WALKING THROUGH SMOKE: IMPLEMENTATION OF THE 5A'S FOR SMOKING

CESSATION COUNSELING IN RURAL VIRGINIA

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Cristina Maria Minotti, BSN, RN

Liberty University

Lynchburg, VA

August 2020

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Scholarly Project Chair Approval:

8/13/20

Dr. Kenneth Thompson, Pharm.D   Date

ABSTRACT

Tobacco use represents a significant cause of morbidity and mortality in the U.S. and is a contributing risk factor for multiple pulmonary, cardiovascular, and oncologic diseases. Despite documented evidence of these health hazards, use of tobacco products remains high, particularly in rural America. While providers may frequently question patients regarding tobacco use and inform patients of associated health hazards, a standardized, structured process for delivering smoking cessation counseling (SCC) is rarely established in practice settings. One such method for standardization of SCC is the 5A's (Ask, Advise, Assess, Assist, Arrange) model which has a robust body of evidence to support its efficacy. An evidence-based practice project to incorporate evidence-based SCC into practice at a clinic in rural Virginia was performed. Provider education concerning the 5A's of SCC was delivered to all clinic providers along with educational handouts. Data collection involved baseline and postintervention retrospective chart review of provider rate of SCC performance and the percentage of patients who smoke cigarettes at the clinic. An increase in provider performance of SCC and a decrease in current smokers was identified on evaluation of 90-day postintervention data. Results suggest that the evidence-based intervention was successful at this clinic in producing desired outcomes, and other clinics may find this example of incorporating evidence-based SCC into practice helpful.

Keywords: smoking cessation education, smoking cessation program, 5As, 5A's, smoking cessation counseling, tobacco, cigarette smoking

Walking through Smoke: Implementation of the 5A's for Smoking

Cessation Counseling in Rural Virginia

Dedication

This project is dedicated to every person who has bravely struggled to quit smoking, battled life-altering health consequences from smoking, or lost a loved one due to smoking. My hope is that this project makes the road to smoking cessation smoother for many people, paving the way for a life free from the negative health effects of smoking.

Acknowledgements

First and foremost, I want to thank God who gave me victory through his grace, faithfulness, and earnest prayers of loved ones. I would also like to thank my preceptor and my project site staff who contributed their time and energy to make this project a reality. I want to offer a special thank you to family, friends, and mentors who played an essential part in my quest to become a DNP Jedi Knight and restore balance to the primary healthcare workforce. To Master Obi Wan Kenobi and Princess Leia, my father and mother, who advised me as I honed medical knowledge and skills and helped me remain focused on my goal of becoming a DNP Jedi, thank you. To Master Yoda, my project chair, Dr. Thompson, thank you for your guidance and wisdom that made this project and the completion of my training possible. To the millennium falcon, my old faithful vehicle and laptop, thank you for taking me everywhere physically and intellectually on this journey—despite your multiple repairs. To the Chewbaccas and Han Solos in my life—Michael, Steven, Jenna, Margo, Liz, and Hollie—thank you for your help fixing, maintaining, and supplementing the millennium falcon. You gave me great hugs and encouragement, made me laugh, and came to my aid when I needed it most. To my comrades, R2D2 and C3PO—Joanna and Elisabeth—who fought by my side, helped me translate assignment rubrics and instructions, acquire access into various software applications, and navigate DNP program requirements, thank you. To my fellow classmates in the Rebel Alliance, thank you for faithfully fighting with me to restore balance to the workforce. To the Ewoks, Rachel and Sally, thank you for providing tactical support with your giant computer monitor screen and editing services in the last battle of my DNP training. Finally, I want to thank my lightsaber, the Word of God, that is sharper than any two-edged sword; you helped me cut through fears, lies of inadequacy, health issues, and other obstacles to finish this journey.

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List of Abbreviations

Agency for Healthcare Research and Quality (AHRQ)

American Cancer Society (ACS)

Centers for Disease Control and Prevention (CDC)

Current Procedural Terminology (CPT)

Doctor of Nursing Practice (DNP)

Food and Drug Administration (FDA)

International Classification of Diseases Tenth Revision (ICD-10)

Iowa Model Collaborative (IMC)

Population, Intervention, Comparison, and Outcomes (PICO)

The Transtheoretical Model (TTM)

Smoking Cessation Counseling (SCC)

U.S. Department of Health and Human Services (USDHHS)

U.S. Preventative Services Task Force (USPSTF)

Walking through Smoke: Implementation of the 5A's for Smoking

Cessation Counseling in Rural Virginia

SECTION 1: Introduction

Tobacco use represents a significant cause of morbidity and mortality in the United States

and is a contributing risk factor for multiple pulmonary, cardiovascular, and oncologic diseases.

Despite documented evidence of these health hazards, use of tobacco products remains high,

particularly in rural regions (Centers for Disease Control and Prevention [CDC], 2017). The

CDC (2017) reported moderately high levels of cigarette smoking in the state of Virginia

compared to other states. Furthermore, the CDC (2019) estimated the economic burden of direct

health consequences from smoking cigarettes for the state of Virginia in 2009 at 470.8 million

dollars. While healthcare providers may frequently question patients regarding tobacco use and

inform patients of hazardous health associations, a standardized, structured process for delivering

smoking cessation counseling (SCC) is often lacking (Schauer, Wheaton, Malarcher, & Croft,

2016).

These considerations supported the need for an evidence-based practice project targeting

cigarette smoking at a clinic in rural central Virginia. The leader of this project utilized provider

education and application of the 5A's (Ask, Advise, Assess, Assist, Arrange) model to

implement SCC at the clinic. This project was guided by two models: the Iowa Model (Iowa

Model Collaborative [IMC], 2017) as a conceptual framework and The Transtheoretical Model

(TTM; Prochaska & DiClemente, 1983; Prochaska, DiClemente, & Norcross, 1992) as a

theoretical framework. The project leader intended the proposed Doctor of Nursing Practice

(DNP) scholarly project to enhance delivery of SCC, reduce cigarette smoking in patients at the

project site, and serve as an example for application of evidence-based SCC at other practice

settings.

Background on Tobacco Use and SCC

Tobacco use in the United States has been present since before the Nation's inception.

However, use of tobacco products in the United States has reached historical highs within the last

century, peaking at a per capita cigarette consumption of 4,345 cigarettes in 1963 (CDC, 1999).

This stands in sharp contrast to the 54 cigarettes per capita in 1900 (CDC, 1999). The rapid

increase in cigarette consumption resulted in part from cigarette use emerging as socially

acceptable among women in the 1920s (CDC, 1999). Since the introduction of evidence

supporting the association of cigarette smoking and lung cancer in the late 1960s, the CDC

(1999) witnessed a gradual decline in cigarette consumption and the prevalence of lung cancer in

the United States. Notwithstanding, cigarette smoking remains a pervasive issue in the United

States. Approximately 14% of adults currently smoke, and lung cancer remains the leading

cause of cancer-related deaths (American Cancer Society [ACS], 2019; Hernon, 2019).

Furthermore, the U.S. Department of Health and Human Services (USDHHS; 2014) associated

cigarette smoking with multiple types of cancer, heart disease, diabetes, cerebrovascular disease,

lung disease, tuberculosis, certain eye diseases, erectile dysfunction, immune system

dysfunction, and rheumatoid arthritis.

Healthy People 2020 goals included the reduction of tobacco product use through health

system changes and development of policies that discourage tobacco purchasing and restrict its

use (USDHHS, 2010). Governmental initiatives to accomplish this have included raising the

price of products, limiting advertising, reducing sales to minors, and mitigating environmental

smoke exposure (USDHHS, 2010). Furthermore, Healthy People 2020 goals emphasized the

development of educational and community-based programs that target important health

promotion topics, including tobacco use (USDHHS, 2010). Goals of reducing cancer, heart

disease, respiratory illness, stroke, diabetes, infection, and orthopedic conditions were also listed

and have associations with cigarette smoking (USDHHS, 2010).

The CDC (2017) estimated that approximately 16.4% of adults and 6.5% of youth smoke

cigarettes in the state of Virginia. This is no exception for the regions served by the primary care

clinic within a health system in rural central Virginia where this evidence-based practice project

was conducted. Due to the prevalence of smoking in Virginia and in the clinic where this project

was implemented, equipping providers at the clinic to deliver robust evidence-based SCC to

patients was the primary objective of this project.

The 5A's model is one such method for structuring, standardizing, and delivering SCC

which has a strong evidence base to support its efficacy in assisting individuals to quit cigarette

smoking (Bailey, 2015; Siu, 2015). Despite utilization of the 5A's model being an evidence-

based recommendation of SCC, a national survey of over 20 thousand patients found that the

vast majority of patients reported not receiving smoking cessation education that included all

5A's in SCC (Schauer et al., 2016). Other studies of provider documentation and provider-

reported performance of SCC have also noted disparities in the quantity and quality of SCC

delivered (Bartsch, Harter, Niedrich, Brutt, & Buchholz, 2016; Jamal, Dube, & King, 2015).

