

DNP PROJECT PROPOSAL

SMOKING CESSATION IN PRIMARY CARE: A PRACTICE IMPROVEMENT
PROJECT

BY

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Abstract

The purpose of this project is to improve provider utilization of the 5As model for smoking cessation (asking, advising, assessing, assisting and arranging for follow up) for patients who smoke with every patient encounter and to increase smoking cessation rates in a primary care practice located in a northern suburb of Chicago. The patient population of this practice is birth through elderly. There are three providers in this practice; one family physician and two nurse practitioners. The project leader, one of the nurse practitioners in the practice, will meet with the providers prior to the start of the project to discuss current barriers to providing smoking cessation counseling in the setting and potential ways to reduce the barriers. A power point educational presentation on the 5As model and smoking cessation will be emailed to each of the providers. A descriptive study design will be utilized to evaluate the effectiveness of the intervention of electronic medical record (EMR) implementation for smoking cessation counseling using the 5As model. A pre and post-intervention chart audit will be performed to determine if the EMR modification and addition of the 5As model has been effective in improving provider utilization of the 5As model and improving patient smoking cessation rates or statement of intent to quit.

Introduction

Background Knowledge

According to the World Health Organization (WHO), 1.3 billion people currently smoke cigarettes worldwide, with tobacco-related illness deaths occurring every six seconds (World Health Organization, 2011). The Center for Disease Control (CDC) estimates 46 million people in the United States smoke cigarettes and approximately 443,000 deaths per year among adults in the United States are related to cigarette use and secondhand smoke exposure, with smoking-related medical costs reaching more than \$193 billion each year (CDC, 2012). According to the American Heart Association (AHA) (2009), in the year 2006, smoking prevalence was 20.8 % of the U.S. population. Cigarette smoking is more prevalent among men (23.5 percent) than women (18.1 percent) (AHA, 2009). The CDC estimates five million persons under the age of 18 years old will experience premature deaths from a smoking related disease unless tobacco use declines (CDC, 2012a).

According to the U.S. Department of Health and Human Services, Environmental Protection Agency, the benefits of smoking cessation are many. They include risk reduction for major diseases including lung, laryngeal, esophageal, oral, pancreatic, bladder and cervical cancers. People who quit can increase their life expectancy by up to a decade. Health care providers can help patients quit by documenting their tobacco use, advising smokers to quit smoking, and providing evidence-based treatments or referrals (Silfen et al., 2014).

Guidelines recommend that every patient encounter include a smoking status evaluation followed by the opportunity to receive smoking cessation counseling and

intervention. Often smoking cessation counseling may be provided based on patient demographics including age, insurance and economic status. Many times smoking cessation counseling is not provided at all. In a one-year timeframe, only half of the patients who smoke are advised to quit and smoking cessation counseling is performed at less than 25 percent of the patient clinical encounters (Lucan & Katz, 2006). Assessing tobacco use is an important wellness intervention; unfortunately, it is not always performed during primary care visits. This is a lost opportunity to reinforce tobacco cessation, assess the readiness to quit, and provide the appropriate intervention needed.

Statement of the Problem

Smoking is one of the leading preventable causes of morbidity and mortality in the United States. Smoking cessation involves motivating people to quit and helping them to stop once they decide to try. More than 70 percent of current smokers have expressed a desire to quit (Fiore et al., 2009). Incorporating smoking cessation strategies, education and interventions should be important functions of a primary care medical practice. Patients who are advised to stop smoking by their physicians are 1.6 times more likely to stop smoking compared to those patients not receiving smoking cessation advice (Caplin, Stout, & Blumenthal, 2011). Unfortunately, smoking status is often not assessed at every patient encounter, therefore patient education and interventions for smoking cessation are not implemented. The literature suggests that there is an inconsistency in providers assessing smoking status and implementing recommended interventions during routine patient encounters based on guidelines. This inconsistency may be related to provider barriers, including time constraints, the impression the patient is not willing to

quit, self-confidence in providing smoking cessation interventions, concern over the potential strain on patient-provider relationships, and staffing issues.

There are gaps in the literature regarding barriers to providing smoking cessation services by physicians and other health care providers. The majority of the medical literature expresses quantitative methods when qualitative research to help answer “how” and “why” of physician attitudes, behaviors, perception and culture would be helpful (Blumenthal, 2007). Studies suggest general practitioners may need a greater range of skills for counseling the non-motivated smoker (Coleman, Cheater, & Murphy, 2004). The literature supports evidence that brief interventions during patient encounters can increase smoking cessation attempts (Carson et al., 2012). Therefore, it is important to identify why this is not consistently being performed.

Identification and reduction of provider perceived barriers is important in order to make necessary changes to improve guideline compliance regarding smoking cessation counseling and treatment. By identifying barriers, attempts can be made to reduce these perceived barriers and modifications can be made to existing programs. Improved guideline compliance offers the opportunity to improve smoking cessation rates and patient outcomes.

Literature Review

The study by Caplin et al. (2011) explored the barriers to providing smoking cessation services among African-American physicians in private practice and providers at community health centers. The Morehouse School of Medicine Tobacco Control Research Program was used to develop best practices for implementation of the U.S. Public Health Service’s “2000 Public Health Services Clinical Practice Guidelines on

Treating Tobacco Use and Dependence” and the Centers for Disease Control and Prevention’s “Pathways to Freedom” smoking cessation programs. Ten focus groups were used and 82 healthcare professionals participated in the study. The outcomes identified six themes as barriers to smoking cessation services: lack of time, patient lack of readiness to change, inadequate resources available, language and cultural barriers, patient non-compliance, and inadequate smoking cessation clinical skills at the provider level.

The study by Holtrop, Malouin, Weismantel and Wadland (2008) investigated physicians’ perceptions of barriers to referring patients to a quitline for smoking cessation, and using the 5As model. The authors found that clinicians reported multiple barriers to smoking cessation intervention at the primary care level. Barriers included lack of reimbursement, the amount of time it takes and other demands on the provider. The study participants made recommendations to address the identified barriers, which included having one central referral source to eliminate the barrier of matching insurance status with the program, utilizing a referral coordinator, and being able to bill for tobacco counseling with a billable code. According to the authors, research suggests that clinicians may address tobacco with patients more frequently if they are reimbursed for the counseling portion of the visit.

The study by McEwen et al. (2006) assessed the smoking cessation advice of general physicians. The study revealed physicians were concerned about the patient-doctor relationship. Physicians were concerned about the potential for straining this relationship or receiving a negative response from the patient upon providing advice.

This was a predictor of advice giving. The authors stated that this concern may deter physicians from providing smoking cessation interventions during patient encounters.

The study by Meredith et al. (2005) evaluated the consistency of primary care providers' attitudes toward smoking cessation counseling and smoking cessation behaviors. The study participants were 280 primary care providers who completed a survey at 12 months post-implementation of a smoking cessation quality improvement program. Their patients completed a post-implementation survey at 12 months (n=1080) and 18 months (n=924). The results of this study indicated that the primary care providers' positive attitudes were correlated with higher rates of counseling, referral and program attendance. The results also indicated that more favorable attitudes were associated with patient-reported smoking cessation behaviors at 12 and 18 months. The authors concluded that providers who endorse smoking cessation counseling and referral may provide more treatment recommendations and have higher smoking cessation rates among their patients.

