment of services.

Readiness for Change

Prior to implementing the 2013 USPSTF (Moyer & USPSTF, 2013) clinical recommendations for annual alcohol misuse screening, the physician used clinical judgment to order alcohol misuse screening for selective patients resulting in only 3% of 1,670 patients screened for alcohol misuse in 2016. Following analysis of the 2016 microsystems assessment, the physician and project leader recognized the importance of establishing an alcohol screening protocol as alcohol misuse contributed to the top three common diagnoses in the practice: hypertension, hyperlipidemia, and diabetes (Table 2).

Table 2

ICD-10 Diagnosis Codes Used in 2016

Top 3 ICD-10 Codes	Number of Patients Diagnosed
Hyperlipidemia (E78.2)	647
Primary Hypertension (I10)	624
Diabetes type 2 with hyperglycemia (E11.65)	302

Project Identification

Purpose

This project was designed to increase annual alcohol misuse screening in accordance with 2013 USPSTF (Moyer & USPSTF, 2013) recommendations. The alcohol misuse protocol of SBIRT was selected as a guide to screen, treat, and refer patients to facilitate consistency in the practice. The AUDIT assessment tool was chosen to screen adults aged 18 and older for alcohol misuse.

Objectives & Anticipated Outcomes

Table 3

Four Primary Project Objectives

Objective One: Increase alcohol misuse screenings of patients 18 years and older from 3% to 70%.		
Activity	Outcome Indicator	Measure
MAs, staff, and physician were trained on SBIRT and AUDIT alcohol screen, expectations, and responsibilities of implementing the project.	Completion of training	Record staff participation in a 30-minute interactive presentation and review of an informational packet that provided the AUDIT screen, education materials, and PowerPoint.
Integrated AUDIT screenings into EMR to transfer information from paper screening form.	AUDIT screening documented in EMR	Compare completed paper chart screen with EMR chart to verify that the AUDIT screen was recorded. Count number of completed EMR charts/total charts.

Activity	Outcome Indicator	Measure
Based either on the quality measures form or absence of form, the receptionist gave the patient a paper AUDIT screen upon check-in with date, time, patient name, date of birth, and chart number.	The patient completed the AUDIT screen in the waiting area or exam room prior to seeing the physician.	Paper AUDIT screens given to patients is completed prior to visit.
MAs ensured that paper AUDIT screen is completed and clarified any questions the patient may have during vital signs check-in.	MA ensured a paper AUDIT screen is completed prior to seeing the physician.	The number of charts seen per day with AUDIT screen.
MA recorded the AUDIT score and zone in both the EMR and paper progress note. The AUDIT paper screen was attached to the patient's chart.	Score and zone were recorded in EMR and paper progress note.	Count the number of EMRs and paper progress notes with score and zone recorded.
Physician reviewed the score and completed SBIRT as needed by performing the appropriate intervention/treatment.	Notes of intervention recorded in paper chart and EMR.	Verify intervention and treatment were recorded in EMR & paper progress note.
Objective Two: Increase brief interventions for AUDIT scores 8 and above/Zones 2, 3, or 4 from 0% to 50%.		
Activity	Outcome Indicator	Measure
Educated provider on brief intervention techniques for patients.	Provider completed 4-hour training module on SBIRT from the Addiction Technology Transfer Center Network funded by SAMHSA.	Verify the provider received certification at the end of training.
Brief behavioral counseling and personalized alcohol use education provided for all patients with AUDIT score 8- 40 / Zone 2, 3, or 4.	Patients with positive screen were informed of results and given brief behavioral intervention provided by the primary care provider during same appointment or was scheduled for a SBIRT management follow-up appointment.	Count patients with an AUDIT score of 8- 40/ Zone 2, 3, or 4 received behavioral intervention (15-30 minutes or over 30 minutes) documented in EMR, paper progress note, and superbill.

Objective Three: Increase alcohol resources for AUDIT scores 8 and above/ Zones 2, 3, or 4 from 0% to 50%.		
Activity	Outcome Indicator	Measure
MAs provided patients with 2 educational alcohol misuse pamphlets from CDC and *TMF Quality Innovation Network*.	Patients with scores 8 and above received printed information for negative health risks or risky/ hazardous drinking and binge drinking.	Count of patients who screened 8 and above received educational materials about alcohol use.
Physician educated patients about pamphlets and resources for local 12-step programs and support groups.	Patients with scores 8 and above were informed about harms and risks associated with drinking and receive information for support groups.	Count patients who screened 8 and above received resources for support groups.
Physician clarified any questions or concerns about the alcohol education, resources, and how to prevent alcohol misuse.	Patients with scores 8 and above were given an opportunity to expand on information about alcohol misuse.	Count of patients who screened 8 and above were educated by primary provider about alcohol misuse.
Objective Four: Increase referral to treatment for AUDIT scores 20 and above/ Zone 4 from 0% to 70%		
Activity	Outcome Indicator	Measure
Physician referred patients who have an AUDIT score 20 and above/ Zone 4 to see a specialist for long-term counseling and medication management.	All patients that scored 20 and above/ Zone 4 had referrals to psychiatric specialist for pharmacological therapy and/or psychological services.	Count of physician referrals of patients that score 20 and above/Zone 4. The office manager collaborated with patient's insurance plan to find a psychiatric specialist within network for further evaluation.

It is anticipated that after meeting objectives, a greater number of patients will be screened and identified with alcohol misuse. After being identified, proper treatment and management such as brief intervention and referrals will reduce the number of people that

misuse alcohol. This may help reduce the severity of comorbidities associated with alcohol misuse, such as liver diseases, hypertension, stroke, cardiovascular diseases, and increased cancer risk (Babor et al., 2001), and also reduce social problems, such as motor vehicle accidents, accidental deaths, injuries, and reduced work productivity (CDC, 2018a; CDC,2018b). This goal aligns with the Healthy People 2020 (2017a) goals reducing 30-day binge-drinking for adults aged 18 and older from a baseline of 27.1% established in 2008 to 24.4% in 2020 and also reducing 30-day excessive drinking from a baseline of 28.2% to 25.4% (Healthy People 2020, 2017b).

Summary and Strength of Evidence

Chronic overconsumption of alcohol can lead to serious health consequences including changes in mood (APA, 2013), cognitive decline (Topiwala et al., 2017), cardiovascular problems including atrial fibrillation, congestive heart failure, and myocardial infarction (Whitman et al., 2017), hypertension (Rehm, 2011), liver problems including steatosis, cirrhosis, and alcoholic hepatitis (Louvet & Mathurin, 2015), pancreatitis (Samokhvalov, Rehm, & Roerecke, 2015), and increased cancer risk (Bagnardi et al., 2015). Furthermore, alcohol consumption disrupts and weakens the individual's immune responses increasing the risk of infectious diseases (Rehm, 2011).