Martínez et al. (2017) noted that facilitators of provider performance of the 5A's were positive

experiences and self-efficacy in application of the 5A's. Additionally, Martínez et al. (2017)

noted that organizational support was linked to performance of the assisting to quit and the

arranging follow-up steps of the 5A's model, which Schauer et al. (2016) found least reported by

patients. Evidence supports the use of provider training on the 5A's to improve provider self-

efficacy and frequency of providing comprehensive SCC to patients (Malan, Mash, & Everett-Murphy, 2016). Therefore, to facilitate implementation of the 5A's at the clinic site for this project, training on the 5A's was delivered to the five providers at this site in addition to education on documentation and billing for SCC. The outcomes of training success were measured by the project leader through chart audits of provider documentation of SCC and the percentage of adult patients who smoke cigarettes.

Problem Statement

Cigarette smoking represents a significant cause of disease and mortality and is particularly prevalent in the regions served by the identified project site in central Virginia (ACS, 2019; CDC, 2017; 2019; USDHHS, 2010). A standardized system for delivering SCC is often lacking in health institutions to address this issue. Both local and national health agencies recognize cigarette smoking as a leading cause of preventable illness, making efforts such as SCC to address cigarette smoking a priority for the project clinic site and health care across the United States (USDHHS, 2010; Siu, 2015).

Purpose of the Project

The purpose of this evidence-based practice project was to decrease cigarette smoking by patients seen at a clinic in central Virginia through implementation of the 5A's for SCC. It was intended that this intervention initiated at the clinic would be implemented in a way that was sustainable beyond the project timeframe. Further aims of the project were to serve as an example of evidence-based application of SCC and patient education, which may be useful in assisting other health centers to implement best evidence and standardize smoking cessation interventions.

Clinical Question

The following population, intervention, comparison, and outcomes (PICO) question was developed to guide this evidence-based practice project: Will implementation of the 5A's of SCC and provider education on performance of the 5A's increase the rate of SCC delivery and decrease cigarette smoking among patients?

Population. The population targeted by interventions included all nurse practitioners working at a rural clinic in central Virginia who serve a patient population with a high prevalence of cigarette smoking.

Intervention. Provider education on the efficacy and utilization of the 5A's for SCC, along with documentation and billing for SCC, was provided by the project leader utilizing an in-service education format. A copy of the 5A's model, the information on the seven Food and Drug Administration (FDA) approved smoking cessation medications, and the PowerPoint presentation delivered was also distributed to providers.

Comparison. Both the baseline rate of provider SCC completion for the 90-day period prior to the intervention and the percentage of adult patients who smoke seen during the year prior to the intervention served as the comparison group for this evidence-based practice project.

Outcomes. The expected outcomes were an increased rate of SCC performance and a decreased percentage of patients who smoke cigarettes at the clinic over the 90 days following the intervention. These outcomes were evaluated through retrospective chart review.

SECTION 2: Literature Review

Search Strategy

The project leader conducted a literature review using CINAHL, ProQuest, PubMed, and Ovid with the search terms *smoking cessation education*, *smoking cessation program, 5As, 5A's,*

smoking cessation counseling, tobacco, and *cigarette smoking*. Search results were narrowed to

articles published from 2014 through 2019. Over 100 abstracts were reviewed based on search

results, and 15 articles were deemed most applicable to the project. Articles that involved

training staff nurses alone to deliver the 5A's in smoking cessation education were excluded

from the review, since the project concerned education of providers to deliver this intervention.

These articles were excluded because the ability of staff nurses to perform the 5A's for SCC was

limited by their scope of practice and ability to offer smoking cessation aids. Predominant article

topics included in the literature review concerned the efficacy of the 5A's and provider training

on use of the 5A's or SCC in general.

Critical Appraisal

A critical appraisal of evidence was completed on the selected 15 research articles. The

majority of research reviewed involved the application of the 5A's of SCC or the use of

structured education programs to target smoking in a population of patients. To determine the

strength of the literature selected, *Melnyk Levels of Evidence*—a standardized ranking system of

the literature—was utilized for this project (Melnyk & Fineout-Overholt, 2011). The system

ranks the strength of evidence from levels one to six based upon the study or article type

(Melnyk & Fineout-Overholt, 2011). According to this rating system, one level 6 descriptive

study, three level four case-control and cohort correlational studies, nine level three quasi-

experimental studies, and two level two randomized control trials were included in the literature

review (see Appendix A for evidence table). Primary limitations in appraisal of literature were

small sample sizes, convenience sampling, and localized samples which affect the

generalizability of data to the patient and provider population of central Virginia.

Notwithstanding, the various national and international locations in which these isolated studies

were performed support the efficacy of the 5A's of SCC and structured programs for smoking

cessation regardless of location. Therefore, this consistency in findings suggests the applicability

of evidence to the proposed project site.

Synthesis of Literature

       Efficacy of the 5A's for SCC in smoking reduction. The 5A's model for behavior

change was developed based on the TTM by the Agency for Healthcare Research and Quality

(AHRQ; 2012) to assist providers in guiding patients through behavior changes that match

personal readiness to promote smoking cessation (Sturgiss, 2017). However, the 5A's model has

been successfully used for other applications, including obesity management (Sturgiss, 2017). In

the context of tobacco use, the 5A's model has been utilized in multiple studies to decrease rates

of cigarette smoking and is listed by the United States Preventative Services Task Force

(USPSTF) as a grade A recommendation for both pregnant and non-pregnant adults (Bailey,

2015; Celestin et al., 2018; Chertok & Archer, 2015; Kruger, O'Halloran, Rosenthal, Babb, &

Fiore, 2016; Siu, 2015).

       Some comparative trials have identified that structured SCC produces superior outcomes

in smoking cessation compared to traditional methods of SCC (Bailey, 2015; Kazemzadeh,

Manzari, Vaghee, Ebrahimi, & Mazlom, 2016). Bailey (2015) noted a quit rate of 28.0% in

individuals who received the 5A's and a quit rate of 9.8% in individuals who received traditional

SCC provided to pregnant women at five locations in South Central Appalachia in Tennessee.

Similarly, Celestin et al. (2018) found—through survey data of over 45,000 participants—that

smoking cessation success rate improved depending on the number of 5A's delivered.

According to national survey results, patients receiving three or more of the 5A's reported

significantly greater quit success than if none were received, whereas hospital surveys found that

patients receiving four or more of the 5A's had better quit success (Celestin et al., 2018).

Additionally, Kruger et al. (2016) noted that individuals who received all 5A's were more likely

to utilize recommended smoking cessation aids. In reviewing the efficacy of the 5A's for SCC,

it is also of note that Chertok and Archer (2015) found 91.4% of participants who received the

5A's by trained providers and nurses in a longitudinal study smoked fewer cigarettes, and 8.6%

quit smoking after the first month of the study period. This suggests that an extended timeframe

is unnecessary before an improvement in smoking quit rates is witnessed when the 5A's are

utilized.

     Despite a substantial body of evidence to support the efficacy of the 5A's for SCC,

provider application of the 5A's is largely absent or incomplete according to one large national

survey (Schauer et al., 2016). According to survey results, asking about smoking status was

performed 85.8% to 95.4% of the time (Schauer et al., 2016). However, patients without chronic

obstructive pulmonary disease (COPD) reported low rates of being advised to quit smoking;

assessment of willingness to quit smoking, assistance with quitting, and arrangement for follow-

up were infrequently reported for both patients with and without COPD (Schauer et al., 2016).

Although, patients with COPD received more of the 5A's than patients without COPD in all

areas of the 5A's model (Schauer et al., 2016). This represents a care inequity and an

insufficiency in primary care preventative measures to provide comprehensive SCC to patients

before cigarette smoking leads to lung disease. Tobacco product use has been termed, "the

single greatest preventable cause of disease and premature death in America today" (AHRQ,

2012, p. 1). Therefore, it is critical for health outcomes that preventative care services target

cigarette smoking early.

Provider training and application of the 5A's. Research demonstrates that structured

provider training on use of the 5A's correlates with increased 5A's utilization when delivering

SCC (Chen et al., 2015; Girvalaki et al., 2018; Malan et al., 2016; Payne et al., 2014; Sarna et al.,

2016). This also holds true of the increased performance of SCC by providers in general,

whenever training has been provided (Abdelazim, Nour-Eldein, Ismail, Al Sayed Fiala, &

Abdulmajeed, 2018; Chen et al., 2015). The increased performance seen in providers with

training likely results from increased provider self-efficacy with 5A's delivery when training

interventions were provided (Chen et al., 2015; Girvalaki et al., 2018; Payne et al., 2014).

Martínez et al. (2017) noted that self-efficacy with 5A's delivery facilitates provider use of the

5A's with patients. Other facilitators of provider utilization of the 5A's were identified as

organizational support and previous positive experiences with use of the 5A's (Martínez et al.,

2017). Meanwhile, personal tobacco use by a provider was identified as a barrier to application

of the 5A's (Martínez et al., 2017).

Conceptual Framework

The Iowa Model of Evidence-Based Practice provides the conceptual model for this

proposed evidence-based practice project and offers a sequential structure with which to organize

project progression (IMC, 2017). See Appendix D for the Iowa Model permissions letter.