The cross-sectional study performed by Lucan and Katz (2006) evaluated 10,582 smokers ages 18 years or older who reported one or more clinical encounters for the prior year. The results of their study indicated that almost 55 percent were advised to stop smoking. Subjects with increased age were associated with the increased likelihood of receiving smoking cessation advice (OR=1.33, CI 1.10-1.61). Patients who were seen by physicians had a greater chance of being given smoking cessation advice than those seen by dentists. Overall, there was a 4 to 23 percent chance of receiving smoking cessation advice at non-dental clinic encounters and there was no significant increase associated with the number of visits. The authors concluded that patient smoking cessation advice

may be provided selectively based on patient age, education, medical history, and health insurance status, or may not be provided at all. The counseling that was provided occurred in less than a quarter of clinical encounters.

Turker et al. (2014) stated that family physicians were the cornerstone for smoking control. Their study was a cross-sectional and multi-centered study of 1,500 family practice physicians who were randomly selected out of a group of 23,000 family physicians nationwide. They assessed the physician's knowledge, attitudes and status of post-graduate training and their practice regarding tobacco control. The authors concluded that post-graduate training on tobacco control did improve physician self-confidence and competency. They suggested that a continuing training program should be introduced to family physicians for smoking cessation practice.

According to Mannino (2009), most adult smokers are familiar with the risks of smoking and there are a variety of contributing factors that are involved with the inability or unwillingness to stop smoking. These factors include the belief that the benefits outweigh the risks, as well as physiological, psychological, and behavioral factors. Smoking cessation strategies and interventions must consider all of these. Smoking cessation can reduce mortality and morbidity from smoking-related diseases. Tobacco dependence is a chronic condition that often requires repeated attempts and multiple interventions to accomplish cessation.

The study by Gorecka et al. (2003) looked at how the diagnosis of airflow limitation combined with advice to stop smoking in middle-aged smokers influenced the smoking cessation rate. Their study was a prospective comparative study of the effects of smoking intervention in smokers with diagnosed airway limitation and in smokers with

normal lung function. The sample consisted of 659 smokers. The results of the study indicated that all smokers, irrespective of their lung function, tried to modify smoking as a result of the screening and smoking cessation advice.

The study by Kennedy et al. (2004) was a prospective one-group pretest and post test with an intervention to assess smoking cessation. They studied 252 veterans at the Veterans Administration Medical Center. Among the 252 patients, 120 did not quit, and 32 (24 percent) achieved long-term smoking cessation, which was determined to be a one year cessation. Based on study outcomes, the authors concluded that a combination of counseling, pharmacotherapy and office spirometry can be beneficial in smoking cessation.

The use of a tailored electronic medical record (EMR) system can assist with a smoking cessation program. Electronic records can be helpful to prompt providers to screen for and document tobacco use and can prompt providers to intervene and facilitate referrals to smoking cessation resources. Electronic records can also be helpful to provide feedback on tobacco screening and intervention performance. This can be used to track progress and identify areas of needed improvement. Electronic records also are helpful in evaluating quit rates, patient visits and patient outcomes. The use of electronic systems may increase provider screenings and interventions for smoking cessation (Silfen et al., 2014). Developing a practice-based program with a tailored EMR for smoking cessation may improve utilization of clinical guidelines to help improve smoking cessation outcomes. The literature review done by Boyle, Solberg, & Fiore (2010) suggested that adding the patient tobacco use status as a vital sign resulted in an increase in clinical guideline use and overall documentation of smoking status.

Electronic medical records systems can be beneficial in the integration of evidence-based clinical guidelines for many services including preventive services and health screenings. This use of EMR can provide reminders during routine visits to assess smoking status; and to provide education and interventions based on clinical guidelines. This also provides an opportunity to implement the 5As model during every patient encounter.

Local Problem

According to the CDC (2013) Behavioral Risk Factor Surveillance System (BRFSS) report, 20.9 percent of the adult population in the state of Illinois reported as being current cigarette smokers in the year 2011. The Behavioral Risk Factor Surveillance System is a state- based health survey that collects information on behaviors related to health risks, preventive health practices and health care access. It is a cross-sectional telephone survey conducted by individual state health departments with assistance provided by the CDC. In the 2011 report, the smoking population in Illinois included 19.8 percent Whites, 27.1 percent African American, 23.5 percent Hispanic, and 5.4 percent Asian. Of the smoking population for cigarettes, 17.8% were females and 24.2% were males. The educational levels included 31.8 percent with less than a high school degree, 28.7 percent with a high school degree, and 15.2 percent with higher than a high school degree. The ages of cigarettes smokers included those 18-24 year old, 25.2 percent; 25-44 years old, 24.1 percent; 45-64 years old, 22.6 percent; 65 and older, 7.6 percent.

Illinois conducts risk factor surveillance at the county level. In Lake County, Ill., where the project clinic is located, the Illinois Department of Public Health (2013)

reported 14.3 percent of adults were current smokers between the years of 2007 to 2009. On June 30, 2012, the state of Illinois instituted a smoke-free law, which prohibits indoor smoking in the workplace, restaurants and bars (CDC, 2012). The state permitted communities to also enact local smoke-free laws. In the 2009-2010 National Adult Tobacco Survey, Illinois was ranked 14th among the states' smoking cessation attempts during 2009-2010 with 57.8 percent of smokers making a quit-smoking attempt in the past year (CDC, 2012a & CDC, 2012b).

The CDC (2014) *Best Practices* recommends an average quarterly exposure of 1,200 general guidance gross rating points (GRPs) for an effective anti-tobacco media campaign. The GRP can measure how the population is seeing the advertising of the ad campaign. The GRP measurement is important also to measure the reception of the ad message. The CDC reports that Illinois had an average of 0.0 general audience GRPs per quarter in television anti-tobacco media advertising in the year 2010. This would indicate a poor anti-smoking campaign through media exposure.

This project will be addressed at the Associated Physicians of Libertyville. This is a family practice clinic located in Libertyville, Ill. Libertyville is a northern suburb of Chicago. According to the U.S. Census Bureau (2010), Libertyville's population is approximately 20,315. Median home value in Libertyville is \$395,000. The majority of the populations, 95.3 percent are high school graduates, and 60.2 percent are college graduates. The average household income is \$135,584 (Libertyville.com, 2015).

The clinic has three providers: one family practice physician, one adult nurse practitioner and one family nurse practitioner. The physician is on staff at two local hospitals. The nurse practitioners are part-time employees. The patient base age range is

birth through elderly. The philosophy of the practice is that no patient is turned away for a same day appointment regardless how full or overbooked the provider's schedule is. The average number of patients seen per day is 25-35 for the physician and 20-25 for the nurse practitioners. Patients are scheduled every 15 minutes for the physician and often are double-booked within the same 15-minute appointment time frame. Patients for the nurse practitioners are scheduled every 20 minutes. Annual physical appointments are scheduled as 25 to 30 minute appointments for all providers. The nurse practitioners staff a morning walk-in clinic from 8 to 10 a.m. during which no appointment is necessary. This can easily add 10 to 20 patients onto the schedule for the morning. While the providers all agree that patients need to quit smoking and the 5As model is important to clinical practice, the effort for assessing smoking status and providing smoking cessation education is inconsistent and less than optimal. Currently, there is no smoking cessation protocol or dedicated electronic medical record (EMR) component for patient assessment and outcomes related to smoking status.

