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## Evaluation of a Smoking Cessation Program in Primary Care

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# **Evaluation of a Smoking Cessation Program in Primary Care**

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A Dissertation Submitted to the Graduate School at the University of Missouri-St. Louis  
in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice  
with an emphasis in Leadership

August 2024

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## Abstract

**Problem:** The adult tobacco smoking rate exceeds 12.5%. The problem is the insufficient attention given to smoking cessation education in low socioeconomic status (SES) communities. There is a lack of access to and awareness of smoking cessation programs for low-income populations.

**Methods:** This quality improvement (QI) study will use a descriptive, observational approach. A retrospective medical record review will be conducted to determine the rate of individuals who got the smoking cessation intervention and the rate of those who successfully quit one month after the intervention. Data was collected throughout the spring of 2024, during primary care visits and phone calls, using the gold standard 5A Model for healthcare providers.

**Results:** The patient gender breakdown was 53% female ( $n = 17$ ) and 46% male ( $n = 15$ ). The most common race observed was Black ( $n = 21, 65\%$ ), followed by White ( $n = 11, 35\%$ ). There was ( $n = 33, r = -.25$ ) ( $p = 0.152$ ), indicating no meaningful correlations between the variables. Gender and race studies found that Black females have a considerably higher rate of tobacco use ( $p < .05$ ). Participants' ages ranged from 21 to 80, with a mean of 54.21 ( $SD = 16.52$ ). The smoking cessation rate after the intervention was 7.28 ( $SD = 4.77$ ) ( $n = 32$ ).

**Implications for Practice:** The widespread use of the 5A model by primary care providers will be helpful to this underserved community and to improve health.

**Outcome Measures:** The physician documented a smoking history in 16% of the patients ( $n = 5$ ). Extra visits had a significant positive connection with cessation, with a correlation coefficient of 1.00, indicating a big impact size ( $p < .001, 95.0\%$ ). Additional

visits tend to increase smoking cessation was a significant median difference in smoking cessation rates among those who received additional intervention visits ( $z = -4.89$ ,  $p < .001$ ).

## **Evaluation of a Smoking Cessation Program in Primary Care**

In the United States and worldwide, there is considerable public concern about cigarette smoking, which goes unaddressed by providers during healthcare visits. Health maintenance is a priority in primary care, especially for chronic conditions. Smoking is a confounding factor for health maintenance, and 12.5% (30.8 million) of adult Americans currently smoke cigarettes (Centers for Disease Control and Prevention [CDC], 2023). An estimated 87% of lung cancer and 80% to 90% of chronic obstructive pulmonary disease (COPD) related mortalities are directly associated with smoking (American Lung Association [ALA], 2023; CDC, 2023). The CDC (2023) revealed that cigarettes are utilized more than any other tobacco product in adults in the United States, with 480,000 deaths per year from cigarette smoking. Gennette (2022) reported that lung cancer along with deaths from tobacco smoking had increased significantly within six years. Additionally, smoking cessation decreases poor health results, increasing tobacco users' length of life (ALA, 2023; CDC, 2023; Creamer et al., 2019).

Some of the highest smoking rates in the United States occur among Black and multi-racial populations, financially disadvantaged adults, and those with GEDs or without high school diplomas (CDC, 2023). Rates among Black adults were 11.7%, while rates among multi-racial populations were 14.9%, accounting for over 25% of the population (CDC, 2023). Adults below the poverty line were more than twice as likely to smoke as those with a higher income (CDC, 2023). Adults with a GED or no high school diploma had the highest rates of tobacco use, accounting for 30.7% and 20.1% respectively (CDC, 2023; Cramer et al., 2019). In addition, another disadvantage for these populations is a lack of education on tobacco use and decreased knowledge of

smoking cessation programs. Approximately 40% of impoverished adult smokers do not seek primary care visits annually (Gennette, 2022). Further compounding the issue is the lack of formal education on tobacco use and smoking cessation programs from healthcare providers in these communities. Individuals who fail to understand the harms of tobacco use have a low compliance rate in quitting smoking (Gennette, 2022).

Despite the availability of cessation programs, insufficient attention is given to smoking cessation education in low socioeconomic status (SES) communities. Smoking rates remain high among economically disadvantaged individuals due to barriers like limited accessibility, high costs, and a lack of awareness regarding the existence and benefits of these programs. The bottom line on the importance of quitting smoking in low-income communities is that it has a direct effect on public health as well as the burden it puts on health care systems. A Standardized Toolkit for smoking cessation to be used during primary care visits is instrumental in this population (Cramer et al., 2019; {United States Department of Health and Human Services} [USDHHS], 2020; {World Health Organization} [WHO], 2023). A primary care physician can advise patients to stop smoking. Smoking is a major risk factor for chronic conditions like lung cancer, COPD, and heart disease (ALA, 2023; CDC, 2023). Healthcare providers can make substantial progress in reducing smoking-related morbidity and mortality rates by targeting smoking cessation efforts in low-SES communities (Cramer et al., 2019; USDHHS, 2020).

The 5A Model is the gold standard for healthcare provider interventions addressing tobacco use and addiction. The "5A Model" of asking, advising, assessing, assisting, and arranging each visit provides a framework for smoking cessation efforts

(Agency for Healthcare Research & Quality [AHRQ], 2020; World Health Organization [WHO], 2023). The 5A approach includes asking about specifics of tobacco use history, how long, and the number of cigarettes per day smoked. Smoking cessation is encouraged, and patients are educated on its harm to the body (Creamer et al., 2019). Each person who smokes and participates agrees to quit smoking and has the mental readiness to quit. Aid is provided through brochures, support, and optional medication usage channels (American Lung Association [ALA], 2023). Finally, follow-up visits or telephone calls are conducted to evaluate the success of smoking cessation and prevent relapse. In any plan to use the 5A Model, it is critical to re-address the effort of smoking cessation.