According to the Iowa Model (IMC, 2017), an evidence-based project initiates from a trigger

which prompts further inquiry and the development of a clinical question. In this project, several

triggers were identified: the clinical trigger of a high population of patients who smoke at the

project site, the state trigger of a high prevalence of cigarette smoking in Virginia, the clinical

trigger of a lack of standardized and structured SCC delivery, the guideline trigger of USPSTF

recommendations for the use of the 5A's, and the national trigger of underutilization of the 5A's

for SCC (CDC, 2017; Schauer et al., 2016; Siu, 2015). These triggers prompted a review of

literature in accordance with the Iowa Model, the development of a PICO question, and the

formation of a purpose statement for the project. Following these steps, the topic was deemed a

priority and a team was assembled (IMC, 2017). The team consisted of the DNP student project

leader, a faculty project chair and mentor, and the clinic site director who also works onsite as a

nurse practitioner. After team assembly, a systematic search and appraisal of literature regarding

the project subject was performed to determine if a sufficient evidence basis existed for the

proposed interventions to be performed in the clinic hosting the project (IMC, 2017). A

substantive body of evidence was identified, analyzed, and synthesized which is available in

Table 1 of Appendix A. This project proposal was then developed and submitted for review to

the Institutional Review Board (IRB) at Liberty University for approval. The health system

which hosted the DNP scholarly project does not have an IRB. Therefore, before project

implementation commenced, only a letter of support (see Appendix B) from the project site

health system was necessary, in addition to approval from Liberty University's IRB.

Once IRB permissions were granted, project implementation began with preparation of

the project site and nurse practitioners (IMC, 2017). Implementation was performed in such a

way that evidence-based practice change was integrated into workflow and clinic procedures,

sustainable beyond the project's completion if the clinic site director so wished (IMC, 2017).

Lastly, dissemination of project results occurred with submission of the project to Scholars

Crossing, applicable journals, and presentation of findings to the staff at the project site (IMC,

2017).

Theoretical Framework

The TTM developed by Prochaska and DiClemente (1983; Prochaska et al., 1992) was used to inform the proposed project. The TTM was applied to aid in understanding and applying behavior change methodology to the patient population of interest and guide provider training in the 5A's. This model was chosen for its association with improved performance of the outcomes of interest for this project (Bakan & Erci, 2018; Lu, Hsiao, Huang, Lin, & Huang, 2019).

The TTM is a theoretical model for health behavior change, derived from the synthesis of multiple theories that classifies behavior change as a process involving multiple stages before a change in behavior is established (Prochaska et al., 1992). These stages of change are precontemplation, contemplation, preparation, action, and maintenance (Prochaska et al., 1992; Prochaska & DiClemente,1983). In the context of smoking cessation, these stages would be defined in the following way: precontemplation involves no intention to quit, contemplation involves an intention to quit smoking in the next six months, preparation involves readiness to quit in the next 30 days, action involves active performance of quit behaviors, and maintenance involves performance of behaviors for over six months (Prochaska & DiClemente,1983; Prochaska & Norcross, 2001). Progression through these stages is often nonlinear, and some regression and jumps in progression can be anticipated (Prochaska et al., 1992). Prochaska et al. (1992) assert from their research of the TTM that having a systematic approach to guide patients through these stages of change is more effective and efficient than self-change practices dominated by introspection without action or by action without introspection. Instead, change is theorized to best be supported through actions that match an individual's introspectively determined stage of change (Prochaska et al., 1992).

The TTM was first applied to assist individuals with smoking cessation, but has since been applied to achieve a variety of other health behavior changes—such as psychological issues and obesity (Prochaska & DiClemente, 1985). With regard to the project subject, research has continued to utilize the TTM in recent years for smoking cessation with favorable results (Bakan & Erci, 2018; Lu et al., 2019). Research suggests that the TTM is superior to typical SCC practices and some other theoretical models of behavior change in guiding patients toward smoking cessation (Bakan & Erci, 2018; Lu et al., 2019). This is consistent and easily applied to the 5A's model in that the 5A's involve assessment of readiness to quit smoking and patient collaboration at all steps (AHRQ, 2012).

Summary of Literature Review

As described above, available evidence consistently supports the use of the 5A's and group education interventions to promote smoking cessation in patients (Bailey, 2015; Celestin et al., 2018; Chertok & Archer, 2015; Kruger et al., 2016; Siu, 2015). Additionally, training of providers to deliver the 5A's as part of SCC is also consistently supported as efficacious (Chen et al., 2015; Girvalaki et al., 2018; Malan et al., 2016; Payne et al., 2014; Sarna et al., 2016). The value of provider training in the 5A's and the selected SCC interventions for patients is further supported by the TTM (Prochaska & DiClemente, 1983; Prochaska et al., 1992). The literature supporting this project identifies a deficit in current provider trends for delivery of SCC interventions (Schauer et al., 2016). Pervading limitations of the literature were convenience samples and small sample sizes in many studies reviewed. However, consistency in findings between multiple studies supports that a strong evidence base exists for implementation of the 5A's for SCC at the project site. Its implementation would facilitate desired outcomes of

decreasing the percentage of patients who smoke and increasing the standardization and quality

of SCC delivered to patients.

SECTION 3: Methodology

Design

This project was undertaken as a Quality Improvement/Evidence-Based Practice

Initiative, and as such was not formally supervised by the Liberty University Institutional

Review Board. Because the DNP scholarly project involved the translation of existing evidence-

based SCC standards of care into practice, it was classified as an evidence-based practice project.

The practice change in SCC conducted at the clinic was implemented according to the Iowa

Model for Evidence-Based Practice (IMC, 2017). The evidence-based project utilized a quasi-

experimental design with baseline and follow-up data collection to evaluate the impact of the

SCC intervention performed. This design was selected based on the quantitative nature of the

outcomes of interest and the success of this design in multiple studies on implementation of the

5A's with SCC (Sarna et al., 2016, Payne et al., 2014; Malan et al., 2016; Girvalaki et al., 2018;

Chertok & Archer, 2015; Chen et al., 2015; Bailey, 2015; Abdelazim et al., 2018). Additional

reasoning for having baseline participant data serve as a control—rather than performing a

randomized controlled trial—rested on the small sample size utilized.

Baseline data on the percentage of patients seen at the clinic who smoke cigarettes and

baseline documentation of rate of performance of SCC in patients who smoke cigarettes was also

collected prior to initiation of the project interventions. This data was used to evaluate the

effectiveness of provider interventions surrounding incorporation of the 5A's into practice for the

five providers at the clinic site. Provider training occurred within the first two weeks of the

intervention period and was delivered as two educational in-services on different days to

accommodate provider schedules. Content covered during in-service education included

efficacy of the 5A's, performance of the 5A's, documentation of SCC, International

Classification of Diseases Tenth Revision (ICD-10) coding for smoking status, Current

Procedural Terminology (CPT) coding for the delivery of SCC, and application of the 5A's for

SCC to a case study scenario. Each in-service training lasted approximately 20 min. Three

months following provider training on using the 5A's for SCC, data was collected to evaluate the

impact of interventions. Follow-up chart review was performed to evaluate outcomes of

provider training sessions on the rate of provider SCC delivery and on the percentage of clinic

patients who smoke cigarettes.

Measurable Outcomes

Two measurable outcomes of interest were identified for the proposed evidence-based

practice project: rate of SCC performance for patients who smoke cigarettes and percentage of

patients who smoke cigarettes at the clinic. Both the variable of cigarette smoking and the

variable of performance of SCC are classified as categorical or nominal variables due to the

unordered nature of data collected (Sullivan, 2012). These two categorical variables are also

dichotomous by nature in that only yes or no response data was collected (Sullivan, 2012).

Setting

The proposed evidence-based practice project was conducted at a relatively large clinic in

rural central Virginia belonging to a health system that services low-income individuals in

underserved communities. This clinic is well-established and has been in operation for many

years. The patient population in this rural setting demonstrates significant tobacco use, making a

project involving SCC efficacious to address a primary health concern for patients seen.

Furthermore, two new providers were recently added to the clinic before the intervention to

replace providers who left or retired. For the new providers, receiving SCC education at the

onset of employment may make it easier to implement and maintain the change in SCC practices.

This transitional period for the clinic represents an opportunity to incorporate new evidence-

based practices into clinic workflow. Additionally, the clinic is completely operated by nurse

practitioners who support nurse practitioner projects and innovation. Other personnel at the

clinic site include an office manager, several nurses and medical assistants, receptionists, referral

workers, a translator, and a licensed mental health counselor. See Appendix B for a copy of the

project site support letter.

Population

        The sample for this project was collected from providers and patient charts at the clinic

site. A sample of all providers at the clinic site (n=5) was utilized for the provider 5A's training

intervention and was collected through convenience sampling. Exclusion criteria for collecting

chart review data included non-cigarette tobacco product use, patient age less than 18 years, and

patient age greater than or equal to 90 years. Inclusion criteria included cigarette smoking and

age 18 through 89 years.

Ethical Considerations

        Measures were put in place to ensure protection of human subjects throughout subject

recruitment, project implementation, data collection, and results dissemination. No incentives

for participation were offered to providers for participation. However, providers benefited from

training on SCC delivery, documentation, and billing that may increase revenue for the clinic.

