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Evaluation of Multidisciplinary Tobacco Cessation Services

Claudia P. Barone*

College of Nursing, University of Arkansas for Medical Sciences, Little Rock, AR, USA

***Corresponding author:** Claudia P. Barone, College of Nursing, University of Arkansas for Medical Sciences, 4301 West Markham Street Slot 529, Little Rock, AR 72205, USA. Tel: +1-5016867997; Email: BaroneClaudiaP@uams.edu

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Background and Significance of the Project

Tobacco use remains the leading cause of preventable death and disability in the United States (US) with approximately 45.3 million adults continuing to use tobacco [1]. In 2014, the second Surgeon General's Report on Smoking and Health confirmed the 1964 report and provided additional evidence on tobacco use and its devastating consequences on everybody system. Annual costs related to smoking in the US for years 2009-2012 were between $289 and $332.5 billion including $132.5-175.9 billion for direct medical care of adults, yet 70% of a current smokers' excess medical care costs is preventable by quitting tobacco [2]. Tobacco use is viewed as a chronic disease and requires consistent identification and treatment. Although most tobacco users visit a primary care provider annually, this one intervention is not enough to successfully affect and sustain abstinence. Evidence-based tobacco cessation counseling strategies and pharmacotherapy when implemented by healthcare providers can reduce tobacco use and promote long-term abstinence from tobacco [3].

Delivery of effective tobacco cessation interventions and the use of motivational interviewing strategies require the development of specialized knowledge, skills, and competencies consistent with the level of intensity of treatment provided to tobacco users. In 2005, The Association for the Treatment of Tobacco Use and Dependence (ATTUD), comprised of a group of policymakers, practitioners, researchers, and other professional organizations established comprehensive core competencies necessary to deliver high-quality, varying intensity, evidence-based treatment options for tobacco use and dependence for all tobacco users [4]. This accredited course leads healthcare providers to become certified as Tobacco Treatment Specialists (TTS) with the appropriate education and credentials to comprehensively and individually formulate a plan for tobacco cessation for each patient. Tobacco users treated by healthcare professionals with more extensive education are more likely to achieve and maintain long-term abstinence from tobacco than those treated by healthcare providers without training [5].

Problem Statement

More than 50% of patients receiving care at the University of Arkansas for Medical Sciences (UAMS) use tobacco products and 25% use more than one tobacco product on any given day. Some inpatient medical services have documented an average inpatient length of stay (LOS) substantially greater than the diagnosis related group LOS presumed to be tied to tobacco use. The cost of care rendered to individuals who use tobacco is largely above that of non-tobacco users. These disproportionate costs cannot be sustained in an academic health sciences center whereby the clinical income generated supports all of the institution's missions.

A previous grant-funded tobacco treatment program demonstrated that face-to-face in clinic counseling at the time of a heath care clinic visit provides the opportunity for Tobacco Treatment Specialists to counsel patients on their tobacco use and dependence and recommend pharmacotherapy to their provider. This single counseling episode led to quit rates that exceeded 60% at various follow-up intervals; however, some important outcomes were not measured. A newly developed program with increased scope, depth and consistent measures needed to be evaluated for effectiveness.

Literature Review and Synthesis

Burden of Tobacco

In the United States, evidence-based tobacco cessation programs that are state specific, comprehensive, sustained, and accountable reduce smoking rates and tobacco-related diseases and deaths [6]. During 2011, combined expenditures by all 50 states totaled $658.15 million for tobacco prevention and control activities. Arkansas spent $13.38 million in 2011 and divided

this sum among five different components: state/community, health communication, cessation, surveillance/education, and administration/management with state/community and cessation having the highest expenditures. Of interest is that Arkansas' funding was only 36.8% of the Centers for Disease Control's (CDC) recommended levels garnering the need for legislative support for substantially more funding. Specifically, for healthcare organizations, it has been recommended that enhancements be made for screening for tobacco use and provide a systematic and comprehensive counseling program for those identified [7]. Increasing access to quality services through different modalities can improve the overall population health.