This clinic utilizes Exmedic software EMR. All patient rooms are equipped with iPads and iMac computers with the Exmedic EMR software system. The EMR system was implemented three years ago and is still being modified. This presents an excellent opportunity for system modification to include smoking status on the vital screen and the opportunity to create a template based on guidelines utilizing the 5As model for smoking cessation. Currently, the smoking history is listed in a narrative under the past medical history in the EMR system. Smoking status is not being assessed with each patient visit in the clinic. Lack of time, lack of reminders or EMR prompts, and lack of reimbursement for the time spent with an already over-booked schedule are all contributing factors to

this clinic for the inconsistency in screening tobacco use status. In addition, there is no smoking cessation protocol once the smoking status is identified.

The certified medical assistants are also inconsistent in updating the past medical history and smoking status in the EMR. It will be important in any smoking cessation improvement efforts to include staff in training as they will be instrumental in assisting with the EMR modification and utilization of the iPads and iMacs for implementing patient smoking cessation education.

Quality Management Guidelines for Practice

The Accountable Care Organization Program Analysis Final Report (2012) lists quality performance standards specifications that include smoking cessation. The Narrative Measure Specifications Preventative Care Domain NQF 0028 Measure for Preventive Care and Screening regarding tobacco use states there is good evidence that tobacco screening and brief cessation intervention in the primary care setting is successful in helping smokers to quit smoking. Smokers who are able to stop smoking reduce their risk for cardiovascular disease, cerebrovascular disease and lung disease.

The Agency for Healthcare Research and Quality (AHRQ) quality measure summary (NQMC-4462) states there is good evidence that tobacco screening and brief cessation intervention inclusive of counseling and medications in the primary care setting is successful in smoking cessation (AHRQ, 2003). The U.S. Prevention Services Task Force (USPSTF) recommends all adults are screened for tobacco use and intervention provided for users (USPSTF, 2003). Evidence indicates that physician advice to quit smoking increases abstinence rates and that minimal interventions of less than three

minutes can increase overall abstinence rates (U.S. Department of Health & Human Services, 2008).

The 2008 update to the U.S. Public Health Service (PHS) *Clinical Practice Guideline: Treating Tobacco Use and Dependence* recommends that providers consistently identify and document tobacco use status and treat every user seen in the health care setting using the 5As model (Jamal, Dube, Malarcher, Shaw, & Engstrom, 2012). The use of the 5As for treating tobacco dependence includes asking, advising, assessing, assisting and arranging for follow up (Fiore et al., 2009). USPSTF recommends providers screen all adults for tobacco use and provide tobacco cessation interventions for those using tobacco products. This is a Strength of Evidence level A recommendation. Strategies include implementation of a tobacco user identification system; promotion of provider intervention through resources, education and feedback; identifying and dedicating staff members to provide the treatment; and assessing staff performance in the delivery of treatment (USPSTF, 2009).

The 5As Model for Facilitating Smoking Cessation includes asking about tobacco use at every office visit, advising all smokers to quit, assessing the patient's willingness to quit, assisting the patient in his or her attempt to quit, and arranging follow up contact. All patients should have their tobacco status documented with each visit. Evidence has shown clinical screening such as expanding the vital signs to include tobacco use or other reminder systems, significantly increases rates of clinical intervention. This is a Strength of Evidence Level A (U.S. Department of Health & Human Services-Public Health Service, 2008). The Healthy People 2020 tobacco use objectives include implementation

of policies to reduce tobacco use among youth and adults. The smoking prevalence target for Healthy People 2020 is 12.0 percent (IDPH 2013).

Quality management in health care services includes compliance monitoring. This requires putting in place processes to review and audit the care that is being delivered to ensure patients are receiving optimal care. The National Institute for Health and Care Excellence (NICE) (2013) recommends discussing the benefits of smoking cessation with brief advice at every patient opportunity in primary and secondary care. Areas of weakness are identified and modifications are made. Quality management for smoking cessation includes chart audits to evaluate if providers are assessing smoking status, smoking cessation readiness, providing brief smoking cessation education and prescribing medications for smoking cessation as necessary based on recommendations.

Intended Improvement

The intended improvement of this project is to identify barriers in practice to assessing smoking status at each patient encounter and to use this information to develop a practice protocol utilizing the 5As model, which will be integrated into the current EMR system for the clinic. The literature supports that a strategy of including smoking status in the vital sign documentation improves risk identification and documentation while providing a prompt for the provider that can markedly increase the rate of provider intervention (Abrams et al., 2003). Provider outcomes expected from this intervention include improved compliance with assessing smoking status at every patient encounter utilizing the 5As model along with patient specific education provided on smoking cessation. Patient outcomes from this planned intervention include improved smoking cessation rates for the patient population in the clinic. Observations that led to this

planned intervention include the prevalence of smoking in this patient population, provider inconsistency in assessing smoking status in this clinic, and the lack of a protocol for a smoking cessation program. Factors associated with the timing of this intervention include the need to identify provider barriers to addressing smoking cessation and providing education, the need to address staffing issues and skill level, the clinic's ongoing EMR modification, and consultant availability for software changes, modifications and implementation. It will take teamwork to implement this change and will involve active participation from clinic providers, medical assistants, the clinic information technology (IT) staff member, and the software designer.

Project Outcome Objectives

1. 100% of health care providers will report reduced barriers to tobacco use screening and counseling following implementation of an evidence based protocol and EMR program.
2. Health care providers will increase tobacco use screening and counseling 25 percent from baseline in three months following implementation of an evidence-based protocol and EMR program.
3. In the three months following implementation of the evidence-based protocol and EMR program, smoking cessation or statement of intention to quit in patients receiving counseling will increase 25 percent from baseline.

Project Questions

1. Does implementation of an evidenced-based protocol and EMR program using the 5As model facilitate provider assessment of smoking status, smoking cessation education and interventions at every patient encounter?

2. Does implementation of an evidence-based protocol and EMR program using the 5As model increase patient smoking cessation or statement of intention to quit?

Conceptual Model

Overview

The 5As model of behavior change counseling is an evidence-based model that has been used in a wide range of different behaviors and health conditions, but used most extensively in smoking cessation (Glasgow, Emont, & Miller, 2006). It is an interventional tool consisting of a few brief questions about tobacco use and smoking cessation behaviors. This model can be used to assist busy practitioners in the ability to summarize smoking cessation effects and this intervention can be delivered in one minute or less if necessary due to time constraints (Litt, 2005). The 5As model is used in clinical practice to assess patients on their health behaviors and risk factors. It has been utilized in high-quality controlled clinical trials related to smoking cessation (Dosh, Holtrop, Torres, Arnold, Baumann, & White, 2005). It has been validated in literature (Jay et al., 2008). The model was developed based on the U.S. Public Health Service Clinical Practice Guideline (Fiore, Jaen, & Baker, 2008).

Research indicates that clinical settings utilizing a fully implemented 5As model experience better results than those with partial or inconsistent use of the model (Fiore et al., 2008). Brief interventions of one to three minutes using the model have proved effective in facilitating smoking cessation (Fiore et al., 2000). The 5As model has often been used in conjunction with the Transtheoretical Model of Change when assessing

readiness for weight loss and smoking cessation efforts. It has also been used with the Fagerstrom Test for Nicotine Dependence in smoking cessation.