SBIRT

Screening, brief intervention, and referral to treatment or SBIRT is a protocol used to screen for substance use disorders, and to provide brief intervention, and/or referrals to treatment centers and specialists for positive screens (Agerwala & McCance-Katz, 2012). Numerous studies have documented the success of establishing SBIRT in a variety of clinical settings as an approach for alcohol screening, intervention, and treatment.

Madras et al. (2009) researched how SBIRT reduced alcohol and drug use after six months at various medical facilities that included hospitals, emergency rooms, outpatient clinics, and primary care clinics. Patients that were considered low risk were only screened and did not require further intervention. Moderate risk patients received brief interventions and severe risk patients received brief treatments and potentially a referral to a specialist (Madras et al., 2009). Analysis of follow-up patients was based on a recommended treatment intervention, not on actual intervention received by patients with moderate to severe risk (Madras et al., 2009). Considering all healthcare sites, more than 63% of patients who screened positive received interventions, which included brief intervention, brief treatment, or referral to specialized treatment (Madras et al., 2009). Following a recommended brief intervention, brief treatment, or referral to treatment, there was a statistically significant difference in patients with heavy alcohol use or patients drinking to intoxication within the past 30 days from a baseline of 9,437 to the 6-month follow-up of 3,233 patients across all healthcare facilities, $p < .001$ (Madras et al., 2009). One clinic site that included only primary health care centers had a reduction of heavy alcohol drinkers from 1,027 at baseline to 325 patients deemed as heavy drinkers at the 6-month follow-up, $p < .001$ (Madras et al., 2009).

Gryczynski, Mitchell, Peterson, & Gonzales (2011) had similar results with SBIRT reducing alcohol use, alcohol intoxication, and illicit drug use. The research was conducted in rural clinics in New Mexico and compared brief intervention versus brief treatment or referral to treatment for alcohol use, alcohol intoxication, and illicit drug use with a 6-month follow-up after treatment (Gryczynski et al., 2011). Patients intoxicated for 4.62 predicted days in the past 30 days at baseline decreased by 30% to 3.22 predicted days in the past 30 days at the 6-month follow-up after brief intervention (Gryczynski et al., 2011). Patients intoxicated an average of

6.94 predicted days at baseline decreased by 48% to 3.65 predicted days at the 6-month follow-up following brief treatment/referral to treatment (Gryczynski et al., 2011). For patients that received brief interventions, the average number of sessions was 1.30 (*SD* = .87) compared to those that received brief treatment/referral to treatment had an average number of 3.18 sessions (*SD* = 3.45) (Gryczynski et al., 2011). About 82% of patients received only one session of brief intervention compared to 48% of those that received one session of brief treatment/referral to treatment (Gryczynski et al., 2011). Each level of service demonstrated a decline in the incidence rate, but the greatest decline in incidence rate was found with brief treatment/referral to treatment (Gryczynski et al., 2011). All treatment options, brief intervention, brief treatment, or referral to treatment were shown to reduce the days of alcohol use and intoxication. Participants that were lost at follow-up were mainly male, White, and Hispanic (Gryczynski et al., 2011).

Rose et al. (2008) screened for hypertensive patients for alcohol misuse and provided brief counseling or referrals for high-risk drinkers in primary care settings. Intervention sites received alcohol-focused intervention education, meetings, and performance reviews while all sites received an EMR template that consisted of an alcohol screening tool, the Audit Use Disorders Identification Test consumption questions, and for positive patients, a template for a full alcohol misuse assessment and documentation for diagnoses and treatment interventions, such as counseling and referral (Rose et al., 2008). Out of the 14,107 hypertensive patients in the intervention primary care practices, only 64.5% of patients were screened for alcohol use and 313 patients were diagnosed with high-risk drinking, alcohol dependence, or abuse (Rose et al., 2008). For the intervention group, 50.5% of patients had documentation of alcohol counseling and within this group, only 20.3% also had additional referrals for specialized treatment (Rose et al., 2008). When compared to the control group primary care practices, out of the 13,484, only

23.5% were screened for alcohol misuse and 8.7% were diagnosed with high-risk drinking, alcohol dependence, or abuse (Rose et al., 2008). For those with an alcohol diagnosis, 29.6% received counseling services and out of those 6.2% received referral for treatment (Rose et al., 2008). Formalized training and education about alcohol screening, brief counseling, and referral to treatment can influence the outcome of successfully diagnosing and treating for alcohol misuse.

Bradley et al. (2006) conducted an observational study in the Veterans Health Administration related to the screening and documentation of alcohol misuse screening and brief alcohol counseling. Patient records kept on the Veterans Health Administration Computerized Patient Record System, allowed for clinical reminders to complete the alcohol misuse screen (Bradley et al., 2006). Reviewing patient records, on average, 93% of patients were screened for alcohol misuse with 25% of patients screening positive (Bradley et al., 2006). Out of those that screened positive, about 42% of patients had follow-up documentation (Bradley et al., 2006). Bradley and colleagues (2006) concluded that even with a clinical reminder to complete alcohol misuse screenings, providers still have a difficult time in following up with patients for alcohol misuse.

SBIRT Team with Medical Assistants and Physicians

Mertens et al. (2015) compared three different SBIRT intervention groups consisting of a single physician, a usual care control group, or an MA with a non-physician provider, such as clinical psychologists, social workers, or clinical health educators. Physician-only intervention groups required the physician to perform all aspects of SBIRT while in the non-physician and MA intervention group, the MA would perform the screening and the non-physician provider would ask additional questions about alcohol use and perform brief intervention/referral to

treatment (Mertens et al., 2015). The usual care group physicians were provided information on an educational webinar addressing an EHR evidence-based screening tool and the recommended low-risk drinking limits (Mertens et al., 2015). Non-physician providers and MAs had the highest average of patients screened (50.9%) compared to physicians (9.2%) and usual care (3.5%) ($p < .0001$) (Mertens et al., 2015). However, physicians were more likely to perform brief intervention/referral to treatment (44.4%) compared to non-physician providers and MAs (3.4%) and usual care (2.7%). Mertens and colleagues (2015) suggest for optimal efficiency, an MA should perform the initial screen while the physician provides brief intervention/referral to treatment interventions for patients who screen positive for alcohol misuse.

AUDIT

The Alcohol Use Disorders Identification Test or AUDIT is a widely researched tool to help clinicians detect alcohol misuse (Moyer & USPSTF, 2013). AUDIT was developed by the World Health Organization to screen for excessive drinking (Babor et al., 2001). The AUDIT is comprised of 10 questions that identify alcohol misuse with four questions addressing hazardous alcohol consumption, three questions addressing alcohol dependence symptoms, and four questions addressing harmful alcohol consumption (Babor et al., 2001). Questions include drinking frequency, alcohol consumption, heavy drinking frequency, morning drinking habits, impaired control, blackouts, injuries, guilt, failure to perform duties due to alcohol drinking, and persons concerned with drinking habits (Babor et al., 2001).