The medical costs associated with Chronic Obstructive Pulmonary Disease (COPD) in the US and its complications was recently estimated to be $32.1 billion with absenteeism costs at $3.9 billion using the 2006-2010 Medical Expenditure Panel Survey [8]. In Arkansas, in 2010, the prevalence of treated COPD is 3.3%, one of the highest percentages nationwide. This includes 106,000 Arkansas residents with a per capita cost of $5,850 and total medical cost treatment of $545,274,000.00. Medicare and Medicaid in Arkansas absorb 81% of the costs and private insurance absorbs 19%. This analysis reveals each state has an opportunity for tremendous cost savings of medical care and absenteeism through aggressive state-sponsored tobacco prevention and cessation programs targeted at smoking.

A large proportion of individuals who use tobacco in the United States (27%) live at or slightly above the poverty level, have a low educational level, and many only use a cellular phone as their primary means of communication. In Arkansas, the burden of tobacco uses and health disparities is somewhat dependent upon where you live. In the Delta, individuals have limited access to health care, are poorer in the state, with low educational attainment. Whereas individuals residing in northwest Arkansas thrive educationally and financially, and have abundant access to healthcare, at UAMS, a diverse population seeks care for a variety of reasons. There are many reasons why low income patients seeking outpatient care at UAMS need access to tobacco cessation programs [9]. This randomized control trial compared usual treatment to a proactive tobacco treatment intervention with a group of diverse low-income smokers and was designed to determine the cost-effectiveness. A critical piece of this intervention was offering tobacco cessation to all low-income smokers regardless of their interest in cessation. All services were free of charge including Nicotine Replacement Therapy (NRT).

Systems Changes

Facilitating systems changes in the healthcare arena can be very difficult and take much longer than expected. Often, when faced with a diagnosis, patients need to be directed to healthcare resources that are reliable and authoritative. This led researchers at the University of Wisconsin to develop the Comprehensive Health Enhancement Support System (CHESS) to assist women newly diagnosed with breast cancer to access resources needed for decision making, behavior change, and emotional support [10]. The focus of their research was to use this system and implement it as the new standard of care for breast cancer patients. Their quest to implement evidence-based innovations into standard care led to three broad issues for effective implementation: organizational issues, clinical and staff issues, and implementation issues. They offered their project experiences and solutions for each of the three topics and identified the lessons learned for each topic. This study was a critical piece of implementing tobacco cessation as the standard of care for outpatients at UAMS in the future.

The effectiveness of implementing tobacco cessation as the standard of care is evidenced by a retrospective electronic medical record review involving 79,777 low income patients with more than 1.2 million adult primary care visits over a three-year period [11]. The researchers assessed a systems change to evaluate the use of a tobacco screening and protocol during primary care visits at seven sites housed within a public hospital system. Their results demonstrated than six of the seven sites (85.7%) met the standards change definition by demonstrating screening rates higher than 50%. The first year of the electronic medical record review yielded a 99.7% screening rate and smoking prevalence decreased by 9.5% over the three-year study period. These results are significant as the study involves a low income population, one of the most difficult populations to sustain cessation in and was conducted in a public hospital. The benefit of altering the electronic medical record to foster a systems change can be a powerful way to increase cessation rates.

Creating an innovative program within the context of a shifting financial marketplace for an academic, public healthcare system can be a challenge. Engaging stakeholders, use of the electronic medical record, and anticipating early and late adopters are all keys to a successful implementation. Use of institutional finances to fund such an evidence-based, standard of care program may not be a priority for the institution but could be a priority for nursing. One method to implement such a program is to use the academic-service partnership [12]. This systematic review included 110 articles which described attributes of successful partnerships such as pre-requisites for success, benefits, types, and workforce development. Two of the most often cited reasons for engaging in an academic faculty practice were cost effectiveness and patient satisfaction. Other reasons for implementing this type of arrangement was to standardize a service not already offered (but needed) by the institution, to implement evidence-based practice by faculty who are well educated, skilled and certified to deliver such an intervention, and to improve organizational efficiencies. All of these reasons presented by this systematic review are viable reasons for evaluation of this project at UAMS.