The Plan, Do, Study, Act (PDSA) improves change when a problem is identified according to (AHRQ, 2020). The PDSA cycle was chosen as the framework for this project as it uses research and non-research findings to help improve patient care, focusing on clinical issues. The PDSA cycle provides a continuous perspective to evaluate small-scale interventions to assess rapidly and gather feedback to ensure appropriate modifications are made in the future (AHRQ, 2020). The AHRQ (2020) announced the PDSA cycle founded on a four-step system: establish a plan, notice the treatment, analyze the outcome, and finish with an action. This evidence-based practice framework identifies a purpose that regulates a quality outcome and implements a plan of action. Reducing the consumption of cigarettes has the potential to reduce the incidence of diseases and enhance the overall health of individuals (ALA, 2023).

The Ask is the first step is to identify cigarette smoking. Assess the tobacco use habit to see how long they smoked, and the number of cigarettes smoked per day. It is

also important to ask if they have ever tried quitting and if so, what happened to them to continue smoking. Ask if they are ready to stop smoking cigarettes and document it.

According to the CDC (2023), it is valuable for the primary care provider to assist with smoking cessation by asking and suggesting an intervention.

Advise all patients who smoke cigarettes that smoking cessation is important in their health to avoid illnesses. Make it clear that smoking can kill them, and it also can affect others through secondhand smoke. Advise the patient that asthma, cancer, and heart problems are worsened by smoking and document it (ALA, 2023; CDC, 2023).

Assess if they are motivated and ready to quit smoking. Assess how many times they have attempted to quit smoking. Assess if there are factors that may interfere with quitting like stress or depression about living situation. Assess if counseling may be needed to help patients stop smoking cigarettes as it has been recommended for some patients to be successful in smoking cessation and document findings (CDC, 2023).

Assist patients by providing literature and brochures, the 24/7 hotline for support and refer to support groups. Assist the patient with one-on-one education on smoking cessation and what to expect when you quit smoking. Assist those who are not sure if they want to quit smoking with one-on-one support, and evidence-based literature to support education. Assist the patient by referring to their primary care doctor if pharmacotherapy is needed (AHRQ, 2020).

Arrange for weekly calls to evaluate their success in abstinence within the first week and document it. Arrange for a follow-up visit in person or by phone to address any problems with smoking cessation or the disease process. A great number of people who



quit smoking experience some form of withdrawal or weight gain (ALA, 2023; CDC, 2023; USDHHS, 2019; (World Health Organization [WHO], 2023).

### ***Purpose of the Project***

The purpose of this project is to evaluate a smoking cessation program at a primary care clinic serving predominantly low-income individuals. The 5A Model will be followed: for those who report smoking cigarettes, the provider will assess smoking usage, discuss risks, and give an informational brochure. Those who wish to quit will be given resources (CDC, 2023). To address the final step of the 5A Model (arrange), a follow-up call will be made in one week to check in regarding smoking cessation goals. At week four, an additional call will be made to check in regarding smoking cessation goals and documents. The study question for this project is:

In adult patients ages 18-85 receiving care at a primary care clinic:

1. What is the rate of those who received the smoking cessation intervention?
2. Of those who received the intervention, what is the rate of self-reported smoking cessation at 1 month?

This project seeks to address the pressing issue of high smoking rates within low socioeconomic status (SES) communities and to develop effective strategies for promoting smoking cessation in these populations. Despite the availability of cessation programs, smoking rates remain alarmingly high due to various barriers, such as limited accessibility, financial constraints, and lack of awareness about the benefits of quitting smoking (CDC, 2023).

## Literature Review

A systematic literature review for evidence was conducted using PubMed, Google Scholar, CINAHL, Medline Plus, and Summon. Keywords used include smoking cessation, nicotine addiction, stop smoking, effects on the human body, risk from smoking, smoking-related heart disease, pregnant women, COPD and smoking, and smoking cessation program, with Boolean operators AND and NOT. The articles considered for inclusion from the systematic review looked at primary care screening adults for smoking cessation interventions. The articles cover adherence to screening cessation tools in adult patients aged 18 to 85, as well as teaching on risk to motivate cessation, and were published in English from 2017 to 2023. Preference was given to studies published within the last six years to prioritize the most recent evidence when selecting publications. Exclusion criteria were under the age of 18 and over the age of 85, articles not published in English before 2017, and nonsmokers. Following revision, the number of articles remaining was:

- Identification of records returned from databases 375 and 83 removed due to duplication.
- Screening by title and abstract 90 with 88 excluded due to articles on adolescents, pregnancy, and electronic vaping.
- Eligibility per records screened 202 and 198 excluded were inpatient smokers, psychiatric patients, institutional people, and the military population.
- After applying filters and revisions, six articles were chosen for the literature review.

The 5A Model for Smoking Cessation

Current evidence indicates that the gold standard evidence-based tool recommended for smoking cessation is the 5A Model. This is a validation tool that was developed in 2000 and was implemented to treat tobacco and dependence usage (United States Department of Health and Human Services [USDHHS], 2019). The 5A Model has been a widely recommended approach for smoking cessation and includes five areas: Ask, Advise, Assess, Assist, and Arrange. Primary care providers should align the 5A Model to focus on assessing readiness for smoking cessation.

In a randomized control trial (RCT), the use of the 5A Model with literature was found to be effective in smoking cessation of patients (Lewis, 2021). Authors of the RCT found that evidence-based smoking cessation interventions were higher among Veteran Healthcare Administration (VHA) compared to academic healthcare (AHC) providers. (OR = 4.3; 95% CI 1.3–14.4;  $p = .02$ ) Individual treatment components as well as smoking cessation medication use significantly differed across health systems (98% VHA vs 90% AHC,  $p = 0.02$ ) and referral for treatment (91% VHA vs. 65% AHC,  $p = 0.001$ ).