Methods

Project Intervention

The receptionist, *medical assistants* (MAs), office manager, care coordinator, and physician participated in an educational presentation focused on alcohol misuse, significance of

alcohol screening, SBIRT, AUDIT administration and interpretation, EMR charting and paper progress notes prior to implementation. The educational presentation defined the roles of each team member, facilitated discussions of AUDIT alcohol screening and SBIRT implementation, and clarified the educational materials in the handbook containing the clinic's new alcohol misuse protocol, a screening process flow-chart, AUDIT screenings in both English and Spanish, and patient education materials. The physician was also provided access to a SBIRT provider training-course with a certificate upon completion (Pacific Southwest-HHS Region 9, 2015).

Following clinic education and discussion of roles in the SBIRT protocol, patients aged 18 years and older scheduled for a physician visit were given the AUDIT screening tool in English or Spanish based upon their preferred language by the receptionist at the time of registration. The receptionist instructed the patient to fill out the confidential survey prior to their exam. The patient filled out the AUDIT screening form either in the waiting room or exam room. Upon completion, the MA collected the screening form, asked clarifying questions as needed, and scored the AUDIT. The MA documented the score and AUDIT zone in the EMR and on the paper progress note, and attached that the paper copy of the AUDIT screen to the patient's paper chart. The physician then reviewed the AUDIT screening scores and if patient scores were positive, a SBIRT Alcohol Positive Screen Management form was utilized during brief intervention (Figure 1).

AUDIT scores of 0-7 are categorized as Zone one, low risk patients (TMFQIN, 2016). Low risk patients received reinforcement of current healthy behaviors and low-risk alcohol use. The physician reminded all patients aged 65 and older and female adults to not drink more than one alcoholic drink a day and to limit drinks to seven per week. The physician also reminded male adults, aged 18 years of age to 65 years of age, to drink only two alcoholic drinks per day

and to limit drinks to 14 per week (HHS, NIH, & NIAAA, 2014). Zone two is defined by AUDIT scores of 8-15 and these patients are considered risky users (TMFQIN, 2016). Zone three has AUDIT scores of 16-19 and these patients are harmful users (TMFQIN, 2016). The physician provided patients scoring in zone two or zone three personalized patient education handouts and a brief counseling intervention. Upon the physician's clinical judgment, patients scoring 8-19 were considered for referral to treatment with a psychiatric specialist. Zone four has AUDIT scores 20 and higher and these patients are considered severe risk users (TMFQIN, 2016). Patients in zone four had brief interventions and treatment referrals to a psychiatric specialist (Figure 2).

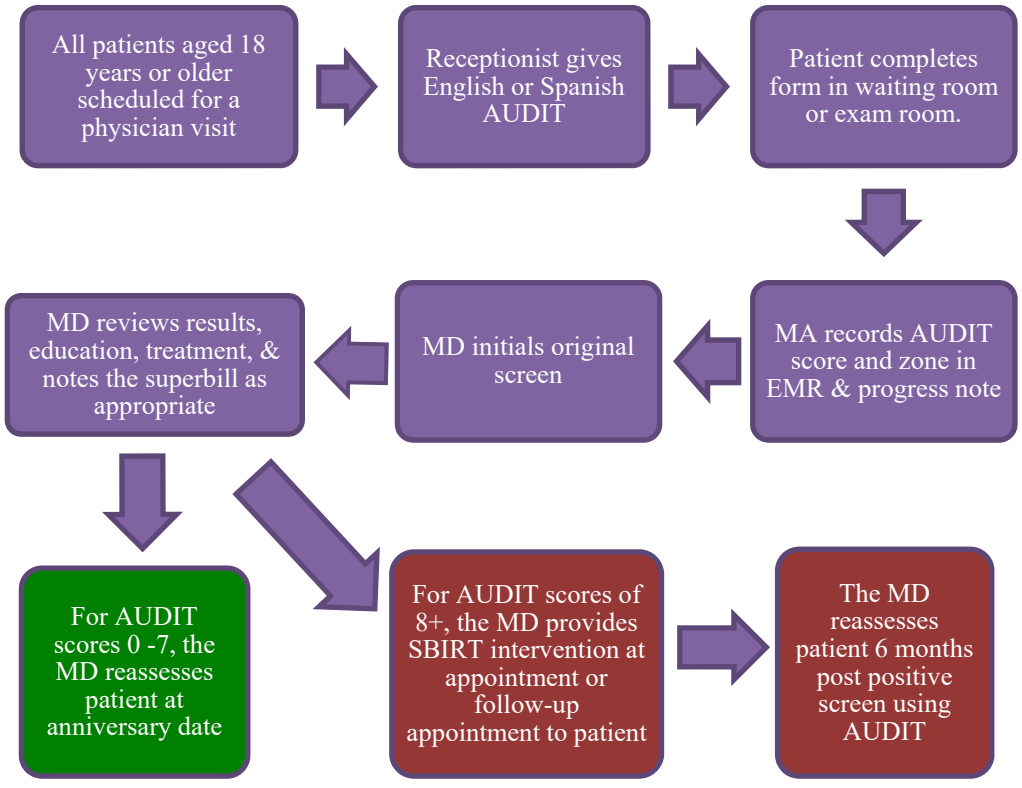

Figure 1. Project methods flowchart. This informational flowchart provided the office staff the project intervention procedures.