The 5As model entails *ask, advise, assess, assist* and *arrange*. Based on patient response to questions using the model, the provider can formulate patient-centered counseling and treatment. The *asking* intervention consists of identifying and documenting tobacco use status for every patient at every visit. This intervention is the most fundamental but is the most commonly omitted. Asking the patient about their smoking status demonstrates and confirms smoking as a valid concern. Asking the patient about their smoking status helps determine their smoking history and factors contributing to their continued smoking choice. This facilitates an awareness of the patient's addiction and helps identify strategies for intervention (Scanlon, 2006).

The *advise* intervention consists of advising the patient in a clear, strong manner while taking into consideration the patient's individual assessment based on information available about the smoker (Abrams et al., 2003). Personalized advice should include the effects of smoking on the patient and their family as well as the benefits of smoking cessation (Scanlon, 2006).

The *assessing* intervention consists of assessing how ready the patient currently is to make a change and quit smoking. During this intervention a readiness ruler, Stages of Change, and Fagerstrom Test for Nicotine Dependence are often used to assess the patient status and readiness to change. The Stages of Change is helpful in identifying the patient's point of transition during a life-changing event (pre-contemplation, contemplation, planning, action and maintenance). It is also helpful in determining personalized interventions. The Fagerstrom Test for Nicotine Dependence provides

helpful information about addiction level. It is considered the benchmark to assess nicotine dependence. It is helpful to assess how and when the person smokes. A higher patient score correlates with higher nicotine dependence (Scanlon, 2006).

The *assisting* intervention consists of collaboratively developing an action plan and helping the willing patient to quit smoking. This intervention includes pharmacological, non-pharmacological assistance, and educational materials to aid with smoking cessation. Available resources from local, state and federal governments, including QUIT organizations can be used. For the unwilling patient, interventions should be designed to increase future quit attempts (Scanlon, 2006).

The *arrange* intervention includes scheduling follow-up for the patient willing to make a quit attempt, preferably within the first week after the determined quit date. The patient may need assistance with follow up appointments for community or support groups. For the patient that is unwilling to make a quit attempt, tobacco dependence should be addressed and willingness to quit at the next patient encounter should occur (Lawson et al., 2009; Fiore et al., 2000).

Review of the Literature

The 5As model has been documented and used in different clinical environments. It has been utilized in the counseling management of weight loss and is an evidence-based behavioral intervention strategy (Vallis, Piccinini-Vallis, Sharma, & Freedhoff, 2013). Jay, Gillespie, Schlair, Sherman, and Kalet (2010) concluded that physician counseling using the 5As model was associated with motivation to lose weight. Rueda-Clausen et al. (2013) concluded that implementation of the 5As model for obesity management in primary care can be accomplished in a short time period and is well

accepted by providers. Their study revealed an increase in the number of interactions about weight management during clinic visits when the 5 As model was used. The authors stated that often primary care providers do not initiate conversations about weight management with patients due to poor training, lack of competency in obesity management, lack of time, economical disincentives and negative attitudes towards obesity. Their conclusions were that using the 5As model for obesity management facilitated weight management and promoted physician-patient communications, medical assessments related to obesity and follow up care.

The purpose of the article by Glasgow et al. (2006) was to discuss methods of assessment of clinician utilization of the 5As model from a research and quality improvement perspective. The authors looked at the strengths and limitations of present approaches to assessing whether or not the 5As were being used by clinicians. The authors described four primary sources of information used to assess the delivery of the 5As model which included: direct observation of the patient-clinician interaction, medical records, clinician reports, and patient reports. An electronic search utilizing PubMed was used to identify potential instruments that have been used to assess the 5As implementation. The authors found that while labor intensive, medical records review provided one of the most important measures of the clinicians' delivery of the 5As. With the electronic systems, clinician based prompts and feedback can be integrated.

The study by Puschel et al. (2008) compared the effect of an intervention based on the 5As model used in women smokers in Chile. The study compared the effect of a brief counseling intervention delivered by primary care providers to women smokers in the intervention clinic (Clinic A) located in La Pintana, Santiago to one control clinic

(Clinic B) also located in La Pintana and the other control clinic (Clinic C) located in Puente Alto, Santiago. The sample included 773 women patients ages 15 through 45. The smoking cessation intervention was based on the 5As model. The process included the providers following a five-step process including: asking every patient about tobacco use, advising the smokers to quit, assessing the smokers' willingness to quit, assisting smokers with treatment and referrals, and arranging follow up.

All women who presented to the clinic for care were asked about their smoking status. Brief advice was given to the smoking women of childbearing age when their vital signs were assessed. The stage of change for smoking cessation was assessed and registered. Based on the information obtained, patients that were willing to quit were provided with information and were assisted with follow up. Upon the end of the study, 15.2 percent (n=31) of the women reported smoking cessation for at least one month in the intervention clinic compared to the control clinics (n=15 for Clinic B and n=29 for Clinic C; $p<0.05$). Greater than 70 percent of the women in the intervention clinic were asked, assessed, and received advice based on the 5As model. The authors concluded that the 5As model for smoking cessation is a feasible intervention that can have significant effects in reducing smoking prevalence based on this study for this population.

The study by Quinn et al. (2009) assessed the effectiveness of tobacco treatments in Health Maintenance Organizations (HMO). The goal was to examine the relationships between tobacco use control policies and the way smoking cessation services were delivered to smokers, and to examine the effectiveness of the 5As model in a primary care practice. The authors stated that little is known about the model's effectiveness outside the research setting. The results of the study indicated that clinician compliance

with the 5As model varied among the nine large HMOs. The majority of smokers was offered *advice*, but *assist* treatments were lacking. The authors stated that lack of progress in tobacco control is attributable to the failure to implement proven strategies. The results of the study further confirm the need for clinicians to intervene more than providing simple advice.

The purpose of the study by Persai, Panda, Venkatesan, Arora, and Ahluwalia (2014) was to explore the relationship between patient satisfaction and counseling services using the 5As model for tobacco cessation and the impact of counseling service satisfaction on the patients' plans to quit smoking. Two cross-sectional surveys were given to physicians and patients in primary care health settings in twelve districts of two states in India, using a random sample. The analysis was limited to those patients that were asked about tobacco use. Patients that were *advised* to quit, *assessed* for readiness to quit, and offered *assistance* to stop smoking were more satisfied with the counseling services. Those that were satisfied were also five times more likely to intend to quit smoking and four times likely to recommend counseling services for smokers.

Williams et al. (2014) collected patient data using medical records from six health systems. Medical records of 200 current smokers in each of the six selected health systems were randomly selected. The results indicated the proportion of smokers receiving smoking cessation advice, assessment of readiness to quit, and assistance with quitting varied across the six health systems. The range for advice was from 29 percent to 91 percent, the range for assessing was from 13 percent to 76 percent and assisting was from 18 percent to 79 percent. The authors stated their study supported prior research in that advise occurred most frequently, and assist and arrange occurred less often.

Identified barriers to implementing the 5As included limited administrative support, issues with case management, provider and patient situational differences, lack of resources for smoking cessation efforts and provider time constraints.