A systematic review by Martinez et al. (2017) was conducted and the performance means (standard deviation) for the first three As [Ask: 6.4 (3.1); Advise: 7.1 (2.7); Assess: 6.3 (2.8)] were moderate, while the last two As [Assist: 4.4 (2.9); Arrange: 3.2 (3.3)] were low. The authors discovered a strong relationship between Assist and Arrange ( $r = 0.704$ ,  $p < 0.001$ ) regarding smoking cessation success (Martinez et al., 2017). Performing the 5A Model and having organizational support with Assist and Arrange were positively associated with having positive experiences and feeling competent. Personal tobacco use was negatively associated with Advise and Arrange among healthcare workers. According to the authors' findings, clinical healthcare workers

did not completely perform the 5A (Martinez et al., 2017). The primary barriers identified pointed to the need for training and the availability of practical guidelines in healthcare services. Moving toward the implementation of Assist and Arrange requires organizational support (Martinez et al., 2017).

Gennette et al. (2022) conducted an independent study of core smoking cessation measures and revealed inadequate smoking cessation education records and a lack of monitoring protocols. The smoking cessation data compliance rate pre-implementation 25% rate and 77% post-implementation of a provider education program, which exemplified a significant 52% increase in the rate of smoking cessation ( $p < .001$ ) in addition to improved documentation adherence in 180 days. This study supports the benefits of targeted provider education programs for improving smoking cessation in the low-income population.

Broadly, system-level changes and brief tobacco cessation interventions can assist with patient screening and treatment (AHRQ, 2020). A meta-analysis by Wray et al. (2018) sought to assess the efficacy of tobacco cessation programs in various integrated primary care clinics. The review included 36 studies and 12,975 patients. Over 58% of the studies used interventions like the 5A Model with direct advice, motivational interviews, and health education. Over 42 % of the studies used both the above interventions and pharmacological treatment of nicotine replacement therapy (NRTs). In the literature, 83 % of all studies lasted about six months and included at least three follow-up appointments with the identified primary care provider. The meta-analysis found that those who received multiple interventions (both non-pharmacological and pharmacological) had a higher chance of quitting smoking (1.78 odds ratio [OR],

confidence interval [CI] 95%), ( $p < .001$ ) than those who only received non-pharmacological interventions (Wray et al., 2018).

Despite concluding that brief interventions were effective, this review was limited by publication bias and sample heterogeneity, both of which, hampered statistical interpretation. Regardless, Wray et al. (2018) suggest that future research evaluates ways to improve the dissemination of brief interventions in integrated primary care settings. The 5A Model was a low-cost, time-saving intervention that improved smoking cessation care and addiction. It costs more to treat an illness from tobacco use than to implement the 5A Model.

In a study by Affentranger and Mulkey (2023), provider respondents to a survey reported higher rates of asking patients about their smoking status and advising them to quit than they did of assessing readiness to quit, assisting in quit attempts, and arranging follow-up appointments. The mean tobacco cessation counseling (TCC) rate increased by 27.5% among 629 patient encounters, and the mean reported cessation rate improved by 3.9% (Affentranger & Mulkey, 2023). When providers used the 5A intervention, variation in TCC rates decreased, which was a statistically significant finding after using the intervention ( $p < .001$ ) (Affentranger & Mulkey, 2023).

Healthcare facilities in low-SES communities should prioritize establishing comprehensive smoking cessation programs. These programs should encompass a range of evidence-based interventions, including behavioral counseling, pharmacotherapy, and support groups (AHRQ, 2020; USDHHS, 2020). A study by Creamer et al. (2019) found that implementing comprehensive population-based interventions in coordination with

regulation of the manufacturing, marketing, and distribution of all tobacco products can reduce tobacco-related disease and death in the United States (Creamer et al., 2019).

A major study involving 14,438 smokers by the Centers for Disease Control (CDC) (2023) discovered that physician advice alone resulted in approximately 2% of smokers quitting since 2018. However, additional guidance and support lead to approximately 5% of smokers quitting, according to CDC studies involving 6,466 participants (CDC, 2023). The average U.S. household earns \$35,000 annually and has a 20.2% smoking rate (American Lung Association [ALA], 2023; Creamer et al., 2019). However, those living in poverty smoke more cigarettes and smoke for almost three times as long as those with a family income which is two times higher than the poverty rate (ALA, 2023). For instance, at current prices, an individual would spend more than \$100,000 on a single pack of cigarettes over 10 years, which is the equivalent of a deposit on a home. That is more than the cost of a down payment on a house.

Those who smoked and were cognizant of the four adverse health outcomes associated with tobacco use were more likely to report an intention to quit within the next month, compared to those who were not cognizant of all the analyzed adverse effects of tobacco use. Findings for the former and the latter showed 19.7% versus 13.1% ( $p < 0.05$ ), indicating a need to enhance knowledge of the risks of active and passive tobacco use among socially disadvantaged populations (USDHHS, 2020). It is also possible that a person's lack of knowledge of the health consequences of smoking is an intentional act to justify their smoking habit.

COPD, a diagnosis exacerbated by smoking, is the third most common cause of mortality in the world, accounting for 3 million fatalities (WHO, 2023). The CDC (2023)

found that individuals diagnosed with COPD within two years of their diagnosis had a significantly reduced risk of all-cause mortality and cardiovascular mortality compared to those who continued to smoke. The risk of smoking-related mortality decreases by approximately 90% for those who quit smoking before the age of 40 (ALA, 2023).