Theoretical Framework and Rationale

The theoretical framework for this project is the Innovation in Healthcare Delivery Systems [13]. This framework is based on the concept that healthcare continues to balance cost containment and healthcare quality while using technology in healthcare to improve and guide delivery. The authors define healthcare innovation as, "the introduction of a new concept, service, process, or product aimed at improving treatment, diagnosis, education, outreach, prevention and research, and with the long term goals of improving quality, safety, outcomes, efficiency, and costs" [13]. The framework and the definition are aligned with the Institute for Healthcare Improvement's triple aims of improving the patient's experience with care, improving the health of populations, and reducing the per capita costs of healthcare [14].

Additionally, this framework and the project are consistent with the Institute of Medicine's, Future of Nursing: Leading Change, Advancing Health, 2010 report which suggests changes in the healthcare system that result in improvements in quality, costs, safety, efficiency, and outcomes [15]. This framework positions the healthcare providers in using technology to treat, diagnose, prevent, educate, research, and establish outreach all of which are characteristics of an effective evidence-based tobacco cessation program. The focus of the framework is on the patient and how the healthcare provider sees and hears the patient and ultimately, how the patient's needs are met. This framework is a perfect match for this project as it places the patient as the priority and the use of an academic practice model demonstrates a fiscally sound approach. Evaluation of this project parallels this framework as it represents introduction of a new standard of care for tobacco using outpatients at UAMS to receive consistent, evidence-based tobacco cessation treatment strategies. A diagram of the model is located in (Appendix A) as (Figure 1).

Project Purpose/Goal and Aims/Objectives

The purpose of this project was to evaluate a newly implemented inter-professional tobacco cessation program at an academic health sciences center in the southern US. The aims of this project were to:

- Measure the number of referrals,
- Evaluate self-reported patterns of tobacco usage, product usage, motivation and confidence to quit tobacco among UAMS patients through use of evidence based standards for tobacco data collection,
- Assess tobacco cessation percentage rates at 2 weeks, 30, and 60 days from initial counseling session,
- Measure referring provider's acceptance of recommended tobacco cessation pharmacotherapy, and
- Extrapolate reimbursement potential of billable services of tobacco ICD 10 codes.

Context

Congruence of Organizational Strategic Plan to Project

One approach to improve the health of a patient population while reducing length of inpatient stays and readmission rates is to address and counsel all tobacco users and make pharmacotherapy recommendations. This new program reduced the burden on healthcare providers and provided a comprehensive service to patients. Its design and intended outcomes were consistent with the Health Innovation Model offering a new service to patients that is patient focused. This was a very feasible, reproducible and budget-efficient project which could generate revenue and reduce healthcare costs. Consistent with the Institute of Medicine's report of 2011 this program speaks to the specialty care that many patients need that cannot be found anywhere except an academic health science center. Lastly, a shift to translational research is a critical step in improving population health and changes needed in the healthcare system. Applying what is learned at the "Bench" and using these discoveries to improve patient care (efficiency, safety and cost effectiveness) is critical to future success.

Methods/Interventions

This tobacco cessation program consisted of inter-professional Tobacco Treatment Specialists (TTS) staffing three half day clinics per week (oncology, cardiology and pulmonary), receiving patient referrals by email, telephone and face to face, and counseling patients scheduled for low dose CT scans. Patients meet with a TTS face to face in clinic or speak to a TTS by phone. During this counseling session, the TTS explores tobacco use behaviors, assesses importance, motivation, and confidence to quit tobacco on a 0-10 Likert scale and uses behavioral and cognitive counseling strategies to motivate the patient to quit using tobacco. In addition, in the face to face counseling sessions, an exhaled carbon monoxide measurement is taken. Pharmacotherapy options for the patient are explored to determine which medication would be best suited for the patient.