Assessment of clinician utilization of the 5As model has been limited to self-reporting and medical records review. Lawson, Flocke, and Casucci (2009) created an instrument to assess the rate at which the 5As were accomplished. They developed the 5As Direct Observation Coding scheme (5A-DOC) based on published 5As guidelines which was refined using observed patient-clinician interactions. The sample included 46 audio recorded visits between smokers and their physicians. The researchers applied the 5A-DOC to a sample of 131 physician visits over a three year period. The results indicated that when smoking status was *asked*, 61 percent *assessed* readiness to quit, 50 percent completed the *assist*, and 73 percent failed to complete the 5As adequately. The authors concluded that the 5A-DOC could be applicable to audio or transcript data to reliably assess which of the 5As have been done. They suggested clinician training should include the ability and timing of the *assessing* intervention in conjunction with the patients' reported readiness.

Application to Project

The 5As model will be used as a framework for the development of a smoking cessation practice improvement project in the Libertyville primary care clinic. It will be used as a guide for clinical assessment and interventions between providers and smoking patients. The 5As will provide a framework in the current EMR program to prompt providers to *ask*, *assess*, *advise*, *assist*, and *arrange* follow up for smoking cessation. Medical chart prompts are one of the most important measures of the clinicians' delivery

of the 5As (Glasgow et al., 2006). By utilizing the 5As model with every patient encounter, greater provider compliance and patient outcomes are expected.

In the current EMR, the vital sign screen is a pop up screen. Smoking status will be added to the vital screen. Adding smoking status into the EMR program vital screen will prompt the provider to *ask* every patient at every encounter their smoking status. This can be further expanded in the EMR program to prompt additional screens with data specific to the remaining 4As, *assess, advise, assist* and *arrange*.

The clinic has iPads in every patient room. The QuitMedKit for treating tobacco dependence is a free application that can be down loaded to each iPad. It is based on the U.S. Public Health Service Clinical Practice Guideline (Fiore et al., 2008). It has the 5As model with appropriate questions for each of the five interventions. This could be a very helpful reference tool for the provider. This program offers counseling recommendations for identifying relapse situations, coping skills and smoking facts. It has a reference screen listing commonly used medications in smoking cessation with dosage, side effects, and availability. It also lists additional smoking resources including Smokefree.gov, American Cancer Society, American Lung Association, CDC, Nicotine Anonymous, and Quitnet.

Utilization of the EMR will provide the opportunity for an individualized smoking cessation strategy following the 5As model at every patient encounter. Implementation of this evidence-based protocol within the EMR program will provide the opportunity for increasing tobacco use screening, intervention and counseling to meet desired outcomes and increased intention to quit as well as smoking cessation outcomes.

Strengths and Weaknesses

Strengths of using the 5As model include that it is a recognized U.S. Clinical Practice Guideline which provides an evidence-based framework. This model has been most commonly used in smoking cessation which makes it an excellent framework for this project. It is well published in the literature. It is nationally recommended and is easily coded in the EMR (Dolin et al., 2006). Adaptability is also a strength of this model. The adaptability makes this framework reasonable to work with and effective. Since time constraints are a concern in the Libertyville practice, another strength of this model is that it can be completed in a short time frame. It is easily implemented into EMR systems to increase documentation and prompt providers.

Weaknesses of using the model include the limited ability to evaluate its implementation and utilization in clinical practice. There is no standardized or widely used tool for assessment of utilization of the 5As model (Lawson et al., 2009). However, with utilization of the EMR system, chart audits are a way to evaluate model implementation, provider compliance, and patient outcomes. Using patient records to assess performance can guide future smoking cessation initiatives (Williams et al., 2014).

Project Design

Setting

The setting for this practice improvement project is a family practice clinic located in Libertyville, Illinois. This practice location is a private practice which employs one family nurse practitioner, one adult nurse practitioner and one family practice physician. The practice has two front office employees, one information technology employee, and five certified medical assistants (CMA).

The patient population includes birth through elderly. The majority of patients are over the age of 25. The practice is approximately 20 percent Medicare patients, 80 percent personal insurance coverage with a minimal number of self-pay patients secondary to insurance coverage discontinuation. The clinic services between 45 and 50 patients daily with close to 13,000 patient visits per year. Hours of operation are Mondays, Wednesdays, and Fridays 8 a.m. until 5 p.m., Tuesdays and Thursdays 8 a.m. until 6 p.m., and Saturdays 8 a.m. until noon. Walk-in hours are daily from 8 a.m. until 10 a.m. No appointment is necessary for walk-in and often a provider may see an additional 10 to 15 patients during that walk-in time frame. The CMAs also draw blood and patients can walk in for their lab work and PT/INR between the hours of 8 a.m. and 10 a.m. An average morning will have between 10 and 15 patients for lab related services. Provider appointments are scheduled every 15 to 20 minutes depending on patient acuity level. Annual physicals are scheduled every 30 minutes and often times the provider's schedule is double booked.

There are two front office employees. One employee is at the check-in computer for patient registration, another is at the check-out station. The information technology (IT) employee also works in the front office at another computer station. Once the patient is checked in, the appointment screen for the provider shows an asterisk by the patient's name indicating check-in is complete. Total wait time is recorded next to the patient's name. A CMA escorts the patient back into a room, obtains vitals and updates the patient's EMR.

The Libertyville clinic has eight patient rooms. Rooms are equipped with both an iMac and iPad with Exmedic EMR. Each provider has four examination rooms in which

they may see patients. The office provides many ancillary services including wellness screenings, spirometry, audiometric testing, and dexascan screening. The office has radiology equipment but is currently not utilizing due to lack of staff that can operate the equipment.

There are a number of strengths in this practice that are likely to positively influence the process and outcomes of this project. This practice has a comprehensive EMR system that is user friendly and allows for modification. The software designer is easily accessible for questions and modifications. Each patient room has an iMac computer and iPad. Wireless internet service is connected to each computer which enables providers to readily access educational materials and multiple resources. Another strength is the IT employee. He works Monday through Saturday and is readily available for any technological issues that need resolved. He is very competent and skilled in his position.

The skill level of the CMAs also is strength. The CMAs are skilled in their field and are competent in using the technology in the office. They are trained to check the patient in the room and obtain vital signs on each patient. Their job duties also include updating the chart, active medications, allergies and entering the reason for the patient's visit.

The morale and work environment are strengths to project implementation. The practice strives to provide outstanding care and service to its patients. In the past, the practice owner and providers have been committed to improving practice protocols when weaknesses have been identified. The staff including the providers is open to change and eager for clinic improvements. Teamwork is an important aspect of implementation.

During past office modifications, the staff has been easily trained and helpful during transitional times. Turnover is low and employees are committed to the practice and the patients. This is an internal strength of this practice that will be very beneficial in the implementation of this project. Implementation will require teamwork of the providers, CMAs and IT employee.

There are no relevant budget issues. The EMR system is currently in operation. There are no additional costs associated with making program modifications. Some of the modifications to the EMR system may be entered by the providers upon approval by the physician owner. A potential conflict of interest is that this project will be implemented at the project leader's place of employment. However, this will be minimized since the project leader will be implementing the project during non-working hours. There is potential for bias in the response of the providers reporting their personal practice habits of *asking, advising, assessing, assisting* and *arranging* follow up for smokers at every patient encounter.