### ***Accessibility to Smoking***

The accessibility of tobacco products in low-income areas is a pressing issue that contributes to the high prevalence of smoking in these communities. Large tobacco companies invest significant resources in advertising their products and strategically placing them in convenience stores, gas stations, and grocery stores. The ease with which individuals in these areas can access tobacco products exacerbates the smoking problem (CDC, 2023; WHO, 2023).

Furthermore, aside from the physical environmental factors, social characteristics of certain geographic locations also shape smoking behaviors. The influence of peers, family members, and community norms can significantly impact an individual's smoking decision. A study by Lewis et al. (2021) demonstrated that social determinants of health, such as income level and education, can influence smoking behaviors, highlighting the complex interplay of various factors in determining smoking rates in low-income areas.

Research indicates that smokers typically die ten years earlier than those who never smoked, underscoring the urgent need for effective smoking cessation interventions (CDC, 2022). Certain populations, such as Black individuals, are disproportionately affected by smoking, with a higher prevalence of smoking mentholated cigarettes, which are more addictive. Lasser et al. (2017) found that the influence of race, ethnicity, and

socioeconomic status on smoking behaviors emphasizes the need for targeted interventions tailored to address the specific challenges faced by different communities.

Furthermore, aside from the physical environmental factors, social characteristics of certain geographic locations also shape smoking behaviors. Research has demonstrated that socioeconomic and educational factors, such as income and education, can have an impact on smoking habits, emphasizing the intricate interplay of multiple elements in determining smoking prevalence in low-income communities (ALA, 2023).

Utilizing culturally competent interventions that promote and expedite cessation, with a particular emphasis on groups with a high smoking prevalence rate and or ongoing cessation-related disparities (WHO, 2023) can prove successful. Health disparities between rich and poor populations are closely linked to tobacco use, with individuals from low-income backgrounds experiencing a higher prevalence of smoking-related diseases and reduced access to smoking cessation resources (CDC, 2023). Addressing these disparities is crucial to achieving health equity and promoting well-being.

### ***Barriers to Success in Smoking Cessation***

Barriers to success in smoking cessation include providers underestimating willingness to quit smoking. Assessing current patients who smoke might not occur because often only new patients are screened for smoking status and intake (CDC, 2023). Other barriers are the provider's lack of time to address smoking cessation and the lack of time to provide adequate counseling. The absence of an established tobacco cessation program poses a challenge, as providers lack the necessary resources to refer individuals to the program and lack the time to follow up with patients (CDC, 2023).



The CDC (2023) reported a barrier in that people who abuse other substances often smoke cigarettes, but eliminating addiction is not a guarantee of smoking cessation due to the addictive properties of nicotine. Patients' anxiety stems from experiencing fear of the unknown, low confidence, and the results of failure in past smoking cessation programs (Lewis et al., 2021). A perceived barrier is the worry or anxiety felt by people who smoke about feeling hungry or gaining weight from quitting smoking cigarettes (Assari & Bazargan, 2019). An additional barrier is that other family members may smoke cigarettes, making it a challenge to quit smoking due to familial exposure or influence.

### ***Gaps in Literature***

The limitations and barriers identified in the research were that not every provider uses the 5A Model, provider lack of knowledge, and time constraints. The World Health Organization (WHO) (2023) recommended that primary care providers improve their knowledge and skills in treating smoking cessation. The 5A Model has revealed that this evidence-based tool helps to stop tobacco use, is cost-effective, and decreases the risk of morbidity and mortality (Affentranger & Mulkey, 2023). Furthermore, in primary care implementation of smoking cessation and smoking interventions are highly necessary for the outcome of smoking cessation.

When conducting the literature review, it is noteworthy that resources by the medical team identified patients' lack of knowledge and health consequences to avoid gaps in the present literature concerning successful abstinence after six, nine, and twelve months of attending a smoking cessation program (ALA, 2023). Further research is essential to emphasize to the smoking population that there are benefits to smoking

cessation (ALA, 2023; AHRQ, 2020). For example, an evidence-based smoking questionnaire from the patient's chart requires the medical team to document each visit created. Additionally, a study by Lewis et al. (2021) found that a unique method of provider behavior and support in smoking cessation services would increase healthcare providers' faithfulness to recommend smoking cessation intervention guidelines for all patients.

With the 5A Model, there is one major limitation in that it relies on patient self-reporting, which could distort actual results. To avoid the bias that this issue creates, the emphasis should remain on the perspectives of primary care providers and various follow-up mechanisms to better direct intervention efficacy. A weekly call or face-to-face should be conducted, an individualized approach for each participant employed, and adherence by primary care providers maintained. The current literature suggests that systemic change in health organizations is required to support the delivery of these evidence-based tobacco-dependence therapies (Wray et al., 2018). Research shows that full adherence to the 5A Model by providers remains poor. Implementing a distinct approach to provider behavior and support in smoking cessation services, such as the 5A Model, can increase the willingness of healthcare providers to provide smoking cessation treatment recommendations to their patients.

### **Conceptual Framework**

The theoretical framework guiding this scholarly project is the Institute for Healthcare Improvement (IHI) Model for Change, and the process will be a PDSA cycle, a repetitive process to improve change when a problem is identified by the (AHRQ, 2020). The PDSA cycle was chosen as the framework for this project as it uses research

and non-research findings to help improve patient care, focusing on clinical issues. The PDSA cycle provides a continuous perspective to evaluate small-scale interventions to rapidly assess and gather feedback to ensure appropriate modifications are made in the future (AHRQ, 2020). The AHRQ (2020) announced the PDSA cycle founded on a four-step system: establish a plan, notice the treatment, analyze the outcome, and finish with an action. This evidence-based practice framework identifies a purpose that regulates a quality outcome and implements a plan of action. Reducing the consumption of cigarettes has the potential to reduce the incidence of diseases and enhance the overall health of individuals (ALA, 2023).