Initial data collection was completed using a form (Appendix B) originally developed by the Medical University of South Carolina. This form was evidence based for tobacco use and dependence data collection and was selected by the group due to its conciseness and information collected. A follow-up form (Appendix C) was constructed by the group and included information necessary to determine tobacco use status and compliance with pharmacotherapy. Once the information was collected, it was entered into a password protected database. A power analysis indicated that data on 50 patients would be a sufficient sample size, however previous data were not available

so no comparison group was used. A convenience sample of 50 sequential patients identified through self-report as tobacco users aged 18 years of older who were willing to speak with a TTS, provide information on tobacco use and complete follow-up at prescribed intervals was evaluated. Individuals who were unable, unwilling or too ill to speak with a TTS or who were unable to complete the follow-up schedule were excluded. Patients spoke with a TTS either face to face or by phone for both initial data collection and follow-up. General demographic information, (gender, year of birth, ethnicity, race) and clinic or inpatient unit, referring provider and presenting health condition were collected. The front sheet of the data collection tool was sequentially numbered and then was separated from the balance of the document.

Analysis Plan

Statistical analyses were performed using SPSS version 22 (IMB SPSS, Inc). Data were examined for missing and incomplete values. Descriptive statistics were used to report results from the tobacco use data collection form and the follow-up form.

Ethical Considerations

The Institutional Review Board deemed this quality improvement project as human subjects exempt. Use of the tobacco use data collection forms met the criteria for exempt review and did not necessitate formal written consent from respondents. The only potential risk to study participants was the potential for loss of confidentiality. Participants were advised that their responses would be anonymous with no identifying information on the questionnaire and specific responses to results were not linked. Follow-up was conducted by the project director using a directory of patient numbers and corresponding telephone numbers.

Results

Number of Referrals

Fifty sequential patients were recruited and counseled beginning January 9, 2017 representative of three medical specialty clinics (surgery oncology, pulmonary and cardiology), low dose CT patients, email and face to face referrals. Frequency data revealed that of the 50 patients that were counseled and participated in follow-up, 100% (n=50) completed the initial counseling only 2% (n=1) requested to be excluded from the project after initial data collection. Two-thirds (60%, n=30) of the patients were female, 40% (n=20) were male and the sample ranged in age from 25 to 76 with a mean age of 50.76. The patient sample represented cardiology, pulmonary, oncology, screening or other clinic encounters. A summary of the patient demographics is shown in (Table 1).

Age: range, mean + SD, y	25-76, Mean = 59.94 + SD 10.36
Gender	
Male	40%
Female	60%
Race	
Caucasian	60%
African-American	40%
Clinic	
Cardiac	18%
Pulmonary	16%
Screening (LDCT)	18%
Oncology	42%
Other	6%

Table 1: Patient Demographics.

Tobacco Use Behaviors, Importance, Confidence and Motivation

Frequency data were examined to determine tobacco use behaviors (daily tobacco usage, most commonly used tobacco product and amount used per day). Collapsing data into three broad categories for descriptive analysis revealed 96% (n=47) of patients described their tobacco product usage as daily for the past 30 days, cigarettes were the most commonly used tobacco product 92% (n=46) and most patients (94%, n=47) smoked one pack of cigarettes or less per day. When addiction was assessed through use of the modified Fagerstrom Test for Nicotine Dependence, the patient was asked "how soon after awakening do you smoke" yielded a 76% (n=38) response rate to within 30 minutes of awakening (Table 2).