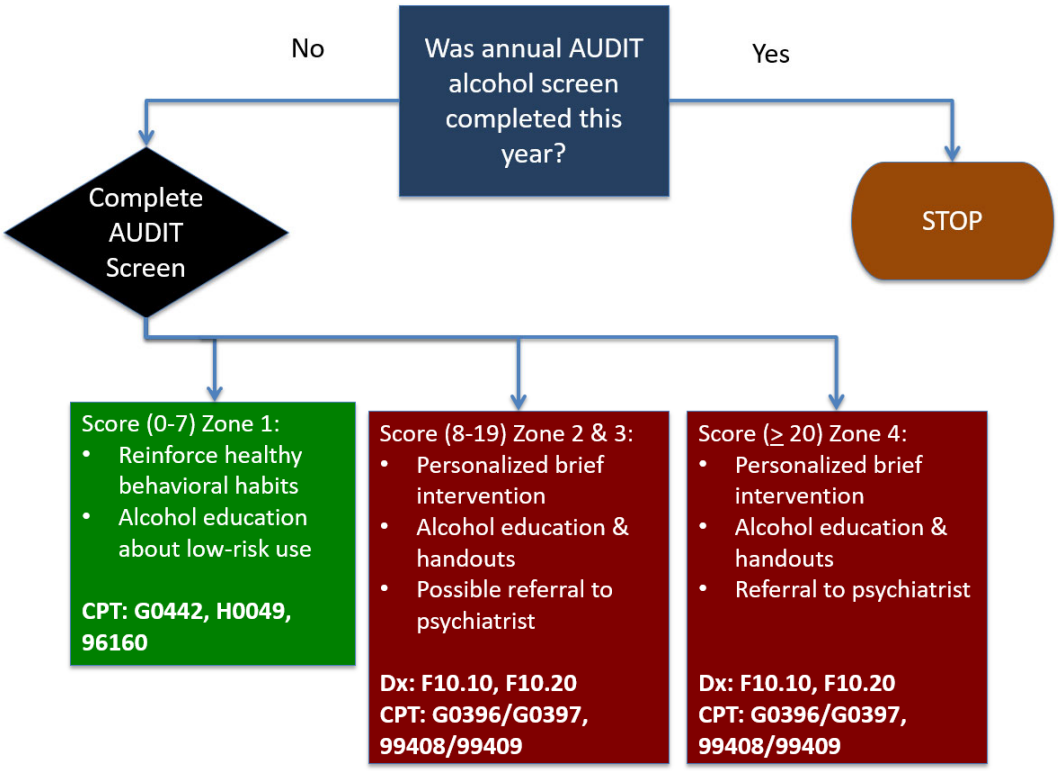

Figure 2. AUDIT screening algorithm. Staff members used this algorithm to see whether patients needed an alcohol misuse screen for the year and what intervention(s) to pursue based on screening score.

There were three quality improvement staff meetings at each location after the start of implementation. The first meeting took place during week 3 to address any issues, concerns, and obstacles regarding the implementation of AUDIT, scoring, and treatment interventions. The second meeting took place during week 7 to assess and address any opportunities for improvement or adherence to the AUDIT screen, recording, and interventions. The third meeting took place during week 9 to review and find ways to smoothly integrate and refine the process into normal routines.

Adjustments were made accordingly during these meetings to facilitate process flow and clarify paper materials. During the post-implementation period, it was determined that the AUDIT screen would be given to all adult patients new to the practice and the practice's current adult patients during their annual wellness visit. Patients screened during project implementation would have the next alcohol misuse screen completed on the anniversary date of the last screen, unless otherwise specified by the physician.

Organizational Barriers and Facilitators

There were multiple challenges during the implementation of this new protocol. Barriers included the staff failing to screen patients, fluctuations in clinic staff, site variability, and societal stigma around alcohol screening and intervention. Staff had a difficult time incorporating the screening process into their routine. During week 3 at Site A, MAs had to cover the receptionist duties and this resulted in the lowest screening adherence of 24%. Gathering feedback from staff, adjustments to the screening protocol were made. Screening adherence in the following weeks at Site A ranged from 46% to 67%. Screening adherence at Site B fluctuated from 65% to 86% throughout the implementation period.

Another barrier was the fluctuation in staffing. Midway through project implementation, a staff member left and two new staff members were hired. New hires received training and education on the project protocol, however there was a learning curve for all job responsibilities, including AUDIT screening for alcohol misuse and SBIRT management. In-depth analysis of the MA workflow resulted in adjustment of the incorporation of the protocol in their daily routine.

Site variability and patient volume posed another challenge. Site A was an established clinic site for almost 30 years with a solid patient base, while Site B had opened within the last 18 months. The MAs at Site A had three or more years of experience as compared with the MAs

from Site B who had less than 1 year of experience. The variability in clinic workflow and staff experience were factors that made project implementation challenging. The project leader created an alcohol misuse binder for each clinic site that contained SBIRT protocol flowcharts, the AUDIT screen, and educational materials in English and Spanish to help reinforce the education received. The binder was reviewed with the MAs when screening compliance fluctuated.

Patient misconceptions and societal stigma were barriers to project implementation of alcohol screening and intervention. General misconceptions and stigma surrounded alcohol screening, diagnosis standards, treatment referrals, and alcohol consumption limits. Overall, patients were willing to be screened with the AUDIT. AUDIT was available in both English and Spanish and scored a Flesch-Kincaid grade level of eighth-grade readability. Some patients had difficulty with language barriers or low literacy; bilingual staff members assisted with form completion if patients were unable to complete the form. The physician provided patient education about safe drinking practices and the clinical manifestations and management of alcohol misuse to allow patients to make an informed decision about treatment options. Due to time constraints during patient visits, the majority of brief intervention follow-up appointments were scheduled for a later date. Scheduling created a barrier for patients as it required them to come back to the clinic, take time off from work, and pay for a second appointment.

Organizational facilitators included the presence of an EMR, which eased data collection and adherence monitoring. Another organizational facilitator was the commitment of the physician, care coordinator, and the clinic staff to uphold quality standards to provide the best patient outcomes. The internal medicine practice demonstrated commitment to preventing future

chronic diseases, meeting recommended preventive standards and quality measures, and providing optimal care to their patient population.

The new SBIRT protocol increased revenue based on increased AUDIT screenings and billable brief intervention procedures. Screening for alcohol misuse increased insurance reimbursements, increased screening opportunities to identify patients with high risk alcohol intake, and provided opportunities to deliver brief intervention to patients with a positive AUDIT score and/or refer for treatment.

Evaluation Plan

This evidence-based practice project was designed to achieve increased alcohol misuse screening, brief intervention, and treatment referral in adults 18 years and older. Data was collected in Microsoft Excel from the EMR and paper charts. Data was uploaded into IBM® SPSS® version 24 for analysis.

Weekly adherence to each process step was measured by checking the four components of recording the AUDIT screening tool and the SBIRT protocol. The first component was confirming a completed AUDIT screen with the correct patient name, date of birth, chart number, date, and time that was scored and validated by the physician. The second component was ensuring the AUDIT results and management were documented on the EMR and paper chart. The third component was the completion of the SBIRT protocol as necessary. The physician performed and documented the brief intervention in the EMR and on the paper SBIRT Alcohol Positive Screen Management form, which included alcohol education, patient's readiness to change, plan, agreement, diagnosis, time and date of completion, and procedure code. The fourth component was ensuring that the service was marked and billed appropriately with the necessary billing and diagnosis code on the patient's superbill (Table 4). The billing

department used the information from the superbill to submit a claim using the CMS 1500 form to insurance services for reimbursement (CMS, 2012).