## **Methods**

### **Design**

This quality improvement study utilizes a descriptive, observational design.

### **Setting**

The study will be conducted in an organizationally-owned, primary care community clinic environment within the Midwest. The clinic serves low-income individuals who live at or below the poverty level. The number of patients served annually is 200.

### **Sample**

This is a convenience sample of approximately 30 patients receiving care at the clinic who currently smoke cigarettes between January and March 2024. Inclusion criteria include male and female adults who smoke cigarettes, ages 18-85. Exclusion criteria will be clinic patients who do not currently smoke and are younger than 18 or older than 85. Visit types included will be all visits of patients typically seen in the clinic.

## Approval Process

The site's medical director and CEO approved the project. Institutional review board (IRB) approval will be gained from the university. Benefits include the potential for patients to quit smoking. There are no known ethical considerations or risks associated with this study.

## Data Collection and Analysis

Data will be collected via a retrospective chart review of 32 participants. All data will be de-identified and stored on the principal investigator's password-protected computer. Descriptive data will be assembled and utilized to describe the sample population, including patient demographics. A CDC (2023) found that in a study involving 14,438 smokers physician advice alone leads to approximately 2% of smokers quitting each year such as gender, age, ethnicity, and insurance type. Data collected will include current smoking status, and self-reported smoking at one-month follow-up. This data will be entered into Excel Spreadsheet and Intellectus for analysis. The descriptive observation will use an inferential design, proportional data to compare the number of cessations to attempts, and nominal data to determine male/female and ethnicity. All data will be de-identified and each patient will be coded as A1, A2, and A3.

## Procedure

An email will be sent to the clinic provider/CEO's patients informing them of a smoking cessation class. After obtaining signed permission to participate in the project, the CEO will screen all participants using the 5A Model. The CEO will carry out the first three steps, which include asking, advising, and assessing each patient in the clinic. Some patients seen in the clinic have already been identified as smokers. The CEO will provide

the PI of that data after receiving signed consent and screening for smokers. This information will be recorded on an Excel spreadsheet. The PI will implement the final two phases of the 5A Model to assist and arrange for smoking cessation assistance. Verbal assistance, literature, a phone number to the QuickStart 24/7 hotline, and education on how to find NRT referrals. Every week, the PI will implement the intervention of the 5A Model's final two steps of assisting and arranging follow-up with a phone call or face-to-face in-office visit to see how things are going and if support is needed. Every week, participants will receive phone calls or face-to-face contact, and the extent of time spent with each participant will vary depending on their needs. The office number will be provided to participants at that time be able to contact the PI if additional assistance is required. New participants will be added if there are eight weeks left in the smoking cessation program. The PI will annotate the Excel Spreadsheet with the participants who have completed eight weeks of the program. At twelve weeks, the PI will collect all data, enter it into an Excel spreadsheet, and analyze it. There will be constant communication with the CEO about the needs of the smoking cessation participants.

### **Results**

The number of patients who received the smoking cessation intervention was 32 (n=32). The categories of patient gender seen where 53% female (n=17) and 46% male (n=15). The race most frequently observed was Black (n = 21, 65%) followed by White (n = 11, 35%). The Pearson Correlation combination was (n = 33, r -.25) (p = 0.152) revealing a lack of significant correlations between the pairs of variables. However, examination of gender and race showed a remarkable finding that Black females have a

higher rate of tobacco use ( $p < .05$ ). The most frequent educational level was 10th grade ( $n = 9, 27.27\%$ ) Minorities' Diminished Returns (MDRs) theory, on the other hand, proposes that the protective effect of educational attainment may be smaller for racial and ethnic minorities, particularly Blacks and Hispanics, than for Whites (Assari & Bazargan, 2019). Individuals with incomes below the poverty line have a 19.7% smoking rate (ALA, 2023). See Appendix B.

The smoking cessation rate following the cessation intervention was 7.28%, ( $SD = 4.77$ ) ( $n = 32$ ). The rate of patients with a smoking history documented by the provider was 16% ( $n = 5$ ). Additionally, 22% ( $n = 7$ ) of patients reported trying to quit smoking sometime in the past, 78% ( $n = 25$ ) reported never attempting to quit smoking, and 3% ( $n = 1$ ) reported not being asked to quit smoking by the office provider. See Appendix C.

Of the patients who received the smoking cessation intervention, 3% ( $n = 1$ ) quit tobacco "cold turkey", 3% ( $n = 1$ ) attempted to quit with the use of nicotine patches, reported being unsuccessful, and ( $n = 2, 64\%$ ) never used the patches received before the project. Nearly all patients ( $n = 31, 97\%$ ) self-reported a decrease in the number of cigarettes smoked daily before four weeks of follow-up. Assari & Bazargan, (2019) reported unfortunately, tobacco use is unequally distributed in the United States. According to the CDC (2023), persons with a GED had the highest quit rate. Individuals with incomes below the poverty line have a 19.7% smoking rate.

A substantial positive correlation was found between extra visits and cessation, with a correlation of 1.00, indicating a strong effect size ( $p < .001, 95.00\%$ ). The correlations were analyzed using the Holm method. This implies that the correlation between extra visits tends to increase smoking cessation. There were no other noteworthy

relationships discovered. A Wilcoxon signed-rank test showed a significant median difference in smoking cessation rates among individuals who had additional visits as part of the intervention ( $z = -4.89, p < .001$ ). See Appendix D.

### **Discussion**

A retrospective medical record review was used to assess the rate of those who received the smoking cessation intervention and the rate of those who successfully quit 1-month post-intervention. There was a 3% ( $n = 1$ ) no-show. A total of six self-reported having quit smoking within four weeks 2% ( $n = 6$ ). Participant ages ranged from 21 to 80 with a mean age of 54.21 ( $SD = 16.52$ ). Data was collected in the spring of 2024.