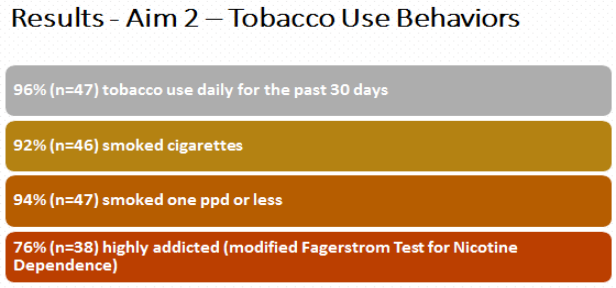

Table 2: Tobacco Use Behaviors.

Frequency data were examined for overall levels of the patient's perceived importance, motivation and confidence to quit tobacco use on a Likert scale of 0 to 10 (with 0=none and 10=high levels/most positive). Using descriptive analysis, importance to quit revealed 4% (n=2) did not believe that quitting tobacco was important, 6% (n=3) felt it was moderately important and 82% (n=43) felt that it was highly important. When asked about level of motivation to quit using tobacco, 8% (n=4) had no motivation to quit tobacco, 30% (n=15) were moderately motivated and 58% (n=29) rated their motivation as high. Patients self-perceived confidence to quit using tobacco showed 14% (n=7) had no confidence to quit tobacco, 16% (n=8) reported moderate levels of confidence and 66% (n=33) reported high confidence levels (Table 3).

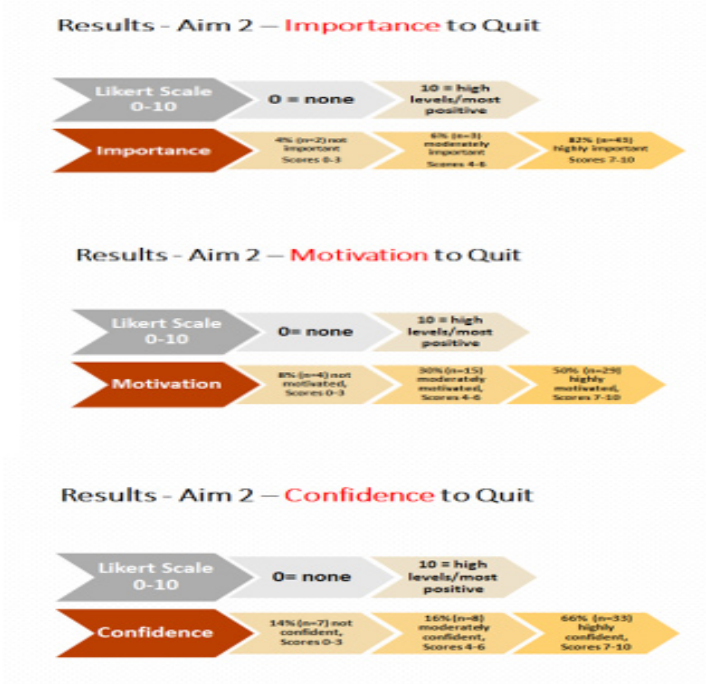

Table 3: Importance, Motivation & Confidence Scores.

Tobacco Cessation Rates

Tobacco cessation rates, as self-reported by each patient, were measured at two weeks and 30 days after initial counseling sessions. The two-week quit rate was 8% (n=4) and the 30-day follow-up quit rate was 22% (n=11). In addition to quitting, the program measured how many patients reported reducing their tobacco use representing harm reduction. At two weeks 34% (n=17) of the patients reported a reduction in their tobacco product usage and at 30 days 14% (n=7) reported this same measure (Table 4).

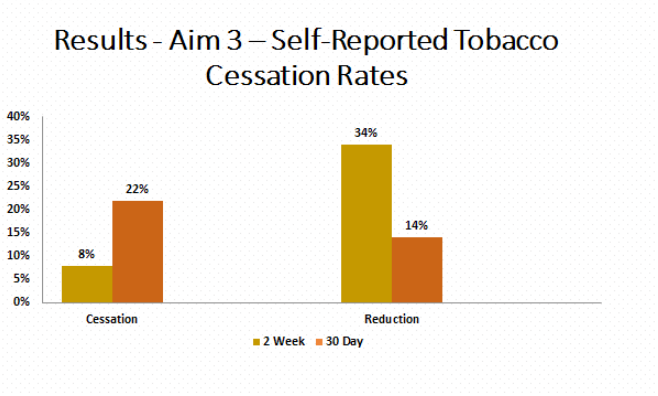

Table 4: Self-Reported Tobacco Cessation Rates.