Providers were not penalized if they chose not to provide SCC during an encounter with a patient

who smokes cigarettes. Baseline and follow-up data were stored in such a way that data was

devoid of personal identifiers to protect patient and provider confidentiality. Furthermore, the

name of the health system and clinic where this project was performed will not be disclosed in

dissemination of results to further protect patient and provider confidentiality. Additionally,

patient charts involving patients less than 18 years of age and over 89 years of age were not

included due to potential vulnerabilities. A copy of the project leader's Collaborative

Institutional Training Initiative (CITI) Certificate is located in Appendix C.

Data Collection

        Retrospective chart review was performed by the project leader in data collection of pre-

intervention and post-intervention data for the variables of SCC performance and cigarette

smoking. Pre-intervention data was collected on whether or not SCC was performed for each

adult patient age 18 through 89 who smoked cigarettes and was seen in the last 90 days prior to

the intervention as well as whether or not cigarette smoking was present for all patients age 18

through 88 seen during the year prior to the intervention. The age range was set at a high limit of

88 years of age to account for patients aging out of the parameters set for follow-up data

collection. Post-intervention data involved chart review of whether or not SCC was performed

for each patient seen in the 90 days following the intervention period as well as repeat collection

on whether or not patients smoked cigarettes for all patients at the clinic seen in the year prior to

the intervention. The follow-up percentage of patients who smoke was derived from the chart

review of patients seen during the year prior to the intervention and were seen again during the

90 days following delivery of the intervention to providers; any change in smoking status

resulted in the adjustment of a data point to reflect the change. Chart review data was stored in a

secured Microsoft ® Excel ®, version 2007, spreadsheet datafile and contains no patient or

provider identifiers (Microsoft Corporation, 2007).

Tools

The 5A's model (AHRQ, 2012) was utilized by providers as a tool for completion of SCC with patients. As discussed previously in the Literature Review section, this model has a substantial body of evidence to support its utility and efficacy in SCC (Bailey, 2015; Celestin et al., 2018; Chertok & Archer, 2015; Kruger et al., 2016; Siu, 2015). The 5A's model includes asking each patient seen about smoking status at every appointment, advising to quit, assessing willingness to quit, assisting the patient with the quit attempt through pharmacological and counseling interventions, and arranging for follow-up appointments within one week of quit date if possible (AHRQ, 2012). Providers were trained in correct implementation of the 5A's and practiced implementation in a patient scenario during the training session prior to using the model with patients.

Intervention

The intervention completed for the project involved provider training on the 5A's of SCC. Provider training sessions regarding use of the 5A's were delivered by the project leader over approximately 20 min to each of the five providers on an individual or group basis. The efficacy of the 5A's, performance of the 5A's, application of the 5A's to a patient scenario, documentation of SCC, ICD-10 coding for smoking status, and CPT coding for the delivery of SCC were covered during these training sessions and delivered via a PowerPoint—which was copied and distributed to each provider for personal reference. Each provider was also given a copy of the 5A's model along with an information sheet on the seven FDA approved smoking cessation medications.

Project Timeline

The timeline and activities for the project followed the Iowa Model of Evidence Based Practice. Preparatory steps as well as planning for implementation and evaluation are discussed below.

Preparation. The preparation phase of this project included trigger identification, PICO question development, team assembly, literature review, proposal development, and proposal submission to the Liberty University IRB for review. Dates of completion for these activities were as follows:

- On November 1, 2019, the project proposal was submitted to the project faculty chair for review based on the original project site planned.

- On November 21st, 2019, the project was submitted to the Liberty University IRB.

- On January 6, 2020, IRB approval to implement the project was obtained.

- On February 26, 2020, an alternate project site was secured with a high population of smoking patients due to the original project clinic site closing. The project was officially endorsed and approved by the management of the new project site which does not have an IRB (see Appendix B).

- On February 27, 2020, a revision to protocol was resubmitted to the IRB to accommodate a change in project site.

- On February 28, 2020, IRB approval to continue with the project was obtained as the project remained classified as an evidence-based practice project rather than human subjects research.

Implementation. Implementation of the project involved delivery of group education seminars and provider training on the 5A's. The project was implemented on the following timeline:

- From March 25th through April 1st, 2020, provider training sessions were delivered.

- From April 2nd through July 1st, 2020, data generation for evaluation took place.

- From July 2nd through 31st, 2020, data collection occurred.

Evaluation. Evaluation of the project included statistical analysis and synthesis of data. Evaluation and dissemination of the project results follow this tentative timeline:

- From July 2nd through 31st, 2020, statistical analysis and review/synthesis of data occurred.

- On August 2nd, 2020, the scholarly project manuscript was submitted to an editor for review.

- On August 2nd, 2020, the project manuscript was submitted to DNP faculty for review.

- On August 12th, 2020, the project defense to DNP faculty was completed.

- On August 14th, 2020, the project manuscript was submitted to Liberty University's Scholars Crossing.

- By August 26th, 2020, the project results will be disseminated to the project site.

Data Analysis

Descriptive and statistical analysis of collected data was performed using the Microsoft ® Excel ® Version 2007 (Microsoft Corporation, 2007). Descriptive statistical analysis of variables included frequency and percent frequency measurements on data collected for the two variables of interest and was most important to this evidence-based practice project (Mateo &

Foreman, 2014). Inferential statistical analysis of data was not performed, since the project was

an evidence-based practice project. Generalizing the project results to the population at large to

generate new information on this topic was not a goal of this project. Therefore, descriptive

statistical analysis was all that was needed to serve the purposes of this project.

      Rate of SCC performance. The project leader collected data on the frequency of SCC

performance as a dichotomous nominal variable with data coding of "yes" and "no" for whether

or not SCC was completed (Marshall, n.d.). The data collected on this outcome measure was

expressed as the ratio of "yes" codes over "no" codes collected for both the 90-day

preintervention and postintervention data generation periods. Preintervention baseline data was

collected on all encounters of patients who smoke seen during the 90-days prior to the week-long

intervention period and was expressed as the ratio of 90-day preintervention "yes" codes over

90-day preintervention "no" codes. Postintervention follow-up data was collected in the same

manner for all patients seen during the 90-day postintervention period.

      Percentage of patients smoking cigarettes. Like the measurable outcome of rate of

SCC performance, data collection on smoking of cigarettes by patients at clinic sites A and B

was coded as a dichotomous, nominal variable. Baseline data on the percentage of patients

smoking cigarettes was obtained through a report provided by the health records administrator of

the clinic. The report listed the number of all patients seen between March 24, 2019 and March

24, 2020 and the number of patients seen who were classified as current smokers during that

timeframe. The baseline percentage of patients who smoke was expressed as the percentage of

current smokers seen out of the population of all patients seen during the year prior to the

intervention.

For follow-up data collection, charts of all current smokers seen between March 24, 2019 and March 24, 2020 were reviewed. First, A code of "yes" was assigned if the patient was seen in the postintervention period of April 2, 2020 through July 1, 2020, and a code of "no" was assigned if the patient was not seen during the postintervention period. Second, based on documentation of smoking status for all patients previously identified as current smokers who were seen in the postintervention period, a code of "yes" was assigned for cessation of cigarette smoking and a code of "no" was assigned for no change in smoking status. The follow-up percentage of patients who smoke was obtained through subtracting patients with a change in status from the total of previously identified current smokers and recalculating the ratio of current smokers to all patients seen during the previous year.

SECTION 4: Results

The project leader performed descriptive statistical tests on retrospective chart review data to evaluate the outcomes of interest. For the first measurable outcome of rate of provider performance of SCC, all provider encounters with current smokers occurring in the 90 days prior to the intervention and in the 90 days following the week-long intervention period were evaluated for applicability and SCC performance. The project leader also performed a retrospective chart review of the charts of all current smokers seen by a provider the year prior to the intervention to determine whether a change in smoking status had occurred following the intervention. This data was analyzed to evaluate the second measurable outcome of percentage of patients smoking cigarettes.

Rate of SCC Performance

To obtain the baseline rate of provider performance of SCC, 228 provider encounters from 171 charts were reviewed. Of these encounters, 210 provider encounters met criteria.