The study aimed to evaluate the effectiveness of the 5 A's model for smoking cessation in primary care settings. The primary care physician used the 5As Model, which involves asking, advising, and assessing patients about their tobacco use, and providing follow-up support one to three months after quitting. The study found that the intervention was successful, with 100% of participants receiving the intervention. Therefore, evidence-based interventions delivered during clinic visits, along with follow-up support one to three months after quitting, have been shown to increase smoking cessation rates (CDC, 2023).

The study included tobacco users of various ages, genders, and ethnicities, with some having previously attempted to quit smoking. The majority of participants had a history of tobacco use, with women outnumbering male smokers and Blacks being the most common race. The US Public Health Service's Clinical Guideline on Tobacco Use and Dependence recommends a brief intervention using the 5 A's for every current smoker at each clinical encounter. Lewis et al. (2019) argue that to enhance provider

adherence to standards, healthcare organizations should prioritize and invest in smoking cessation treatment. The study also found that most participants (n = 31, 97%) received suggestions from the PI to utilize nicotine replacement therapy (NRTs) of lozenges, gum, nasal spray, patches, and pharmaceuticals from the PI. Additionally, 100% of participants (n = 32) were provided with phone numbers of 24/7 smoking cessation counselors. ALA, (2023) reported that Freedom from Smoking, an effective smoking cessation program, offers a variety of options and resources to assist with cessation.

Recommendations for further study include a larger sample size, focusing on the effect of age on smoking and the ethnicity of the smoker's rate. The average years spent smoking for all participants can make quitting tobacco more difficult. Future research should focus on identifying the opportunities and challenges of providing effective smoking cessation treatment to this population of smokers (Lewis et al, 2021).

Additional studies should use a larger sample size, as the effect of age on smoking and the ethnicity of the smoker's rate are ideal targets for smoking prevention initiatives. Providers must screen patients for tobacco use, regardless of age, race, or gender, and inform patients concerning tobacco risks and benefits of quitting. WHO (2021) suggests a large-scale, long-term initiative to increase effectiveness. Patients should research the literature on smoking cessation and accessible resources. According to the CDC (2023), it is never too late to stop using tobacco products. The intervention's effectiveness is attributed to the challenges of quitting smoking due to nicotine dependence. Primary care physicians used the 5As Model to counsel patients on quitting tobacco. This approach makes the intervention feasible, especially for those open to counseling. Practical implications include testing patients for tobacco use, informing them of the need for



quitting, and providing information on available services. For Example: Freedom from Smoking has knowledgeable staff with extensive experience in the healthcare industry, and their goal is to provide comprehensive answers to your lung-health-related questions and refer you to the resources you require (ALA, 2023).

### **Conclusion**

Tobacco use is a leading cause of preventable illness and death in the United States (CDC, 2023). The scholarly project was to use the 5A Model to create a smoke cessation program in a primary care setting. The smoking cessation program taught participants how to improve their health by quitting tobacco use. The clinic's primary providers were suitable to self-report evidence-based smoking cessation treatment, regardless of their attitudes toward smoking cessation effectiveness. The findings reflect that system-wide interventions to promote smoking cessation can be successful. A smoking cessation program would support the adult population's efforts to quit tobacco use (ALA, 2023; CDC, 2023).

Before this study, no formal screening and intervention for smoking cessation was done in this clinic. Now there exists a formal process that the clinic providers can use. The main barriers were a lack of knowledge about the 5A Model and consistent screening for tobacco use. Evidence-based tools and organizational support for Assist and Arrange ensured a successful program. The 5A Model interventions were successful in increasing primary care adherence when screening patients for tobacco use. There were improvements in knowledge and attitude towards smoking cessation. According to AHRQ (2023), knowledge of the 5A model literature, and counseling, contributed to improved smoking knowledge and attitudes. According to the CDC (2023), individuals

with lower levels of education and income are more likely to use tobacco. This scholarly project was not particularly effective in eliminating tobacco use, but it did reduce the number of cigarettes smoked per day. A larger, longer-term project is recommended to assess the efficacy of this adherence to interventions. The 5A Model would improve the treatment of tobacco products and the quality of life for smokers.

Future research should investigate ways to improve the dissemination and implementation of smoking cessation interventions in primary care clinic settings (Wray et al., 2018). States that fund comprehensive tobacco cessation programs experience lower smoking rates, lower healthcare costs, and better clinical outcomes (ALA, 2023; CDC, 2023). An evidence-based smoking cessation program can help smokers understand why they smoke and educate them on effective coping strategies to avoid tobacco use. This study successfully launched a smoking cessation program in a high-needs clinic resulting in a decrease in reported smoking for all participants. Continued use of the program could yield further smoking declines and potentially impact better health outcomes for a vulnerable population. The 5A Model proved to increase the education and support of people who smoke, and these findings can be applied across numerous healthcare settings and yield positive results.

In conclusion, the study's limitations include its small-scale nature, self-reported data, and the lack of quantitative data and well-defined objectives. According to AHRQ (2023), successful evaluation necessitates quantitative data and well-defined objectives. However, the intervention's applicability that primary care physicians saw every patient according to the 5As Model makes it feasible. By implementing comprehensive evidence-based smoking cessation programs, healthcare systems can improve adherence

to guidelines and increase smoking cessation rates. Finally, the project was a single institution that shared cultural characteristics.