There are a few weaknesses or challenges that will need to be addressed when implementing the project in this particular setting. The method for monitoring the compliance of the 5As interventions may be time intensive. Chart audits of the EMR will provide data to evaluate if smoking status is asked with every patient at every patient encounter and if the remaining 4As which include *advise, assess, assist* and *arrange* are completed. This will require manual auditing which will be time consuming considering the volume of patients seen per day. However, since data collection will be limited to noting if the 5As were used and if the patient quit or expressed intention to quit smoking at the visit this process should be manageable. The scheduling of the office with patients

booked every 15 to 20 minutes and often double booked presents a challenge in this setting. The providers are very busy and may not consistently complete interventions which cannot be accomplished in under 10 minutes. The software designer will be involved in creating prompts for each of the interventions that are easily accomplished in a reasonable amount of time, totaling not greater than five to ten minutes for each twenty minute appointment. Other strategies to manage weaknesses/challenges include facilitating effective open communication with all members involved in this practice improvement project and making modifications as needed in the EMR system based on outcomes and staff feedback.

Population

The participants that will be recruited for this project include one part-time family nurse practitioner and one family physician. The inclusion criterion is being a provider working at the Libertyville family clinic who is responsible for evaluating, diagnosing and treating patients. However, all staff will be informed of the EMR modification. The CMAs will be instructed regarding the smoking status addition on the vital screen and will complete when rooming the patient and entering the vitals. Because the project leader is a provider at the clinic she will also participate in implementing the change in practice with patients she sees.

The two providers will be recruited by a brief individual meeting and verbally asking them if they will be willing to participate in this practice improvement project. The physician is the owner of the practice so his approval will be obtained first. The strength of this sampling method is convenience and accessibility. There is only one office and working relationships are close with providers making for optimal

communication. A weakness is that due to the small sample size, generalization to other practices and patient population cannot be made. However, this project may provide a model for other offices to consider.

Plan of the Intervention

The intended improvement of this project is to identify barriers in practice to assessing smoking status at each patient encounter and to use this information to develop a practice protocol utilizing the 5As model, which will be integrated into the current EMR system for the clinic. The project outcome objectives are:

1. 100% of health care providers will report reduced barriers to tobacco use screening and counseling following implementation of an evidence based protocol and EMR program.
2. Health care providers will increase tobacco use screening and counseling 25 percent from baseline in three months following implementation of an evidence-based protocol and EMR program.
3. In the three months following implementation of an evidence-based protocol and EMR program smoking cessation or statement of intention to quit in patients receiving counseling will increase 25 percent from baseline.

The 5As model will provide the framework for this project. Factors that contributed to this choice of intervention include the lack of consistency in documenting smoking status and the lack of a framework to *advise, assess, assist* and *arrange* follow up for smoking patients. The smoking status is often overlooked and skipped, especially during a busy day.

The project leader will conduct a pre-implementation audit of charts of patients seen in the prior month to determine the current practice of assessing patients seen in the clinic for smoking status. Currently, the smoking status is listed in the patient's history in narrative form in the EMR if the patient is asked. There is no other documentation format for the 5As model in the current EMR system regarding *asking*, *advising*, *assessing*, *assisting* and *arranging* follow up unless the provider charts this in the plan on an individual patient basis. This is inconsistent. No identifying patient information will be collected at any point in this practice improvement project. The same procedure will be repeated after the intervention to compare pre and post-intervention data.

A 30 minute meeting will be scheduled with the two providers and the project leader to assess the level of knowledge about the 5As model and perceived provider barriers to *asking*, *advising*, *assessing*, *assisting* and *arranging* follow up for smokers at every patient encounter. This meeting will also allow for time to discuss the best practice change, the 5As model, each intervention of the model and sample questions to ask the patient with recommended responses. Modifications to the EMR system and iPad applications will be discussed. Billing and coding will also be reviewed. Pre-implementation chart audit data in aggregate form will be shared with the providers. Pre-implementation audit data will provide a baseline information on how the providers are doing and will be used for comparison to post-implementation data.

In addition, the project leader will prepare and email a power point presentation with information on the 5As model and smoking cessation information to each provider view at their convenience. During the 3 month implementation phase, the project leader will send a monthly email to each provider asking for feedback on the process and any

suggestions they may have. A post-implementation meeting will also be scheduled with the project leader and providers.

Education regarding the EMR changes for the addition of smoking status on the vitals screen will be done on an individual basis with the CMAs by the project leader.

The project leader will collaborate with the software designer to add the smoking status to the vital screen of the EMR as well as the corresponding ICD codes for smoking cessation and education. The remaining 5As will be added to the plan section of the EMR with prompts for each intervention. Once the vital screen is complete, the CMAs will be informed of the EMR screen modification and will be instructed to assess smoking status when completing the vitals screen for check. This instruction will be done by the project leader.

The iPad applications will be down loaded in each patient room by the IT employee. The iPad applications will serve as a clinical reference only and no patient information will be entered. A free application for the iPad is available with this information and will be readily accessible on each of the iPads located in the patient rooms for clinical reference. The iPad application is called the QuitMedKit and based on the 2008 clinical practice guidelines for smoking cessation (Fiore et al. 2008) with the 5As model as the framework. It is an application available through the online App Store. This application assists providers in assessing smoking status and delivering smoking cessation interventions. The iPads may also be utilized for patient education videos regarding smoking cessation. The remaining interventions of the 5As model, which include *advising*, *assessing*, *assisting* and *arranging* follow up, will have a prompt in the EMR plan section for the provider. This will also support the time constraints and

potential billing concerns. The following table outlines the process objectives (Appendix A: Project Time Table), responsible party, participants and projected date of completion after IRB approval has been obtained and informal consent (Appendix B: Informed Consent) has been obtained from both practice providers:

Major Process Objectives	Responsible Party	Process Participants	Expected Date of Completion
1. Development of provider educational training PowerPoint presentation on the 5As model and smoking cessation	Project Leader	Project Leader	June 30, 2015
2. Obtain data through EMR chart audits for patient smoking status assessment and smoking cessation counseling pre-intervention	Project Leader	Project Leader	September 13, 2015
3. Schedule dates and time with individual providers for meeting to discuss project improvement, EMR modifications	Project Leader	Family Physician, Family Nurse Practitioner	September 20, 2015
4. Meet with each provider individually to discuss pre-implementation data on chart reviews, email PowerPoint presentation on the 5As model and smoking cessation recommendations	Project Leader	Family Physician, Family Nurse Practitioner	October 2, 2015
5. Modify EMR program to include smoking status on vital screen and prompts for the 5As model and download	IT employee and Software Designer	IT employee and Software Designer	October 18, 2015 Add education of CMAs in your process objectives

free application QuitMedKit to patient room iPads Is this also when the implementation will start?			
6. Monthly email communication to providers to assess feedback on process and provide encouragement to follow the process	Project Leader	Project Leader	November 20 and December 21, 2015 Think about ways to keep the providers engaged in the project I am thinking you might consider audit of charts after first month to see if you need to boost compliance or can congratulate on improvement
7. Obtain data for 5As compliance through EMR chart audit post-intervention	Project Leader	Project Leader	January 31, 2016
8. Schedule follow up meeting to discuss findings and assess provider feedback regarding practice improvement project	Project Leader	Family Physician, Family Nurse Practitioner	February 19, 2016

Ethical Issues

This is a project that only involves the practice providers which consists of one family nurse practitioner, one family physician, and the project leader, an adult nurse practitioner. The risks to providers are minimal and do not include experimental

interventions. Minimal ethical issues are expected. This project involves interventions already performed in current practice but not on a consistent basis. This practice improvement project aims to identify and address perceived provider barriers for consistent smoking assessment and to establish an EMR program modification based on guidelines and the 5As model for smoking cessation. This will provide the opportunity for the providers to *ask, assess, advise, assist, and arrange* follow up for smoking cessation for every patient with every patient encounter.