Between December 24, 2020 and March 24, 2020, providers had 210 encounters with 153

current smokers that met inclusion and exclusion criteria. SCC was performed by providers in

59 of these encounters, yielding a baseline SCC performance rate of 28.10% (Figure 1).
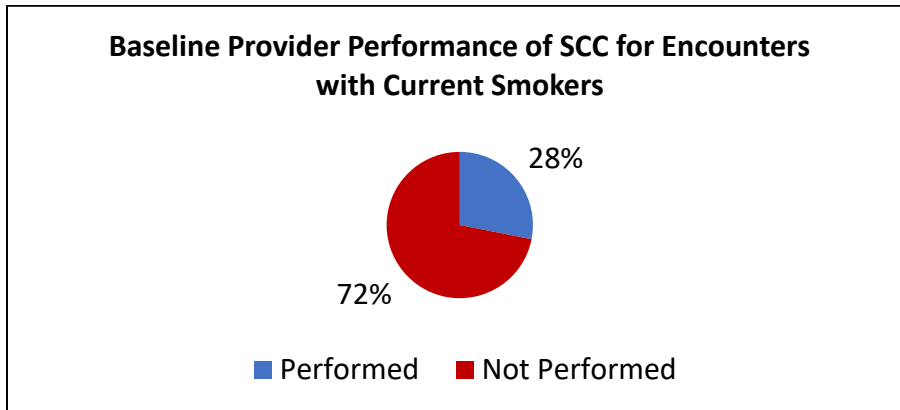

Figure 1. Baseline Provider Performance of SCC for Encounters with Current Smokers

       The project leader obtained the follow-up rate of provider performance of SCC through

chart review of 596 provider encounters with 403 patients occurring between April 2, 2020 and

July 1, 2020. After exclusion of encounters that failed to meet criteria for evaluation, 535

encounters applicable encounters remained. Providers performed SCC in 173 encounters, while

performance of SCC was lacking in 362 encounters. This resulted in a follow-up rate of 32.34%

for provider performance of SCC (See Figure 2) and an overall increase of 4.33% in this

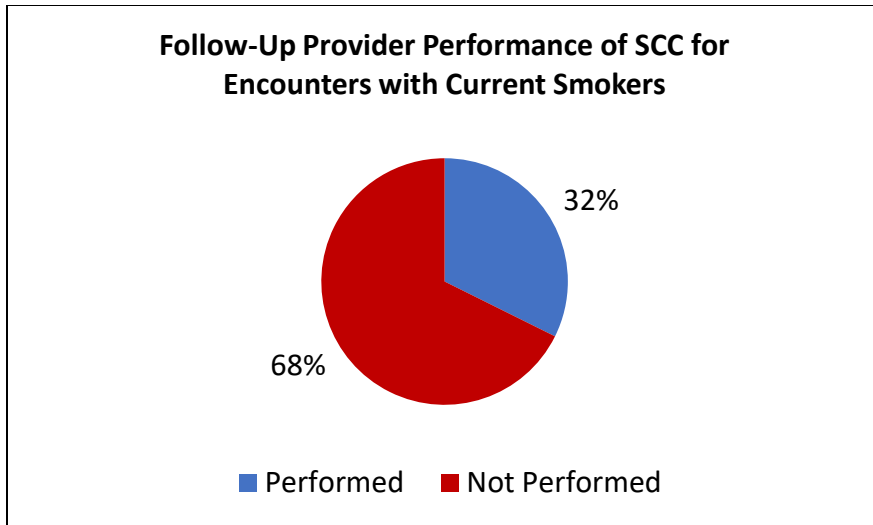outcome measure between baseline and follow-up data.

Figure 2. Follow-Up Provider Performance of SCC for Encounters with Current Smokers

Percentage of Patients Smoking Cigarettes

The project leader utilized a sample of all charts of patients seen the year prior to the intervention, from March 24, 2019 through March 24, 2020, (n=3,814) to obtain percentage data on patient smoking status. Of these patients seen, 1,033 had documentation of current smoking status in an encounter within this timeframe. Therefore, a baseline percentage of 27.08 was calculated for current smokers at the clinic (see Table 2 and Figure 3).

Table 2

Baseline Smoking Status for Patients Seen During the Year Prior to Intervention

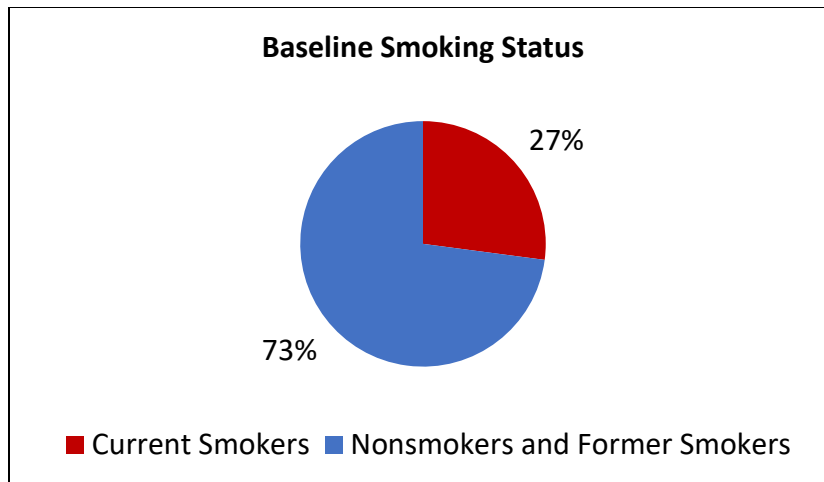| Smoking Status for Patients Seen	Frequency	% Frequency
Current Smokers	1033	27.08
Nonsmokers and Former Smokers	2781	72.92
Total Patients Seen	3814	100.00

Figure 3. Baseline Smoking Status

Follow-up smoking status outcome analysis involved review of all 1,033 charts of patients seen the year prior to the intervention to determine, first, whether or not the patient was also seen between April 2, 2020 and July 1, 2020, and, second, the updated smoking status for patients seen in the postintervention timeframe. Of the 1,033 patients seen the previous year, 374 patients were seen during the 90-day postintervention timeframe. Providers documented a change in smoking status for 56 patients, readiness to quit for 29 patients, and a maintained current smoker status for 257 patients seen during the postintervention period; no follow-up documentation of smoking status existed for 32 patients seen (see Table 3). For patients with a change in smoking status documented, the length of time the patient had quit was not collected due to inconsistency between charts in documentation of this measure. Readiness to quit was defined as documentation of a plan for the patient to quit within the next 30 days with or without the use of smoking cessation medications. Based on analysis of smoking status documentation for these 374 patient charts, a follow-up percentage of current smokers was calculated at 25.62%—a decrease of 1.46% from baseline data (see Table 4 and Figure 4).

Table 3

Follow-Up Smoking Status for Current Smokers Seen Postintervention

Follow-Up Smoking Status for Smokers Seen	Frequency	% Frequency
Quit	56	14.97
Ready to Quit	29	7.75
Did Not Quit	257	68.72
Status Not Documented	32	8.56
Total Patients Seen Postintervention	374	100.00

Table 4

Follow-Up Smoking Status for Overall Patient Chart Sample

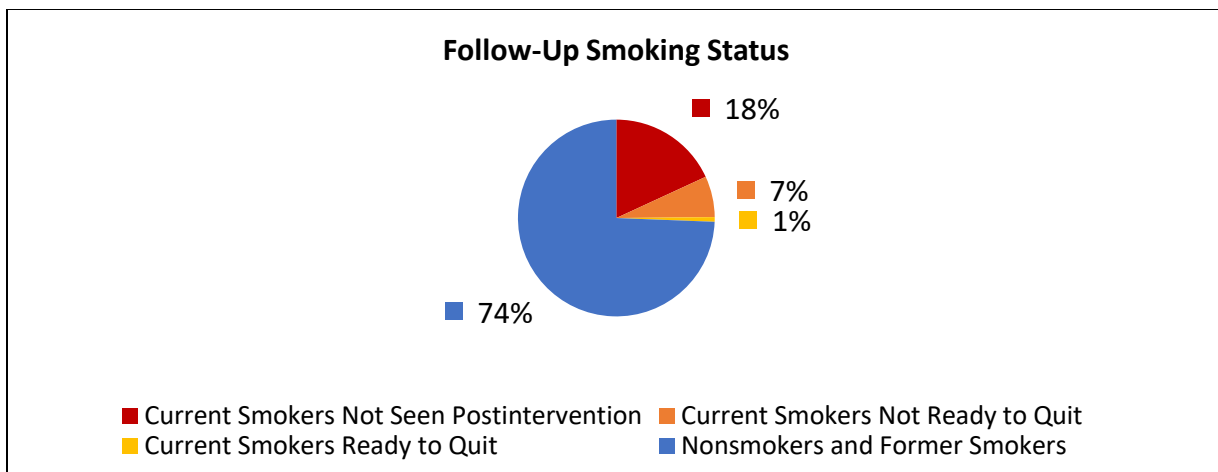| Follow-Up Smoking Status	Frequency	% Frequency
Current Smokers Not Seen Postintervention	691	18.12
Current Smokers Not Ready to Quit	257	6.74
Current Smokers Ready to Quit	29	0.76
Nonsmokers and Former Smokers	2837	74.38
Total Patients Seen	3814	100.00

Figure 4. Follow-Up Smoking Status

SECTION 5: Discussion

The results of this project favorably answered the PICO question posed prior to project

implementation. Intervention success was defined as an increase in provider rate of SCC

performance and a decrease in the percentage of patients who smoke cigarettes at the clinic. The

project leader witnessed an increase of 4.33% in provider performance of SCC, and a reduction

of 1.46% in documented current smokers. Outcome measures suggest project success.

However, project success must be gauged with several limitations.

Limitations

First, the project results are not generalizable to the population, but serve as a reference

only for the project site. Descriptive statistics were utilized instead of inferential statistical tests,

which would have allowed more generalizability of the data by comparison of sample data to the

population. Additionally, sampling methods utilized in this project do not favor generalizability

of results to other sites. Convenience sampling was utilized rather than random sampling, which

increases the chances of outliers that would skew data to misrepresent the population. However,

it was never an objective of this evidence-based practice project for results to be generalized to

other sites. The goal of this project was to implement evidence-based SCC care standards into

practice at a clinic in rural Virginia; the project leader did not seek to inform evidence-based

practice, but rather to align clinic procedures with evidence-based practices. Other clinics that

implement the 5A's of SCC into practice may achieve different results. Although, the literature

review conducted prior to project implementation demonstrated widespread success with

implementation of the 5A's in a research context that does suggest generalizable favorable

outcomes in performance of SCC and smoking cessation.