Referring Provider's Acceptance of Tobacco Cessation Pharmacotherapy Recommendation

For the patients that were referred to the program by a licensed provider such as a physician, advanced practice registered nurse or registered nurse, pharmacotherapy was recommended by the TTS for 100% (n=50) of patients and ordered by the prescribing provider 52% (n=26). The two-week follow-up indicated non-compliance with the pharmacotherapy regimen for 30% (n=15) of patients. Lack of insurance coverage (12%, n=6), out of pocket costs (8%, n=4) and patient reports that the medication didn't work (2%, n=1) were the three top reasons for non-compliance (Table 5).

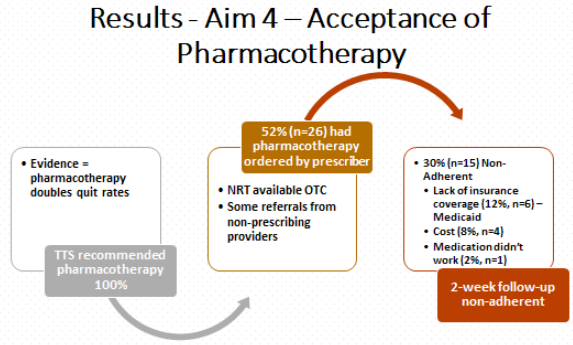

Table 5: Acceptance of Pharmacotherapy

Reimbursement Potential

The two billable codes for tobacco cessation services are Common Procedural Terminology (CPT, 2010) codes 44906, tobacco cessation counseling 3-10 minutes and 44907, tobacco

cessation counseling greater than 10 minutes. CPT code 44906 yields a billable amount of $26.00 and 44907, $51.00. All but one (98%) of the 50 patients had counseling that lasted longer than 10 minutes resulting in a total potential billable services amount of $2,525.00 (Table 6). Following Medicare guidelines for tobacco cessation counseling, patients can be billed eight times in a calendar year for tobacco cessation counseling.

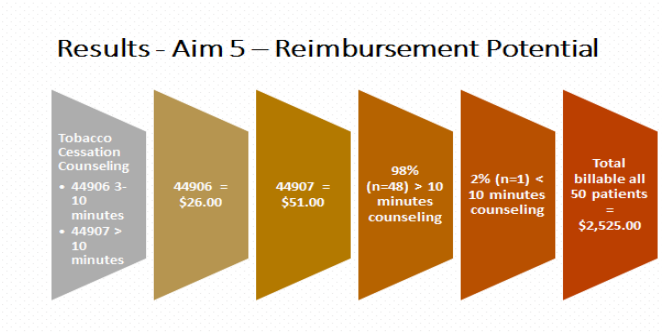

Table 6: Reimbursement Potential.

Summary

The key findings of this project indicate that when a health innovation model is implemented, such as face-to-face counseling provided by a TTS for longer than ten minutes, and follow-up is conducted, patients attempt to quit using tobacco or reduce their consumption. As supported by the literature, patients believe quitting tobacco is an important aspect of their overall health and perceive lower levels of motivation and confidence to make a quit attempt and sustain abstinence. Prescribing providers are willing to accept the tobacco cessation pharmacotherapy recommendation from a TTS but due to cost, including lack of insurance coverage, patients are unwilling to bear the expense of medications to help them quit. Very few providers bill for tobacco cessation but yet with a large percentage of tobacco using patients seen at an academic health sciences center, there are financial gains to be made if billing is submitted with the appropriate supportive documentation.