Provider participation will be voluntary with the ability to withdrawal at any time. Participation is not a requirement for employment and does not reflect job evaluation. There are no financial incentives. The project leader will not be performing any of the project planning, providing education, or collecting data during the project leader's working hours. Providers will not be asked to participate in any additional time requirements outside of their working hours; therefore, no additional compensation is required. The brief 30 minute meeting can be scheduled during lunch hours, since all providers break at the same time for lunch. All provider information will be presented as grouped data. This ensures the respect for participant privacy and confidentiality. Formal written permission will be provided by the practice owner to conduct this practice improvement project at the clinic.

Confidentiality will be maintained and protected during all phases of this project. The practice owner will be consulted regarding HIPAA compliance issues related to patient chart review. No identifying patient information will be collected or recorded during EMR chart audits. Since there are no patient identifiers, HIPAA compliance is not anticipated to be of issue. Any forms deemed necessary will be completed. Data obtained

during this project implementation will be stored on the project leader's secure password protected computer with only the project leader having access. The office is all electronic records and paperless, so it is anticipated that all data will be in electronic form.

Electronic data will be stored for no longer than one year after completion of this project.

Information will be reviewed on Libertyville clinic's own patients. Data will be stored with anonymity with no patient names or identifying patient information. Only aggregate information will be shared with the providers for the sole purpose of this practice improvement project. Ball State University (BSU) IRB will be utilized. An application for IRB approval will be submitted prior to starting any aspect of this intervention. Associated Physicians of Libertyville does not have an internal IRB. They will accept BSU IRB.

Study of the Intervention

The intended goal of this project is to implement a practice improvement program utilizing the 5As model to achieve improved provider compliance in *asking, advising, assessing, assisting* and *arranging* for follow up with every patient at every patient encounter. The long-term outcome is to improve smoking cessation rates for the smoking patient population at the clinic.

Project Outcome Objectives

1. 100% of health care providers will report reduced barriers to tobacco use screening and counseling following implementation of an evidence based protocol and EMR program.

2. Health care providers will increase tobacco use screening and counseling 25 percent from baseline in three months following implementation of an evidence-based protocol and EMR program.
3. In the three months following implementation of an evidence-based protocol and EMR program smoking cessation or statement of intention to quit in patients receiving counseling will increase 25 percent from baseline.

Project Questions

1. Does implementation of an evidence-based protocol and EMR program using the 5As model facilitate provider assessment of smoking status, smoking cessation education and interventions at every patient encounter?
2. Does implementation of an evidence-based protocol and EMR program using the 5As model increase patient smoking cessation or statement of intention to quit?

Study Design

The study design that best fits this project is a descriptive study design. It will be used to identify provider patterns in assessing smoking status in a family practice environment. The descriptive study is not used to identify causal relationships. The purpose of this practice improvement project is not to identify causal relationships; therefore the descriptive study is an appropriate study design to be utilized to measure the effectiveness of the intervention in achieving the desired outcome objectives and goal of the project. The 5As model is an evidence-based framework. It has been used most extensively in smoking cessation (Glasgow, Emont, & Miller, 2006). The descriptive study design will work well with the 5As model in identifying provider behavior if all patients at every encounter are asked about tobacco use, advised to quit, assessed for their

willingness to quit, assisted in their attempt to quit and follow up arranged. The project leader will meet with the two providers before and after the intervention and will be assessing feedback throughout the implementation period regarding the EMR modifications, perceived barriers and prompt screens that the providers will be utilizing. The EMR modifications and prompt screens will be based on the 5As model for smoking cessation. The project leader will be performing a manual chart audit pre and post-intervention to evaluate if the outcome objectives were met.

The sample of this project will be a convenience sample consisting of two providers in the office, one family practice physician and one family nurse practitioner. Factors impacting the internal validity of this project include participant selection being two providers and events that may occur during the intervention. Events may occur during the time frame of this project implementation which could impact internal validity including staffing issues, technological issues, and unforeseen circumstances.

External validity concerns include the degree to which this project can be generalized beyond the sample. This is a small sample size and cannot be generalized to a larger population. However, this project may provide a framework for other practices to adopt. Providing a detailed and accurate description of the project setting and intervention steps may help the reader determine if this project can be replicated in their practice setting.

Methods of Evaluation Process Objectives

Plans for implementation of the process objectives of this study design are outlined in the table Appendix A: Project Timeframe Table. Each process objective will

be assessed for implementation by the project leader. The anticipated completion dates will serve as a guide for the expected time frame. A log will be maintained by the project leader and updated with any changes. The project leader will meet with the individual providers for an initial 30 minute meeting and will email a minimum of once a month to obtain their feedback on the project implementation as well as any concerns, issues or problems from their perspective. It is anticipated that while working with the EMR system modifications, some revisions may need to be made based on provider feedback of the EMR screens and prompts. A monthly email communication will help to assess if the intervention is being implemented as planned and if revisions or modifications are needed.

Methods of Evaluation Outcome Objectives

The second outcome objective is that providers will increase tobacco use screening and counseling 25 percent from baseline in three months following implementation of an evidence-based protocol and EMR program. This will be evaluated by chart audits performed by the project leader with data comparison from pre and post-intervention. Charts from all providers will be included in the audit. Medical chart abstraction can be very labor intensive but is one of the most important measures of the clinicians' delivery of the 5As model (Glasgow et al., 2006). The revised EMR program will have documentation screens based on the 5As model which will facilitate the post intervention audit. A checklist audit tool will be utilized consistently with all chart audits. The project director has developed a chart audit checklist tool based on the 5As model (See Appendix C: Chart Audit Checklist).

The third outcome objective is that in the three months following implementation of a smoking cessation program, smoking cessation or statement of intention to quit in patients receiving counseling will increase 25 percent from baseline. This outcome objective will be evaluated also by performing a manual EMR chart audit of patients seen by all providers. There will be a prompt screen in the plan section of the EMR which will provide ability to document intention to quit or cessation obtained. This will be a subjective response elicited from the patient by the provider with documentation into the EMR program of the patient's chart. Due to the time frame of this project being only three months, complete cessation rates may not be available. Studies indicate that often a smoker makes multiple attempts before successful cessation is obtained. Therefore, a statement of intent to quit will be documented for the purpose of evaluation of meeting this objective.

The BSU statistician will be consulted regarding the recommended number of charts to audit to be able to obtain adequate data for a descriptive analysis. A method of choosing charts randomly yet including an equal number of charts from each provider will be developed.

The chart audit checklist tool will be used to evaluate the effectiveness of the intervention and if project outcome objectives 2 and 3 and the project goals are achieved. Meticulous record keeping will ensure consistency of the data collection, data quality and data adequacy. The process for data collection will include both pre and post-intervention collection consisting of manual EMR chart reviews.

According to Glasgow et al. 2006, there are no standard, widely used assessment tools of the delivery of the 5As model. The majority of the studies utilizing the 5As

model have developed their own measures. Efforts to ensure validity and reliability of the checklist instrument will include consistency in application and documentation both in the pre and post-intervention stages. The checklist is one of the easiest approaches to documenting the 5As for quality improvement purposes, but it must be used consistently with all visits to provide reliable data.