Table 4

Breakdown of Charting AUDIT Results

AUDIT	Charting AUDIT
Score 0-7 Zone 1	EMR ○ Score 0-7 ○ Zone 1 Reinforcement of healthy behaviors Paper Chart ○ Score, Zone Superbill ○ Diagnosis Code: Z13.89 Screening for Other Disorder ○ Procedure: G0442/ H0049/ 96160 Alcohol Screen
Score 8-15 Zone 2	EMR ○ Score 8-15 ○ Zone 2 Simple Advice ○ SBIRT: ▪ Education, Readiness to change, Plan, and Time administered ▪ Diagnosis Code: Alcohol Misuse ICD-10 Paper Chart ○ Score, Zone, Plan, Treatment Superbill ○ Diagnosis Code: Alcohol Misuse ICD-10 ○ Procedure Code: ▪ 99408/G0396 SBIRT Services 15-30 minutes ▪ 99409/G0397 SBIRT Services > 30 minutes
Score 16-19 Zone 3	EMR ○ Score 16-19 ○ Zone 3 Counsel & Continue Monitoring ○ SBIRT: ▪ Education, Readiness to change, Plan, and Time administered ▪ Diagnosis Code: Alcohol Misuse ICD-10 Paper Chart ○ Score, Zone, Plan, Referral to Treatment (if necessary) Superbill ○ Diagnosis Code: Alcohol Misuse ICD-10 ○ Procedure Code: ▪ 99408/G0396 SBIRT Services 15-30 minutes ▪ 99409/G0397 SBIRT Services > 30 minutes
Score 20-40 Zone 4	EMR ○ Score 16-19 ○ Zone 4 Refer to Specialist ○ SBIRT: ▪ Education, Readiness to change, Plan, and Time administered ▪ Diagnosis Code: Alcohol Misuse ICD-10 Paper Chart ○ Score, Zone, Plan, Referral to Treatment Superbill ○ Diagnosis Code: Alcohol Misuse ICD-10

- Procedure Code:
  - 99408/G0396 SBIRT Services 15-30 minutes
  - 99409/G0397 SBIRT Services > 30 minutes

Results

During the 10-week project implementation, 745 eligible patients were seen in the clinics. Of the eligible patients, 420 patients (56.4%) were screened using AUDIT (Figure 3). At the end of implementation, 18 (4.3%) patients were identified as having a positive AUDIT score of eight and above.

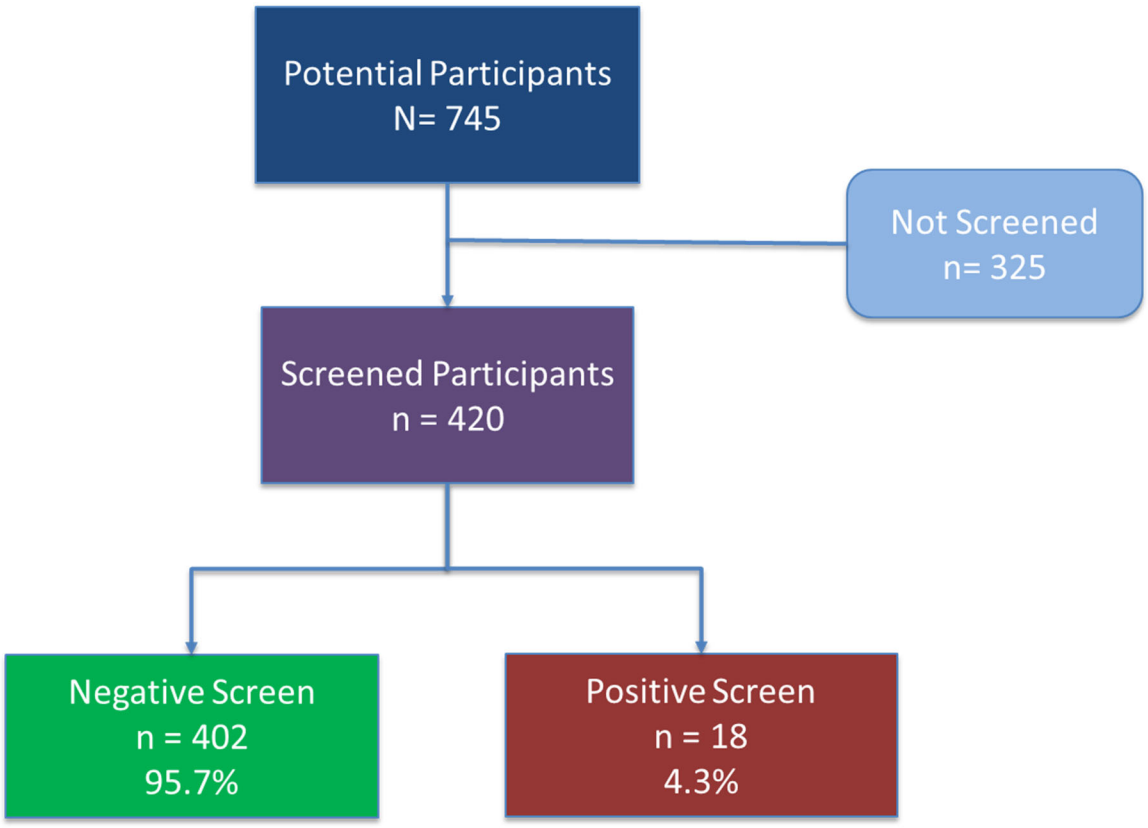

Figure 3. Participants screened during project intervention.

Adherence to screening varied each week by clinical site. AUDIT adherence varied from 24% adherence to 86% adherence. In general, site B had a higher average adherence to AUDIT screening compared to site A. Overall, there was an average of 67.8% adherence to AUDIT screenings for both clinic sites combined (Figure 4).

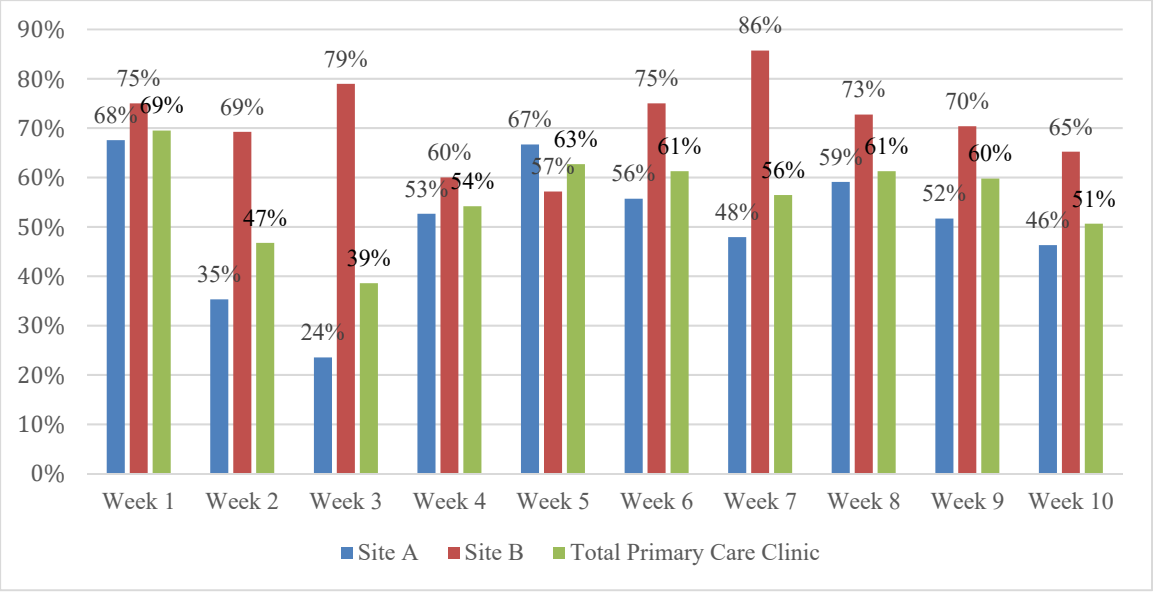

Figure 4. Completed AUDIT screens broken down by week. Each week shows the individual clinic sites and overall clinic percentage of how many participants were screened.