Interpretation

Nurses are well positioned to provide tobacco cessation intervention and there have been studies conducted that examine cessation interventions by nurses [16-18]. In addition, there are well-designed studies that document tobacco cessation interventions by inter-professional teams of providers [17]. These results support the need to continue to make tobacco cessation a top care priority in healthcare systems through education, organizational infrastructure support and policy change. Through application of the Health Innovation Model, this program impacted tobacco using patients and yielded a higher than national average quit rate. Implementation also positively impacted consumption through harm reduction. Tobacco cessation can impact many chronic diseases and intervention with tobacco using populations of patients' needs to be the standard of care.

Tobacco Use Behaviors and Quitting Tobacco

Self-report of behaviors is consistently under-reported in the literature and this is true of tobacco use. Rostron and colleagues conducted a survey to estimate the burden of major medical conditions directly related to cigarette smoking in the United States [19]. It is noteworthy that most tobacco use is under-reported when national surveys are conducted and supports the need for all healthcare providers to consistently ask about tobacco use at every healthcare encounter.

In this program, validation of the reported combustible tobacco use was conducted with an exhaled carbon monoxide test which, in concert with assessment of the modified Fagerstrom Test for Nicotine Dependence, demonstrated a largely nicotine addicted population of patients. Although patients report high levels pertaining to the importance of quitting tobacco, motivation and confidence to do so lag behind. There is support in the literature that demonstrates that confidence is the most important perception that is positively correlated to cessation [20]. The patient follow-up schedule may have impacted the results of the program. The TTS who completed the initial intake form was responsible for calling the patient for the two follow-ups to cultivate that relationship and trust that was initially established. The impact of this program is demonstrated through harm reduction and quit rates that are substantially higher than the national average of 4% when patients attempt to quit on their own, commonly known as cold turkey, without the benefit of counseling and pharmacotherapy (which doubles quit rates).

Pharmacotherapy Recommendations

The literature has consistently demonstrated that pharmacotherapy doubles quit rates and this pattern of evidence continues [21]. However, most providers are familiar with their specialty pharmacotherapy and lack the willingness, knowledge and self-efficacy to recommend and order tobacco cessation pharmacotherapy for their patients. Providers are often unwilling and unable to implement the 5 A's of tobacco cessation with their patients due to knowledge, time and financial constraints of a busy practice setting. Standing orders for tobacco cessation pharmacotherapy are absent in the current electronic health record so knowledge of how to select and order these medications is essential to promote tobacco cessation. Standing orders based on evidence-based practice guideline recommendations provide the necessary infrastructure for delivery of tobacco cessation interventions. Through the use of TTS personnel who are well educated on tobacco cessation pharmacotherapy and can make evidence-based recommendations to providers, the willingness to prescribe these medications increases greatly. Our data demonstrates that ordering

the medication for the patient supports tobacco cessation, but policy changes need to occur to increase the insurance coverage of all tobacco cessation medications. Non-coverage or limited insurance coverage results in patients assuming the cost burden for these medications. It is well known that eradicating tobacco use would substantially reduce the cost of chronic care for cardiac, pulmonary and oncology diagnoses [20].

Reimbursement Potential

Our data suggests that there is potential revenue generation for tobacco cessation counseling when patient counseling is ten minutes or more in length. There are organizational infrastructure changes in the electronic health record and billing that could be made to make the tobacco cessation counseling documentation to support billing streamlined and accessible for providers. This standard of care change is supported by the evidence-based practice guideline and will require organizational stakeholder support to implement a more robust and responsive documentation and billing system to capture this important healthcare interaction.

Limitations

Due to the small number of patients, the results cannot be generalized to the larger population of tobacco using patients. The follow-up data collection schedule does not include a 6 and 12-month follow-up period which is the evidence-based standard reporting in the literature. The data collection tool should be modified to collect more data pertaining to addiction related behaviors and expand the ability to collect reasons for tobacco use. The data collection follow-up tool needs to be tested for validity and reliability. All patients should have the same data collected; therefore, face-to-face counseling needs to be the only approach to tobacco cessation counseling for consistent results and possible correlations to the carbon monoxide measurements. Patients may have self-reported lower levels of tobacco product usage and may have self-reported higher importance, motivation and confidence levels due to engagement with a new health professional.