Another factor to consider is the change in provider staffing that occurred between

baseline and follow-up data collection. Two providers left the practice just prior to the

intervention period, and two different providers joined the practice during the intervention

period. While the joining providers also received 5A's education and materials during the

intervention week, this change of providers between baseline and follow-up data may not fully

capture the difference in provider SCC behaviors as a direct result of the intervention delivered. For example, the two providers who left may have been more or less responsive to the intervention than the two providers who joined. Similarly, the two providers who joined may have performed SCC more or less frequently at baseline than the original two providers. Three providers remained the same between baseline and follow-up measures. This promotes confidence that the increase in SCC performance witnessed was more likely influenced by the intervention and not variation in provider behaviors.

The coronavirus disease 2019 (COVID-19) pandemic may have influenced follow-up results as well. Providers may have experienced distraction from routine patient preventative healthcare education to discuss COVID-19 precautions with patients. The number of patients coming in for COVID-19 testing may also have inflated the number of provider encounters where SCC was less likely to occur due to the brief nature of provider encounters for COVID-19 testing. However, this should not influence provider performance of SCC since smoking predisposes individuals to respiratory infections. It is also possible that before telehealth visits were well-established at the clinic, patients may not have come to regularly scheduled appointments for fear of being in public and contracting COVID-19.

Limitations also existed in the collection of data regarding smoking status. It was not possible to review the individual charts of all 3,814 patients between 18 and 88 years of age seen over the previous year for baseline and follow-up data collection, which resulted in several limitations that should be considered when reviewing results for the outcome of percentage of current smokers. Only smoking status of previously identified current smokers was reviewed. Therefore, it is possible that some adult patients who were previously nonsmokers or former smokers could have become current smokers following the intervention. However, it was not of

interest to collect data on patients who became smokers, since former smokers and nonsmokers

would not receive SCC; data collected would not be linked to the effectiveness of the

intervention. It is also noteworthy that some of these patients may have quit smoking at some

point during the year prior to the intervention rather than during the intervention period even

though the same sample of current smokers was utilized. This is because the 1,033 charts of

current smokers comprised patients who had at some point during the year reported a current

smoking status documented for an encounter. In subsequent encounters during the year, the

patient may have quit smoking. Still, the risk for patients to relapse remains high for many

months following a quit attempt, necessitating ongoing counseling. Therefore, it seems

appropriate to include these patients in evaluation of the effectiveness of the intervention.

Lastly, some patients in the original sample of 3,814 individuals may have died prior to the

follow-up period, which would alter the percentage. Seven patients were identified from among

the 1,033 patient charts reviewed who died between March 24, 2019 and July 1, 2020. For the

sake of continuity, these patients were included in baseline and follow-up data collection, since it

could not be determined if any of the remaining 2,781 patients were deceased.

        The length of follow-up period was also a limitation on the results of this project. A 90-

day timeframe was the maximum amount of time that could be allotted to evaluate outcomes of

the provider intervention for the project leader to complete the project in time for graduation. A

longer timeframe may have demonstrated a greater decrease in the percentage of patients who

smoke cigarettes. Some patients may only have received SCC toward the end of the follow-up

period, which would not allow the outcomes of the SCC to be reevaluated on a future visit. Of

the patients seen postintervention, 29 were identified as ready to quit, which implies that a

greater quit percentage may have been witnessed with more time to measure the outcome of

smoking status. The project leader believes that a follow-up period of six months to a year would have been most helpful to capture the long-term effectiveness of the intervention.

Lastly, the potential for bias in data collection exists since the project leader collected and interpreted findings of this evidence-based practice project. Additionally, because charts were reviewed by one person, it is possible that some items were overlooked or missed due to human error. To mitigate these risks, the data was narrowed as much as possible by the health records administrator prior to project leader review, and strict inclusion and exclusion criteria were developed for review of charts prior to initiation of the project. Additionally, a systematic approach for data collection was developed prior to collecting measures for each outcome.

Implications for Practice

For this clinic site, the results of the project suggest project effectiveness in helping providers to incorporate evidence-based standards of SCC in a way that has positively impacted documentation of SCC and patient smoking status. Improved performance of SCC may ease the transition for patients to quit smoking—increasing health, longevity, and quality of life for patients at this clinic. While these project results are not generalizable to other clinics, this project may serve as an implementation example to assist other clinics in implementing evidence-based standards of care in SCC. Providers personally informed the project leader that the materials provided concerning application of the 5A's model and FDA approved medications for smoking cessation increased provider confidence in delivery of SCC. Inclusion of a case scenario at the end of the presentation on application of the 5A's for SCC, SCC documentation, and SCC billing, also allowed the project leader to evaluate comprehension of the presentation and reinforce concepts taught. Other clinics may find some or all of these elements helpful in implementing evidence-based standards of SCC.

Sustainability

This project was implemented in a way compatible with clinic workflow and empowers

providers with the tools for continued performance of evidence-based SCC. Each provider was

given a hard copy of the entire presentation, a 5A's model quick reference sheet, and a laminated

reference sheet for smoking cessation medications. These items equip providers with knowledge

concerning SCC they may need to remember from the education presented. The presentation

was also developed with this clinic in mind, so it is personalized to the clinic setting, particularly

regarding documentation points. It seems likely that improvements in SCC performance will be

sustained, which should help to further decrease the large percentage of smoking patients at the

clinic over time.

Dissemination Plan

The findings of this project will be disseminated through submission to a journal and/or

presentation of a poster at a nursing conference. Access to this project will also be possible

worldwide upon publication of the project in Liberty University's Digital Commons Scholars

Crossing. Upon graduation, the findings of this project will be shared with the project

implementation site, which may motivate continued application of evidence-based principles of

SCC at the clinic. Baseline and follow-up data will be discussed with providers and concepts

learned through completion of the project. The project leader plans to pursue opportunities to

share this project and emphasize evidence-based SCC throughout her career, thereby increasing

the potential for effective SCC that helps patients quit smoking and improves quality of life.

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Appendix A

Table 1

Evidence Table

Article Title, Author, etc.	Study Purpose	Sample	Methods	Study Results	Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No)
Abdelazim, S.A., Nour-Eldein, H., Ismail, M.A. Al Sayed Fiala, L., & Abdulmajeed, A. (2018). Effect of training program regarding smoking cessation counseling for primary health care physicians in Port Said City, Egypt. *Journal of Public Health, 26*(5), 569-575. doi: 10.1007/s10389-017-0890-4	To evaluate the effect of training programs for primary healthcare physicians on the knowledge, attitude, and practice of smoking cessation counseling (SCC).	A convenience sample of 74 primary care providers in Port Said City, Egypt.	A quasi-experimental design utilizing a pretest and post-test methodology.	Knowledge, attitude, and practice skills regarding SCC among providers were markedly improved after education intervention.	Level 3: Controlled quasi-experimental design without randomization.	Limitations of this study included convenience sampling, lack of randomization of intervention and control groups, and foreign location which may diminish generalizability.	Supports provider educational intervention to improve provider knowledge, attitude, and skill set regarding SCC.
Bailey, B.A. (2015). Effectiveness of a pregnancy smoking intervention: The	To determine the impact	Convenience sample of all smoking	Quasi-experimental design	A statistically significant difference in	Level 3: Controlled quasi-	Only assesses efficacy of the 5A's in	Demonstrates a difference in smoking

Tennessee intervention for pregnant smokers program. *Health Education & Behaviors, 42*(6), 824-831. doi: 10.1177/1090198115590780	of SCC using the 5A's on levels of smoking in pregnant women and on birth outcomes.	pregnant women entering any five prenatal practices in rural south central Appalachia in Tennessee between the years 2008 to 2011; total sample of 1,486 out of 1685 eligible participants.	utilizing a non-randomized intervention group which received 5A's-guided counseling (n=1,486) and a control group (n=461).	quit rate noted in the intervention (28%) versus control group (9.8%) was observed. Two thirds of participants in the intervention group reduced smoking and 40% attempted to quit on one occasion or more. Newborns in intervention group weighed 270g more at birth and were 50% less likely to have a neonatal intensive care unit admission.	experimental design without randomizatio n.	pregnant women for smoking cessation; pregnant women may have a greater motivation to quit smoking and men may be less likely than women to quit in general making the study not fully generalizable to the population of adults greater than or equal to 18 years of age at the DNP project site.	cessation rates between traditional or unguided unstandardize d SCC and SCC that utilizes the 5A's.
Bakan, A.B., & Erci, B. (2018). Comparison of the effect of trainings based on	To compare and evaluate the effects	Convenience sample of 214 smoking	A quasi-experimental design	Results demonstrated 17% of	Level 3: Controlled quasi-	Participants were acquired	Provides insight into the value of