AUDIT

Meeting protocol standards varied across clinic sites. Inputting the results of the AUDIT into the paper progress note had stronger adherence with Site A averaging 86.6% adherence compared to Site B with 61.3% adherence (Figure 5). Recording results in the EMR were similar for both clinic sites with Site A averaging 77.7% adherence compared to Site B 75.1% adherence (Figure 6). Adherence to marking the superbill correctly for negative alcohol screens had slightly higher averages with Site A 83.6% compared to Site B 78.4% (Figure 7).

SBIRT

The SBIRT protocol consisted of motivational interviewing that addressed alcohol misuse education, readiness to change, plan, patient-physician agreement, and available resources. Of the 18 patients with positive scores, nine (50%) had brief intervention performed by the physician, four patients (22.2%) had follow-up SBIRT management appointments scheduled

following the completion of this 10-week project, two (11.1%) patients cancelled their follow-up appointment and did not reschedule, and three (16.7%) patients did not follow-up.

Of the patients who had brief intervention, only three (33.3%) patients received educational handouts about alcohol misuse, but all nine (100%) patients received verbal education about alcohol misuse from the physician. There were two patients that had an AUDIT score of 20 or more and both refused a referral to a treatment specialist. Both patients, however, agreed to have SBIRT management performed at their follow-up appointment with the clinic physician and to see the clinic physician for continual care.

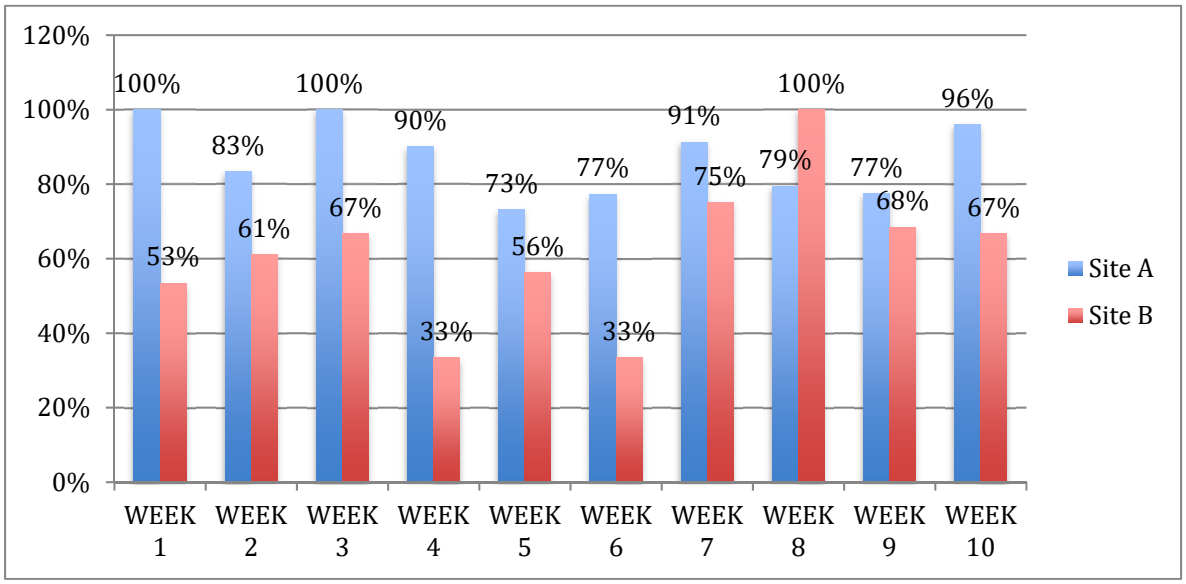

Figure 5. AUDIT score recorded in progress note by week and site.

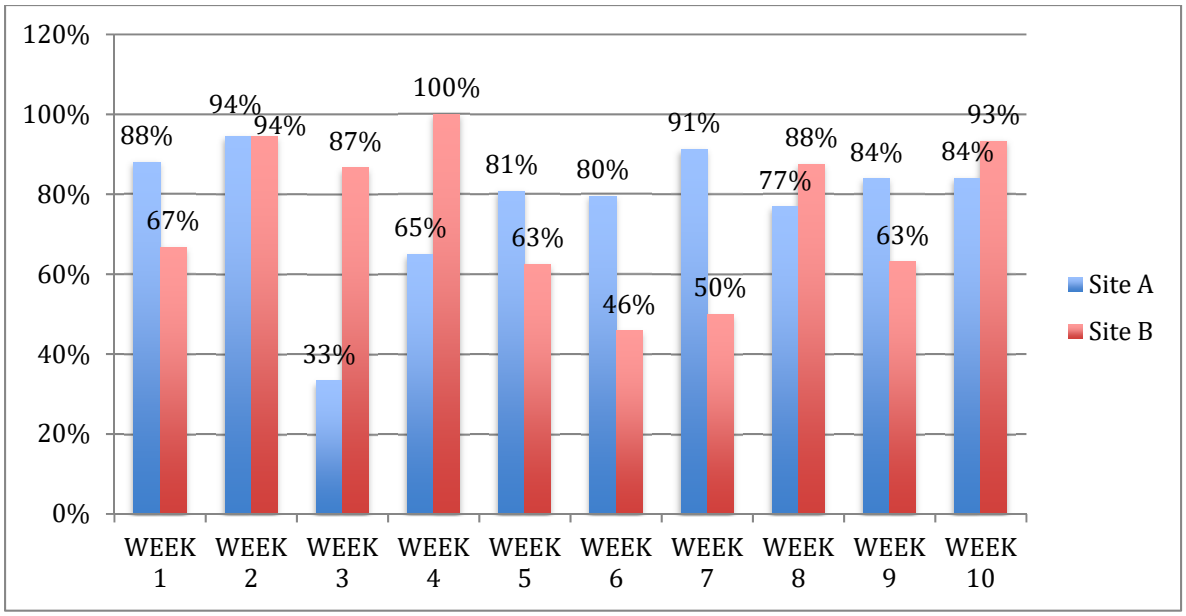

Figure 6. AUDIT score and zone recorded in the EMR.