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## Appendix A

### Informed Consent for Participation

Informed Consent for Participation in Research Activities Implementation of the 5A  
Models to Enhance Smoking Cessation

Education Participant \_\_\_\_\_ Principal Investigator Yolanda  
Duncan, MSN, RN Clinic Number 314-874-5941

Summary of the Study This quality improvement project aims to implement an educational toolkit that integrates the 5A (Ask, Advise, Assess, Assist, Arrange) Model for assessing the habits of smokers under the care of Rejuvenating Comprehensive Service (RCS). The objective is to evaluate a smoking cessation program in primary care. Participation in this project is voluntary, with minimal associated risks.

1. Participants are cordially invited to participate in a project study by the principal investigator (PI). Print name \_\_\_\_\_
2. Your involvement will include a 5-minute face-to-face/telephone interview with the PI to explore your needs and smoking habits.
3. Your responses will be treated with confidentiality. Your engagement is entirely voluntary, and you retain the prerogative to decline participation or withdraw your consent at any juncture. Opting out or withdrawing will not result in any form of reprisal.
4. Should you have queries or concerns about your rights as a participant in this project, you can contact the University of Missouri-St. Louis Office of Research at 314-516-5897.

5. For any inquiries or concerns concerning this study, or if issues arise, please get in touch with the Investigator, Yolanda Duncan, MSN, BSN, RN, at 314-874-5941.

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5A's	Action	Strategies for implementation
<p><b>Ask -</b> Systematically identify all tobacco users at every visit.</p>	<ul style="list-style-type: none"> <li>• Ask <b>ALL</b> of your patients at every encounter if they use tobacco and document it.</li> <li>• Make it part of your routine.</li> </ul>	<ul style="list-style-type: none"> <li>• Tobacco use should be asked about in a friendly way – it is not an accusation.</li> <li>• Keep it simple, some sample questions may include: <ul style="list-style-type: none"> <li>– “Do you smoke cigarettes?”</li> <li>– “Do you use any tobacco products?”</li> </ul> </li> <li>• Tobacco use status should be included in all medical notes. Countries should consider expanding the vital signs to include tobacco use or using tobacco use status stickers on all patient charts or indicating tobacco use status via electronic medical records.</li> </ul>
<p><b>Advise -</b> Persuade all tobacco users that they need to quit</p>	<ul style="list-style-type: none"> <li>• Urge every tobacco user to quit in a clear, strong and personalized manner.</li> </ul>	<p>Advice should be:</p> <ul style="list-style-type: none"> <li>• <b>Clear</b> – “It is important that you quit smoking (or using chewing tobacco) now, and I can help you.” “Cutting down while you are ill is not enough.” “Occasional or light smoking is still dangerous.”</li> <li>• <b>Strong</b> – “As your doctor, I need you to know that quitting smoking is the most important thing you can do to protect your health now and in the future. We are here to help you.”</li> <li>• <b>Personalized</b> – Tie tobacco use to: <ul style="list-style-type: none"> <li>– <i>Demographics</i>: For example, women may be more likely to be interested in the effects of smoking on fertility than men.</li> <li>– <i>Health concerns</i>: Asthma sufferers may need to hear about the effect of smoking on respiratory function, while those with gum disease may be interested in the effects of smoking on oral health. “Continuing to smoke makes your asthma worse, and quitting may dramatically improve your health.”</li> <li>– <i>Social factors</i>: People with young children may be motivated by information on the effects of second-hand smoke, while a person struggling with money may want to consider the financial costs of smoking. “Quitting smoking may reduce the number of ear infections your child has.”</li> </ul> </li> </ul> <p>In some cases, how to tailor advice for a particular patient may not always be obvious. A useful strategy may be to ask the patient:</p> <ul style="list-style-type: none"> <li>– “What do you not like about being a smoker?”</li> </ul> <p>The patient’s answer to this question can be built upon by you with more detailed information on the issue raised.</p> <ul style="list-style-type: none"> <li>– Example: <p><b>Doctor:</b> “What do you not like about being a smoker?”</p> <p><b>Patient:</b> “Well, I don’t like how much I spend on tobacco.”</p> <p><b>Doctor:</b> “Yes, it does build up. Let’s work out how much you spend each month. Then we can think about what you could buy instead!”</p> </li> </ul>