the Transtheoretical Model and the Health Belief Model on nurses' smoking cessation. *International Journal of Caring Sciences, 11*(1), 213-224.	of SCC based on the Transtheoretical Model (TTM) and Health Belief Model (HBM) on smoking cessation in nurses.	nurses at two hospitals.	utilizing a pretest and post-test design with an HBM-based intervention group and a TTM-based intervention group.	participants in the HBM group and 7% of the TTM group progressing to the action stage and 11.6% of the TTM group progressing to the maintenance stage.	experimental design without randomization.	from two hospitals in Turkey which may make results not generalizable to patients in rural central Virginia.	utilizing the TTM versus the HBM as a theoretical model for the delivery of smoking cessation interventions in DNP project.
Celestin, M.D., Ferguson, T., Ledford, E.C., Tung-Sung, T., Carton, T., & Moody-Thomas, S. (2018). Differences in treating tobacco use across national, state, and public hospital system surveys. *Preventing Chronic Disease, 15*. doi: 10.5888/pcd15.170575	To compare the smoking status and receipt of the 5A's of smoking cessation based on survey data from one national telephone survey, two Louisiana state-based surveys, and two in-person surveys in a Louisiana	Mixed random sampling and convenience sampling of 39,563 participants from the national survey, 2,329 and 2,084 from the state-based telephone surveys, and 890 and 1,209 with the hospital system surveys all with an	Non-experimental cross-sectional surveys.	National survey results demonstrated increased odds of smoking cessation when three or more of the 5A's were delivered compared to none and hospital system survey results showed increased odds of quitting with delivery of	Level 4: Correlational design.	Limitations of this study include a significant portion of results arising from surveys being conducted in Louisiana which may not be perfectly generalizable to the state of Virginia. Convenience sampling utilized.	Provides validation for utilization of the 5A's to support smoking cessation among patients included in this DNP project.

				four or more 5A's compared to none.				
hospital system.	annual income of less than 50,000 dollars per year to reduce confounding variables in smoking cessation.							
Chen, T.C., Hamlett-Berry, K.W., Watanabe, J.H., Bounthavong, M., Zillich, A.J., Christofferson, D.E., . . .Hudmon, K.S. (2015). Evaluation of multidisciplinary tobacco cessation training program in a large health care system. *American Journal of Health Education, 46*(3), 165-173. doi: 10.1080/19325037.2015.1023475	To evaluate the effectiveness of a four-hour tobacco cessation training program for health care professionals at increasing self-efficacy and knowledge regarding delivery of the 5A's of SCC.	Convenience sample of 205 healthcare professionals out of 291 from five Veterans Affairs facilities.	A quasi-experimental design utilizing a pretest and post-test design.	The training increased clinicians' knowledge and perceived self-efficacy regarding delivery of the 5A's of SCC.	Level 3: Controlled quasi-experimental design without randomization.	Limitations of this study included convenience sampling and lack of randomization of intervention and control groups.	Supports improved provider knowledge and self-efficacy regarding delivery of best practices with provider training concerning the 5A's of SCC.	
Chertok, I.R.A., & Archer, S.H. (2015). Evaluation of a midwife- and nurse-delivered 5A's prenatal smoking cessation program. *Journal*	To apply recommendations from the American	A convenience sample of 35	Quasi-experimental design utilizing a non-	During the study period, 91.4% of women reduced	Level 3: Controlled quasi-experimental design	Sample size is small and subjects utilized may not be	Supports the efficacy of the 5A's of smoking cessation in a	

of Midwifery & Women's Health, 60(2), 175-181. doi: 10.1111/jmwh.12220	College of Obstetricians and Gynecologists to implement the 5A's of SCC for smoking reduction among pregnant women.	pregnant women.	randomized intervention group which received 5A's-guided counseling.	smoking and 8.6% quit smoking during the study period. Participants who reduced smoking without quitting, smoked an average of four less cigarettes.	without randomization.	entirely generalizable to the population being studied which includes non-pregnant women and men.	longitudinal study delivered by trained providers and nurses.
Girvalaki, C., Papadakis, S., Vardavas, C., Pipe, A.L., Petridou, E., Tsiligianni, I., . . .Lionis, C. (2018). Training general practitioners in evidence-based tobacco treatment: An evaluation of the tobacco treatment training network in Crete (TiTAN-Crete) intervention. *Health Education and Behavior, 45*(6), 888-897. doi: 10.1177/1090198118775481	To determine the impact of training, practice, and patient tools for providers on delivery of 4A's (ask, advise, assist, arrange) of SCC and provider self-reported knowledge and self-efficacy.	A convenience sample of 24 general practitioners and 841 patients in Crete, Greece.	A quasi-experimental design utilizing a pretest and post-test for intervention group with a control group as well.	Practitioners reported significant increase in self-efficacy and knowledge compared to control group and patients served by these practitioners reported more receipt of the 4A's.	Level 3: Controlled quasi-experimental design without randomization.	Limitations of this study included convenience sampling and lack of randomization of intervention and control groups.	Supports the value in provider education to enhance delivery of four of the 5A's of SCC as well as increased provider self-efficacy with smoking cessation education delivery.

Kazemzadeh, Z., Manzari, Z.S., Vaghee, S., Ebrahimi, M., & Mazlom, S.R. (2016). The impact of smoking cessation training-counseling programs on success of quitting smoking in patients with acute coronary syndrome. *Journal of Evidence-based Care, 6*(3), 67-76.	To determine the effects of training-counseling programs on smoking cessation in patients with acute coronary syndrome.	Convenience sample of 51 patients with acute coronary syndrome.	An experimental design utilizing a randomized intervention group that received standardized SCC and a control group that received typical smoking cessation education.	A significant difference was observed between intervention and control groups in first through fifth stages of the program intervention in quit success. No significant difference was noted after the sixth stage of the program.	Level 2: Randomized controlled trial	Limitations of this study included convenience sampling, small sample size, and foreign location which may diminish generalizability of results.	Demonstrates the value of structured SCC to support smoking cessation in patients over traditional methods of smoking cessation education.
Kruger, J., O'Halloran, A., Rosenthal, A.C., Babb, S.D., & Fiore, M.C. (2016). Receipt of evidence-based brief cessation interventions by health professionals and use of cessation assisted treatments among current adult cigarette-only smokers: National Adult Tobacco Survey, 2009-2010. *BMC Public Health, 16*(141), 1-10. doi: 10.1186/s12889-016-2798-2	To evaluate the impact of receipt of the 5A's of SCC on patient use of recommended smoking cessation aids.	Random sample derived from National Adult Tobacco Survey (NATS) participants who totaled 10,801 current cigarette-only smokers.	A non-experimental survey.	Participants who received all 5A's of SCC were more likely to utilize counselling, medications, or a combination of both compared to individuals who received one or none of the 5A's.	Level 4: Correlational design.	Information obtained is subjective based on patient reports rather than an objective measurements of smoking cessation aids.	Demonstrates that the 5A's of SCC is associated with actual patient use of recommended cessation aids.

Lu, C.C., Hsiao, Y.C., Huang, H.W., Lin, J.Y., & Huang, C.L. (2019). Effects of a nurse-led, stage-matched, tailored program for smoking cessation in health education centers: A prospective, randomized, controlled trial. *Clinical Nursing Research, 28*(7), 812-829. doi: 10.1177/1054773817754276	To determine the effectiveness of a smoking cessation intervention matched to participant stage in the process of change according to the TTM.	Convenience sample of outpatients with heart disease or diabetes who smoke at a clinic.	Randomized controlled trial with an intervention group who received four 30-min face-to-face cessation counseling sessions and three sessions of telephone counseling over three months and control group who received standard treatment.	Results demonstrated improved abstinence among intervention group and a 50% decrease in daily cigarette consumption at six-month follow-up.	Level 2: Randomized controlled trial.	Participants were acquired from one health system in Taiwan which may make results not generalizable to patients in rural central Virginia.	Study utilizes the TTM for smoking cessation education and counseling which will be employed by this student in patient education seminars and provider education.
Malan, Z., Mash, B., & Everett-Murphy, K. (2016). Evaluation of a training program for primary care providers to offer brief behavior change counselling	To determine the impact on clinical practice of delivering	A convenience sample of 41 primary care providers including	A quasi-experimental design utilizing a standardized patient for	Review of 123 recordings six weeks following the training	Level 3: Controlled quasi-experimental design without	Results may not be generalizable to U.S. healthcare.	Supports training of primary care providers on the 5A's to promote

on risk factors for non-communicable diseases in South Africa. *Patient Education & Counseling, 99*(1), 125-131. doi: 10.1016/j.pec.2015.08.008	training to primary care providers on the 5A's as a counseling method for unhealthy eating, tobacco smoking, physical inactivity, and harmful alcohol use.	physicians and nurse practitioners in Western Cape South Africa primary care facilities.	counseling pretest before training, posttest immediately after training, and provider-blinded posttest at six weeks following training intervention.	intervention demonstrated significant improvement in performance of 5A's in clinical practice at six weeks compared to baseline.	randomization.		provider utilization of the 5A's in patient counseling on smoking cessation.
Martínez, C., Castellano, Y., Andrés, A., Fu, M., Antón, L., Ballbè, M., . . .Fernández, E. (2017). Factors associated with implementation of the 5A's smoking cessation model. *Tobacco Induced Diseases, 15*, 1-11. doi: 10.1186/s12971-017-0146-7	To identify barriers and facilitators to performance of the 5A's in healthcare workers.	A convenience sample of 580 clinical health workers enrolled in an online smoking cessation training course.	A non-experimental cross-sectional survey.	Performance of Ask, Advise, and Assess was moderate; Performance of Assist and Arrange was low; Facilitators of 5A's performance were positive experiences and self-efficacy; organizational support linked to performance of Assist and	Level 4: Correlational design.	Convenience sample from one hospital network completing a smoking cessation education online program. The existing emphasis on smoking cessation in this hospital network may make the data less generalizable to other settings.	Provides insight into facilitators and barriers to 5A's implementation to guide and support provider educational intervention.