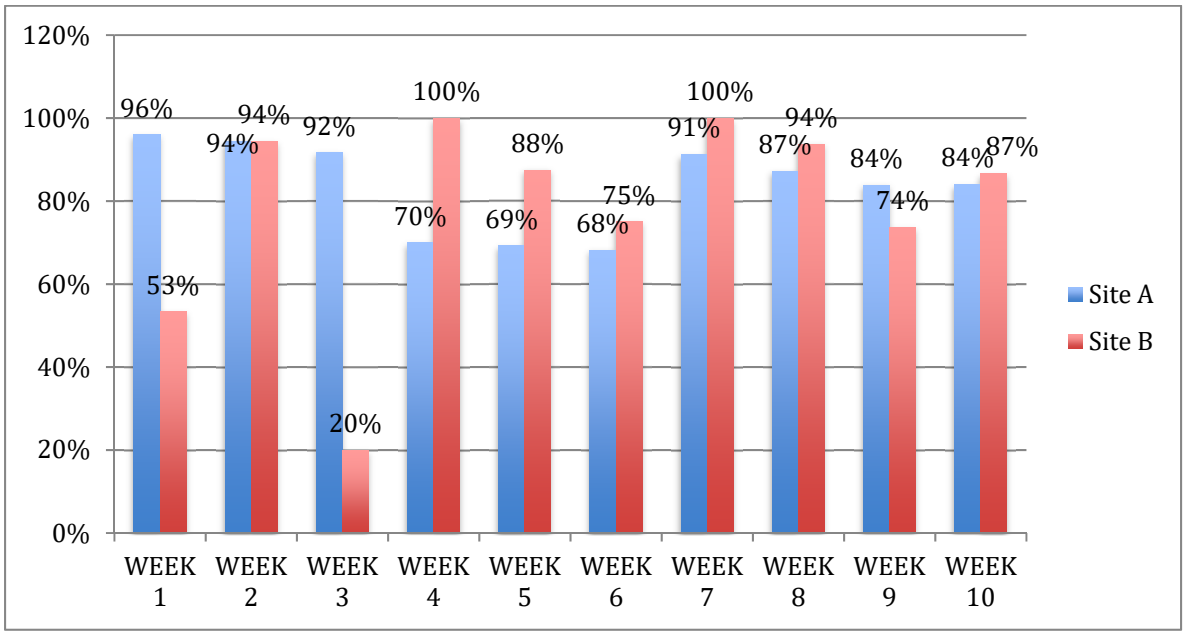

Figure 7. Superbill marked correctly for negative screens. Broken by week, each site marked the superbill for negative screens or with AUDIT scores of 0-7, Zone 1.

Table 5

Patient Demographics (N= 420)

	(n, %)	Negative Screen n = 402	Positive Screen n = 18
Sex			
	Female	199 (49.5)	2 (11.1)
	Male	203 (50.5)	16 (88.9)
Age			
	18 to 24 years	8 (2.0)	-
	25 to 34 years	18 (4.5)	3 (16.7)
	35 to 44 years	53 (13.2)	1 (5.6)
	45 to 54 years	92 (22.9)	2 (11.1)
	55 to 64 years	99 (24.6)	8 (44.4)
	65 to 74 years	75 (18.7)	4 (22.2)
	75 to 84 years	47 (11.7)	-
	85+ years	10 (2.5)	-
Body Mass Index			
	< 18.5	1 (0.2)	-
	18.5 to 24.9	59 (14.7)	-
	25.0 to 29.9	91 (22.6)	7 (38.9)
	30.0 to 34.9	103 (25.6)	7 (38.9)
	35.0 to 39.9	77 (19.2)	3 (16.7)
	40.0 +	59 (14.7)	1 (5.6)-
	Not Indicated	12 (3.0)	-
Insurance			
	Medicare	147 (36.6)	3 (16.7)
	Medicaid	38 (9.5)	3 (16.7)
	Commercial	210 (52.2)	12 (66.7)
	Cash-Pay	7 (1.7)	-
Race			
	American Indian/ Alaska Native	1 (0.2)	-
	Asian	-	-
	Black/African American	8 (2.0)	-
	Native Hawaiian or Pac Islander	-	-
	White	278 (69.2)	11 (61.1)
	Other	108 (26.9)	7 (38.9)
	Not Indicated	7 (1.7)	-
Ethnicity			
	Hispanic/Latino	329 (81.8)	16 (88.9)
	Not Hispanic/Latino	70 (17.4)	1 (5.6)
	Not Indicated	3 (0.7)	1 (5.6)
Language Preference			
	English	328 (81.6)	11(61.1)
	Spanish	43 (10.7)	3 (16.7)
	Not Indicated	31 (7.7)	4 (22.2)
Smoking Status			
	Never	331 (82.3)	16 (88.9)
	Former	24 (6.0)	-
	Current Everyday	23 (5.7)	1 (5.6)
	Current Some day	15 (3.7)	1 (5.6)
	Not Indicated	9 (2.2)	-

Project Population: Demographics

The 402 patients with negative AUDIT scores of 0-7 were primarily male (50.5%), White (69.2%), had Hispanic/Latino origins (81.8%), preferred English (81.6%) as their language for education and communication, were between the ages of 55-64 (24.6%), had a body mass index between 30.0 and 34.9 kg/m^2 (25.6%), and had commercial insurance (52.2%). Eighty-two percent of patients with negative AUDIT scores indicated that they never smoked (Table 5). The top three patient diagnoses for both positive and negative AUDIT alcohol screens were hypertension, hyperlipidemia, and diabetes (Table 6).

Table 6

Patient Diagnosis (N= 420)

Diagnosis (ICD-10)	Negative Screen n = 402 (%)	Positive Screen n = 18 (%)
Hypertension (I10-I12)	266 (66.2%)	14 (77.8%)
Hyperlipidemia (E78.0-E78.5)	210 (52.5%)	12 (66.7%)
Diabetes (E11.0-E11.9)	144 (35.8%)	7 (38.9%)
Depression (F33.0)	71 (17.7%)	2 (11.1%)
GERD (K21.9)	44 (10.9%)	3 (26.7%)-
Liver Disease (K70-K71.9)	4 (1.0%)	1 (5.6%)

Demographics of the 18 patients with positive AUDIT scores were similar to the demographics of patients who were not positive, however statistical significance was found related to sex. There was a statistical significance between the relationship of positive alcohol misuse screenings and patient sex with males having a higher misuse of alcohol χ^2 (1, N = 420) =10.18, p = .001 (Table 7).