SA's	Action	Strategies for implementation								
<b>Assess -</b> Determine readiness to make a quit attempt	<ul style="list-style-type: none"> <li>Ask two questions in relation to "importance" and "self-efficacy":               <ol style="list-style-type: none"> <li>"Would you like to be a non-tobacco user?"</li> <li>"Do you think you have a chance of quitting successfully?"</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Any answer in the shaded area indicates that the tobacco user is NOT ready to quit. In these cases you should deliver the 5 R's intervention (see Session V).           </li> </ul> <table border="1" data-bbox="834 380 1279 457"> <tr> <td>Question 1</td> <td>Yes</td> <td>Unsure</td> <td>No</td> </tr> <tr> <td>Question 2</td> <td>Yes</td> <td>Unsure</td> <td>No</td> </tr> </table> <ul style="list-style-type: none"> <li>If the patient is ready to go ahead with a quit attempt you can move on to Assist and Arrange steps.</li> </ul>	Question 1	Yes	Unsure	No	Question 2	Yes	Unsure	No
Question 1	Yes	Unsure	No							
Question 2	Yes	Unsure	No							
<b>Assist -</b> Help the patient with a quit plan	<ul style="list-style-type: none"> <li>Help the patient develop a quit plan</li> <li>Provide practical counseling</li> <li>Provide intra-treatment social support</li> <li>Provide supplementary materials, including information on quit lines and other referral resources</li> <li>Recommend the use of approved medication if needed</li> </ul>	<ul style="list-style-type: none"> <li>Use the STAR method to facilitate and help your patient to develop a quit plan:           <ul style="list-style-type: none"> <li>Set a quit date ideally within two weeks.</li> <li>Tell family, friends, and coworkers about quitting, and ask for support.</li> <li>Anticipate challenges to the upcoming quit attempt.</li> <li>Remove tobacco products from the patient's environment and make the home smoke free.</li> </ul> </li> <li>Practical counseling should focus on three elements:           <ul style="list-style-type: none"> <li>Help the patient identify the danger situations (events, internal states, or activities that increase the risk of smoking or relapse).</li> <li>Help the patient identify and practice cognitive and behavioral coping skills to address the danger situations.</li> <li>Provide basic information about smoking and quitting</li> </ul> </li> <li>Intra-treatment social support includes:           <ul style="list-style-type: none"> <li>Encourage the patient in the quit attempt</li> <li>Communicate caring and concern</li> <li>Encourage the patient to talk about the quitting process</li> </ul> </li> <li>Make sure you have a list of existing local tobacco cessation services (quit lines, tobacco cessation clinics and others) on hand for providing information whenever the patient inquires about them.</li> <li>The support given to the patient needs to be described positively but realistically.</li> </ul>								
<b>Arrange -</b> Schedule follow-up contacts or a referral to specialist support	<ul style="list-style-type: none"> <li>Arrange a follow-up contact with your patient either in person or by telephone.</li> <li>Refer the patient to specialist support if needed</li> </ul>	<ul style="list-style-type: none"> <li><b>When:</b> The first follow up contact should be arranged during the first week. A second follow up contact is recommended within one month after the quit date.</li> <li><b>How:</b> Use practical methods such as telephone, personal visit and mail/email to do the follow up. Following up with patients is recommended to be done through teamwork if possible.</li> <li><b>What:</b> <ul style="list-style-type: none"> <li><b>For all patients:</b> <ul style="list-style-type: none"> <li>Identify problems already encountered and anticipate challenges.</li> <li>Remind patients of available extra-treatment social support.</li> <li>Assess medication use and problems.</li> <li>Schedule next follow up contact.</li> </ul> </li> <li><b>For patients who are abstinent:</b> <ul style="list-style-type: none"> <li>Congratulate them on their success.</li> </ul> </li> <li><b>For patients who have used tobacco again:</b> <ul style="list-style-type: none"> <li>Remind them to view relapse as a learning experience.</li> <li>Review circumstances and elicit recommitment.</li> <li>Link to more intensive treatment if available.</li> </ul> </li> </ul> </li> </ul>								

## Appendix B

Table 1

*Demographics*

Variable	M	SD	n	Mdn
<b>Gender</b>				
Female and Male	0.39	0.50	33	0.00
<b>Race</b>				
Black and White	0.09	0.29	33	0.00
Age	54.21	16.52	33	58.00

*Note.* ‘-‘ indicates the statistic is undefined due to constant data or an insufficient sample size.

Table 2

*Level of Education*

Variable	<i>n</i>	%	Cumulative %
Education			
7th	1	3.03	3.03
8th	4	12.12	27.27
9th	3	9.09	15.15
10th	9	27.27	100.00
11th	8	24.24	72.73
12th	7	21.21	48.48
Missing	0	0.00	100.00

*Note.* Due to rounding errors, percentages may not equal 100%.

Table 3

*Age average*

Variable	M	SD	<i>n</i>	Md
Age	54.21	16.52	33	58.0

*Note.* ‘-‘ indicates the statistic is undefined due to constant data or insufficient sample.

## Appendix C

Table 1

*Preintervention and Postintervention*

Variable	M	SD	<i>n</i>
Prior quit attempts	0.72	2.29	32
Postintervention decreases tobacco use at 4 weeks	7.28	4.77	32

*Note.* ‘-’ indicates the statistic is undefined due to constant data or insufficient samples.

Table 2

*Cessation Rate*

Variable	<i>n</i>	%	Cumulative %
Cessation			
Cold Turkey	1	3.03	3.03
1	6	18.18	21.21
0	25	75.76	96.97
Missing	1	3.03	100.00

*Note. Due to rounding errors, percentages may not equal 100%.*

Table 3

*Preintervention and Postintervention*

Variable	M	SD	<i>n</i>	Mdn
Preintervention smoke/day	13.84	5.45	32	15.00
Postintervention tobacco use at 4 weeks	7.28	4.77	32	8.00

*Note.* ‘-’ indicates the statistic is undefined due to data or insufficient sample size.

Table 3

Combination	<i>r</i>	95.00% CI	<i>n</i>	<i>p</i>
Preintervention smoke/day and postintervention tobacco use at 4 weeks	.24	[-.12, .55]	32	.181

Table 4

*Pearson Correlation of Age and Years Smoked.*

Combination	<i>r</i>	95.00% CI	<i>n</i>	<i>p</i>
Age years smoked	.62	[.35, .80]	32	<.001

Table 4

*Pearson Correlation Results Between Gender and Race*

Combination	<i>r</i>	95.00 %	<i>n</i>	<i>p</i>
Gender/Race	- .25	[-.55, .10]	33	.152



Table 5

*Pearson Correlation Results Between NRTs and Postintervention decreased tobacco use at 4 weeks.*

Combination	<i>r</i>	95.00% CI	<i>n</i>	<i>p</i>
NRT patches and postintervention decrease tobacco use at 4 weeks.	.18	[-.18, .50]	32	.32

## Appendix D

Table 1

*Pearson Correlation Results Among Preintervention smoke day, Extra visits, and Extra visits correlate with cessation.*

Combination	<i>r</i>	95.00% CI	<i>n</i>	<i>p</i>
Preintervention smoked/day	.87	[-1.00, 1.00]	3	.667
Preintervention, and extra visit correlate with cessation	.87	[-1.00, 1.00]	3	.667
Extra visits correlate with Cessation	1.00	[NaN, 1.00]	3	<.001

*Note* P-values were adjusted using the Holm correction.