				Arrange; personal tobacco use was a barrier to Advise and Arrange.			
Payne, T.J., Gaughf, N.W., Sutton, M.J., Sheffer, C.E, Elci, O.U., Cropsey, K.L., . . .Crews, K.M. (2014). The impact of brief tobacco treatment training on practice behaviors, self-efficacy and attitudes among healthcare providers. *International Journal of Clinical Practice, 68*(7), 882-889. doi: 10.1111/ijcp.12386	To determine the impact of SCC training utilizing the 5A's on healthcare worker self-reported use of the 5A's and self-efficacy in using the 5A's.	Convenience sample of 488 healthcare workers (nurses, social workers, counsellors, respiratory therapists, asthma and diabetes educators, physicians, nurse practitioners, psychologists, occupational and physical therapists) at participating sites; 51.7% of subjects completed the follow-up	Quasi-experimental design longitudinal study utilizing a pre-survey and post-survey format immediately after and six months following training.	Significant increase in provider self-reported performance of the 5A's in delivery of SCC and self-efficacy in performing 5A's at six-month follow-up.	Level 3: Controlled quasi-experimental design without randomization.	Findings are subjective based on healthcare worker reports rather than objective in determining healthcare worker performance of 5A's. Large portion of original sample lost to follow-up.	Supports that provider training on the 5A's is associated with long term practice behavior, self-efficacy, and attitude improvements regarding delivery of SCC with the 5A's.

		survey (n=252).					
Sarna, L., Bialous, S.A., Zou, X.N., Wang, W., Hong, J., Wells, M., & Brook, J. (2016). Evaluation of a web-based educational programme on changes in frequency of nurses' interventions to help smokers quit and reduce second-hand smoke exposure in China. *Journal of Advanced Nursing, 72*(1), 118-126. doi: 10.1111/jan.12816	To evaluate a web-based educational smoking cessation program on changes in the frequency of hospital-based nurses' self-reported interventions to help smokers quit using the 5A's.	A convenience sample of 1,386 nurses from eight hospitals in Beijing and Hefei, China.	A quasi-experimental design utilizing a pretest and post-test methodology.	At six months, nurses were significantly more likely to Assess, Assist and Arrange for smoking cessation and recommend smoke-free home environment. There were significant improvements in attitudes about tobacco control.	Level 3: Controlled quasi-experimental design without randomization.	Limitations of this study included convenience sampling, lack of randomization of intervention and control groups, and foreign location which may diminish generalizability.	Supports that that training of nurses to use the 5A's of SCC positively translates to performance of the 5A's in routine patient care.
Schauer, G.L., Wheaton, A.G., Malarcher, A.M., & Croft, J.B. (2016). Health-care provider screening and advice for smoking cessation among smokers with and without COPD: 2009-2010 national adult tobacco survey. *Chest, 149*(3), 676-684. doi: 10.1378/chest.14-2965	To estimate the prevalence of patient receipt of the 5A's of SCC among smokers with and without COPD.	Random sample of 20,021 cigarette smokers in the past year across the United States.	A non-experimental survey.	COPD patients versus those without COPD reported 95.4% vs 85.8% for being asked about smoking status, 87.5% vs 59.4% for	Level 6: descriptive design.	Information obtained is subjective based on patient reports rather than an objective measurement of whether providers delivered all	Demonstrates the deficits in providing the 5A's by providers when delivering SCC which supports the need for this DNP project.

				being advised to quit, 63.8% vs 37.9% for assessment of willingness to quit, 58.6% vs 34.0% for being offered assistance to quit, and 14.9% vs 5.2% for being offered follow-up.		components of the 5A's.	

Appendix B

DNP Scholarly Project
LETTER OF SUPPORT

Liberty University, Inc.
1971 University Boulevard
Lynchburg, VA 24593

RE: IRB Letter of Support
Cristina Minotti

Dear Institutional Review Board Chair and Members:

I am writing this letter of support for one of our colleagues.
It is our intention to support Cristina Minotti's DNP scholarly project (described below).

Scholarly Project Overview

1. **Project Summary:**
This project will involve provider education on performance of smoking cessation counseling at
the ▮▮▮▮ clinic for ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

2. **Objectives:**
This project meets with ▮▮▮ objectives of decreasing cigarette smoking and standardizing
smoking cessation counseling among patients seen.

3. **Background & Rationale:**
This project will utilize the Iowa Model of Evidence Based Practice for Quality Improvement. It
will be designed to support smoking cessation among patients through improved delivery of
smoking cessation counseling. ▮▮▮ has identified a high population of smokers within the
population of patients serviced by the ▮▮▮ in ▮▮▮ The clinic plans to benefit from this
project through student assistance with provider training on the 5As (Ask, Advise, Assess,
Assist, Arrange) of smoking cessation counseling as well as education documentation and billing
and coding regarding smoking cessation counseling services rendered which should enhance
clinic efficiency, efficacy, patient-centered care, and reimbursement regarding smoking cessation
counseling. ▮▮▮ grants access to Cristina Minotti to the electronic health record system
utilized by the ▮▮▮ clinic in ▮▮▮ for the purposes outcomes evaluation via baseline and
follow-up data collection to a secured storage device that will contain deidentified data with no
patient or provider identifiers.

Sincerely,

Signatory Name: ▮
Signatory Title: ▮
Institution Name: ▮
Institution Address ▮
Institution City, State, and Zip Code: ▮

Appendix C

Appendix D

Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

████████████ - University of Iowa Hospitals and Clinics ████████████████████

Thu 11/7/2019 7:59 PM

To: Minotti, Cristina ████████████████

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care*. Click the link below to open.

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

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Citation: Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223*

In written material, please add the following statement:
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Please contact ████████████████████████ or ████████ with questions.

Appendix E

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

January 6, 2020

Cristina Minotti
IRB Application 4148: Walking through Smoke: Implementation of the 5As for Smoking
Cessation Counseling at Two Clinics in Rural Virginia

Dear Cristina Minotti,

The Liberty University Institutional Review Board has reviewed your application in accordance
with the Office for Human Research Protections (OHRP) and Food and Drug Administration
(FDA) regulations and finds your study does not classify as human subjects research. This means
you may begin your research with the data safeguarding methods mentioned in your IRB
application.

Your study does not classify as human subjects research because evidence-based practice
projects are considered quality improvement activities, which are not considered "research"
according to 45 CFR 46.102(d).

Please note that this decision only applies to your current research application, and any changes
to your protocol must be reported to the Liberty IRB for verification of continued non-human
subjects research status. You may report these changes by submitting a new application to the
IRB and referencing the above IRB Application number.

If you have any questions about this determination or need assistance in identifying whether
possible changes to your protocol would change your application's status, please email us at
irb@liberty.edu.

Sincerely,

Administrative Chair of Institutional Research
Research Ethics Office

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Liberty University | Training Champions for Christ since 1971

Appendix F

RE: Application 4148: EBP Project Site Revision

IRB, IRB <IRB@liberty.edu>
Fri 2/28/2020 9:09 AM
To: Minotti, Cristina █████████████████████
Cc: Thompson, Ken (Nursing) ████████████████████

Thank you, Christina. We're saved your revised information and new site approval letter to your file. You may continue with your project as described in your documents.

Best,

████████████████████
Administrative Chair of Institutional Research
Research Ethics Office

(434) 592-5530

LIBERTY
U N I V E R S I T Y

Liberty University | Training Champions for Christ since 1971

From: Minotti, Cristina ████████████████████
Sent: Thursday, February 27, 2020 4:54 PM
To: IRB, IRB <IRB@liberty.edu>
Cc: Thompson, Ken (Nursing) ████████████████████
Subject: Application 4148: EBP Project Site Revision

Dear IRB,

I have had to change the site where my project will be performed. I have attached the new site approval letter for this project (application # 4148) and have made the following changes to my EBP checklist and IRB application to reflect this change of site:

- The title of the project was changed to "Walking through Smoke: Implementation of the 5As for Smoking Cessation Counseling in Rural Virginia."
- Provider education will be delivered collectively rather than only individually at this site.
- All instances of "clinics" were changed to singular "clinic" and all instances where the previous site was mentioned was replaced with the appropriate new site name.
- The sample of patient charts that will be reviewed for the variable of percentage of patients who smoke has been narrowed to include only active patients (those seen within the past year prior to baseline data collection) due to the large volume of patients seen at the clinic.

The revised EBP checklist and IRB application are attached to this email along with the IRB approval letter previously issued.

Thank you for your time.