Table 7

Chi-square: Relationship Between Positive Screens and Patient Sex

	Value	df	Asymptotic Significance (2-sided)	Exact Sig (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.176[a]	1	.001		
Continuity Correction[b]	8.696	1	.003		
Likelihood Ratio	11.663	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	10.152	1	.001		
N of Valid Cases		420			

Note. a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.61.
b. Computed only for a 2x2 table

Discussion

The purpose of this evidence-based quality improvement project was to establish screening for alcohol misuse in a primary care clinic. The SBIRT protocol utilizing the AUDIT tool was implemented as the method used to screen all adult patients annually for alcohol misuse. The physician and staff embraced the new alcohol screening protocol and were able to successfully integrate it as part of the overall clinic process, embracing the optimal teamwork suggestion demonstrated by the research findings of Mertens et al. (2015) with the MAs performing the initial screen and the physician provided the education, brief intervention, and treatment. The implementation was very successful in this practice where alcohol misuse screenings increased from 3% to 56.4% over a 10-week period.

While alcohol screening alone is a worthwhile endeavor, it is only one part of the SBIRT protocol. This project achieved moderate success with implementing brief intervention, however

only two patients required referral to treatment. While brief intervention gave the physician an opportunity to educate and spread awareness of alcohol misuse, the physician met resistance from the two patients requiring referral to treatment. Only 50% of the patients positively identified with alcohol misuse were given brief intervention during this study, which was similar to the outcomes of Rose et al. (2008) which attained 50.5% follow-up with brief counseling and slightly under the outcomes of Madras et al. (2009) which attained 63% receiving an intervention. In this study, 27.8% of patients that screened positive for alcohol misuse did not schedule follow-up appointments and zero percent of patients that qualified for referral to treatment sought treatment with a specialist.

The project leader ensured that there was an online SBIRT training course for the primary care provider, on-site training and education to staff members, and the modification to the EMR to support SBIRT. The varied types of health insurance requirements that this practice accepted proved to complicate SBIRT implementation. There was a learning curve to workflow and modifications to insurance coding and billing for services throughout the study to establish a standardized protocol and ensure insurance reimbursement. On average, negative screens were $16 while positive screens with brief interventions ranged from $35 to $50 per session. To summarize, this project shows that private primary care providers can successfully implement an alcohol screening protocol to facilitate alcohol misuse education.

Limitations

The implementation of the SBIRT protocol was limited by time. The project implementation was limited to 10 weeks. This limited the project leader's ability to determine outcomes of the patients screened within the 10-week time period. The physician facing the complexity of each patient was also limited by time. While the physician performed the review

and education of the AUDIT screen at each visit, there was not always time for a brief intervention for positive screens. The return of the patient to the clinic for a brief intervention was not always logistically possible for patients.

There were changes in staff during the middle of project implementation that may have affected the screening and intervention process. It was essential for the project leader to educate, assist, and follow-up with the new staff members in incorporating the SBIRT protocol in the daily clinic routine.

While the AUDIT screen was available in English and Spanish, it was written at an eighth-grade reading level. Some patients with limited reading levels may not have fully comprehended the questionnaire. This discrepancy may have influenced the test results.

Recommendations

As primary care physicians have to do greater amounts of work to meet clinical measures, time becomes a valuable commodity. One recommendation would be to use a one source charting processes. This would reduce the burden of MAs from double charting, allow more patient-physician time, and allow more efficient tracking of follow-up and treatment plans.

Another recommendation is to limit the alcohol misuse screen to the annual wellness appointment. The wellness visits have a longer allotted visit time enabling alcohol misuse brief intervention in the same appointment. In addition, AUDIT tracking may be easier with annual screening.

This study's standard protocol involved patients answering a written questionnaire. For patients that may not read at an eighth-grade reading level, a recommendation following this study is that MAs be allotted additional time to help clarify questions or concerns prior to grading the screening tool. The AUDIT could also be transferred to an electronic touchscreen

device that read the survey to the patient in multiple languages, provided pictures, and enabled the patient to respond verbally or by touch.

Designating a champion can assist in contacting patients to schedule follow-up appointments for brief interventions and track referrals to treatment specialists. Having a point person in charge of alcohol misuse screening would ensure that patients receive the appropriate interventions. Another recommendation that may help with increased follow-up is allowing the patient to contact the primary provider for additional support via electronic consultations. The primary provider can encourage the patient to contact them through the secure patient portal or electronic mail for any additional questions about alcohol misuse or to schedule a follow-up appointment at the patient's convenience. Screening and brief intervention could also be performed as a telehealth service, such that the provider and patient communicate in real-time using interactive video and audio.

Lastly, increasing the project time frame may yield different outcomes. There was a limited window of time to capture results for patients with positive AUDIT scores for follow-up appointments for brief interventions and referral to treatment. Increasing the project intervention time could help to assure sustainability of SBIRT in the primary practice setting.

Implications for Practice

To increase patient awareness of alcohol misuse, healthcare providers need to be educated and well-versed on SBIRT management and AUDIT screening. Currently, alcohol misuse screening has a grade B recommendation and is not a required annual preventive core measure. Policies need to change to embrace alcohol misuse screening and require healthcare providers to screen for alcohol misuse annually.

A doctoral prepared nurse practitioner (DNP) can introduce and facilitate alcohol misuse screenings in the primary care practice. NPs can effectively deliver SBIRT management using the AUDIT tool in the primary care setting since it aligns with the standards of practice of nursing including assessment, diagnosis, outcomes, planning, implementation, and evaluation (Finnell, 2012). With a doctoral prepared background, DNPs can research updated evidence-based protocols, assess and understand the microsystem of the clinic, implement, and evaluate the outcomes of this primary practice preventive evidence-based protocol.

The implementation of SBIRT contributes to helping patients link alcohol misuse to acute and chronic health issues and can lead to positive patient outcomes. Seven months post project intervention, the clinic has increased alcohol misuse screenings to 93%. The clinic has also received financial compensation through insurance reimbursements for the cost of providing the screening and intervention process.

Conclusion

Alcohol misuse screening using SBIRT management and the AUDIT tool are feasible protocols to use in the primary care setting. Primary care providers can incorporate the recommended alcohol misuse screening into a patient's routine office visit exam. The challenge is not implementing the actual screen itself, but rather ensuring that there are follow-up protocols for patients that need brief interventions and treatment referrals. The project implementation used an optimal protocol for alcohol misuse screening, having MAs screen and assist patients to complete the tool, followed by the primary care provider reviewing results and treating as necessary. Primary care providers can break down the barriers and stigma behind alcohol misuse so that patients are well-informed, educated, and provided with supportive resources to achieve low risk drinking habits using brief intervention and treatment referrals. In addition, financial

compensation is available through insurance reimbursement for implementing alcohol misuse screening and/or brief interventions. Primary care providers can provide education and help patients understand the connection between acute and chronic disease related to alcohol misuse.

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