Confidentiality will be maintained and protected during all phases of this project. All chart audit data will be collected by the project leader only and stored on the project leader's password protected computer. No identifying patient or provider information will be collected or recorded during EMR chart audits. Since there are no patient identifiers, no HIPAA compliance issues are anticipated. The physician owner of the clinic will be consulted and any required forms deemed necessary will be completed. Data will be stored for no longer than one year after completion of this project. Confidentiality will be maintained throughout all phases of this project.

Methods of Data Analysis

The Ball State University statistician will be consulted regarding data analysis and interpretation. In addition, consultation will be done with a statistician in the local area as deemed necessary by the project leader. Nominal and ordinal data will be collected. Descriptive statistics will be used including frequency distribution, percentages, means and medians. This practice improvement project will utilize a small convenience sample size consisting of two providers. A small sample size is a limitation and findings cannot be generalized. However, this project may provide information for other practices as a framework for implementing a quality improvement project for smoking cessation.

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Appendix A: Project Timeframe Table

1. Development of provider educational training PowerPoint presentation on the 5As model and smoking cessation	Project Leader	Project Leader	June 30, 2015
2. Obtain data through EMR chart audits for patient smoking status pre-intervention	Project Leader	Project Leader	September 13, 2015
3. Schedule dates and time with individual providers for meeting to discuss project improvement, EMR modifications	Project Leader	Family Physician, Family Nurse Practitioner	September 20, 2015
4. Meet with each provider individually to discuss pre-implementation data on chart reviews, email PowerPoint presentation on the 5As model and smoking cessation recommendations	Project Leader	Family Physician, Family Nurse Practitioner	October 2 , 2015
5. Modify EMR program to include smoking status on vital screen and prompts for the 5As model and download free application QuitMedKit to patient room iPads Is this also when you will begin using the modified program?	IT employee and Software Designer	IT employee and Software Designer	October 18, 2015
6. Monthly email communication to providers to assess feedback on process and provide encouragement to follow the process	Project Leader	Project Leader	November 20 and December 21, 2015
7. Obtain data for 5As compliance through EMR chart audit post-intervention	Project Leader	Project Leader	January 31, 2016
8. Schedule follow up meeting to discuss findings and assess provider feedback regarding practice improvement project	Project Leader	Family Physician, Family Nurse Practitioner	February 19, 2016

Appendix B: Informed Consent Document

Informed Consent to Participate in a Quality Improvement Project

Project Title: Smoking Cessation in Primary Care: A Practice Improvement

Project Director: Kimberly Lynch, NP-C, DNP student at Ball State University

This quality improvement project is being conducted for a capstone project as part of the requirements of the project director's Doctorate of Nursing Practice program.

Introduction:

As a provider at Associated Physicians of Libertyville, you are invited to participate in a study of the outcomes for a quality improvement project focusing on the utilization of the 5As model (asking, advising, assessing, assisting and arranging for follow up for patients who smoke at every patient encounter) and electronic medical record (EMR) implementation for smoking cessation counseling. As a potential participant you need to know that:

- Your participation is totally voluntary.
- You may withdraw at any time without penalty.
- Your participation is confidential.

What is the purpose of this project?

The purpose of this project is to improve patient outcomes for smoking cessation and improve provider smoking cessation counseling through utilization of the 5As model.

Why was I asked to be included in the study of the outcomes of this project?

The three providers who provide direct patient care at Associated Physicians of Libertyville, which are inclusive of one family physician and two nurse practitioners, have agreed as a group to participate in a quality improvement project to improve patient outcomes for smoking cessation through utilization of the 5As model for smoking cessation counseling. Because you are a provider at Associated Physicians of Libertyville you are being asked to participate in the study of the outcomes to assess if the EMR implementation of the 5As model (asking, advising, assessing, assisting and arranging for follow up for smoking patients at every patient encounter) improves provider smoking cessation counseling. You are eligible to participate if you are a nurse practitioner or physician who provides direct care to patients at Associated Physicians of Libertyville.

What will I be asked to do to be part of the project and how long will it last?

Please read the informed consent and then decide if you would like to participate in study of outcomes of this practice improvement project.

As a participant in the study of the outcomes of this quality improvement project, you are being asked to consent to have your charts reviewed and assessed for the presence or absence of the EMR note showing use of the 5As model for smoking cessation. The project director will review a total of 100 randomly selected charts from patients who smoke seen in the ~~two~~ 3 months prior to the start of the quality improvement project and then review 100 randomly selected charts from patients who smoke in the three months after the implementation of the quality improvement project. There will be no provider or patient identifying information collected. The only data collected in the chart audit will be whether or not the provider has completed the EMR note for the 5As model for smoking cessation. You do not have to participate in this study of the outcomes of the quality improvement project. If you decide not to

participate, there is no penalty. You will still be able to participate in the non-study portion of the quality improvement project.

What are the risks and discomforts?

There are no known risks or discomforts for the participants in this practice improvement project. Your participation will remain confidential and only the project director will be performing chart audits.

What are the benefits of being part of this project?

There will be no direct benefits to you for your participation in this practice improvement project.

Who will see the information that is obtained?

No provider or patient names or identifying information will be extracted from the chart audits. No patient or provider identifying information will be recorded on any of the written materials used in this project. Your information will be kept confidential and only the project director will be reviewing charts and collecting data. All chart audit data will be kept confidential in a password protected computer to which only the project director will have access. The results of this project may be published and or discussed in an education setting. All data will be destroyed within one year after the project is completed.

Will I receive any rewards for taking part in this study?

There is no monetary reward or cost for participation in this practice improvement project.

What if I have questions?

For any questions or concerns, please feel free to call the project director, Kimberly Lynch at (847) 732-9218 or kllynch@bsu.edu. Faculty Advisor is Dr. Diana Bantz, at Ball State University, Muncie, IN, (765) 285-5529, dbantz@bsu.edu. If you have questions about your rights as a volunteer in this project, contact the Office of Research Integrity, Ball State University, Muncie, IN 47306, (765) 285-5070.

Consent

I have read the above information and have been given the opportunity to ask questions. By signing this form, I am consenting to participate in the study of the outcomes of this quality improvement project: Smoking Cessation in Primary Care: A Practice Improvement Project. I have received a copy of this consent form for my own records.

Participant Name: _____
(Please Print)

Participant Signature: _____ Date: _____

Project Director Name: Kimberly Lynch

Project Director Signature: _____ Date: _____

Appendix C: Chart Audit Checklist Tool

Audit: Pre-Intervention Post-Intervention

Auditor: _____

Chart Number: _____

Date of Audit: _____

Type of Visit:

Annual Physical/Wellness/Scheduled Chronic Disease/Scheduled Walk-in Same Day
 Other: _____

Demographic Data: Gender: Male Female Age: _____

Health Behavior	Advise (In a direct and personal manner, all tobacco users should be strongly advised to quit)	Assess (Assess every tobacco user's readiness to change by asking if they are willing to try)	Assist (Set a quit date or statement of intent to quit with the willing patient; provide patient education for willing and unwilling patient)	Arrange (Arrange for follow up appointment)
Smoking/ Tobacco Use	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> Pharmacological <input type="checkbox"/> Non-Pharmacological Patient Education Performed: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
Comments:				