Conclusions

These findings contribute to the knowledge of tobacco cessation counseling and pharmacotherapy recommendations of evidence-based practice and the application of the Health Innovation Model by a Clinical Nurse Specialist who is also a TTS when supported by an inter-professional team of TTS providers. Patients demonstrated changes in their tobacco use when counseled by a TTS and either reduced their tobacco consumption or quit completely. Use of this model can lead to an evidence-based practice change with minimal systems change. Work needs to continue in application of this model for tobacco cessation in other health care systems especially as it pertains to billing, insurance coverage for tobacco cessation pharmacotherapy and electronic health record changes to more thoroughly document tobacco use behaviors.

References

1. Centers for Disease Control and Prevention (2011) Cigarette smoking among adults United States, 2005-2010. MMWR Morbidity Mortality Weekly Report 60: 1207-1212.
2. Maciosek MV, Xu X, Butani AL, Pechacek TF (2015) Smoking-attributable medical expenditures by age, sex, and smoking status estimated using a relative risk approach. Preventive Medicine 77 162-167.
3. Fiore MC, Jaen CR, Baker TB, Cohen SJ (2008) Treating Tobacco Use and Dependence: 2008 Update. Rockville, MD: US Department of Health and Human Services 2008.
4. Sheffer CE, Payne T, Ostroff JO, Jolicoeur D, Steinberg M, et al. (2015) Increasing the quality and availability of evidence-based treatment for tobacco dependence through a unified certification of tobacco treatment specialists. Journal of Smoking Cessation 11: 1-7.
5. McDermott MS, Beard E, Brose LS, West R, McEwen A (2013) Factors associated with differences in quit rates between “Specialist” and “Community” stop-smoking practitioners in the English stop-smoking services. Nicotine & Tobacco Research 15: 1239-1247.
6. Huang J, Walto, K, Gerzoff RB, King, BA, Chaloupka, FJ (2015) State tobacco control spending - United States, MMWR Morbidity Mortality Weekly Report 64: 673-678.
7. Bauer UE, Briss PA, Goodman RA, Bowman BA (2014) Prevention of chronic disease in the 21st century: Elimination of the leading preventable causes of premature death and Disability in the USA. Lancet 384: 45-52.
8. Ford ES, Murphy LB, Khavjou O, Giles WH, Holt JB, et al. (2015) Total and state-specific medical and absenteeism costs of COPD among adults aged > 18 years in the United States for 2010 and projections through 2020. Chest 147: 31-45.
9. Fu SS, van Ryn M, Burgess DJ, Nelson D, Clothier B, et al. (2014) Proactive tobacco treatment for low income smokers: Study protocol of a randomized controlled trial. BMC Public Health 14: 1-9.
10. Rahm AK, Hawkins RP, Dearing JW, Pingree S, Lomax JB, et al. (2015) Implementing an evidence-based breast cancer support and communication tool to newly diagnosed patients as the standard care in two institutions. Translational Behavioral Medicine 5: 198-206.
11. Moody-Thomas S, Nasuti L, Yi Y, Celestin MD, Horswell, R, et al. (2015) Effect of systems change and use of electronic health records on quit rates among tobacco users in a public hospital system. Research and Practice 105: e1- e7.
12. Beal JA (2012) Academic-service partnerships in nursing: An integrative review. Nursing Research and Practice 2012: 501564.
13. Omachonu VK, Einspruc, NG (2010) Innovation in healthcare delivery systems: A conceptual framework. The Innovation Journal: The Public Sector Innovation Journal 15: 1-20.
14. Institute for Healthcare Improvement. Triple Aims for Populations.
15. Institute of Medicine report (2013) The Future of Nursing: Leading Change, Advancing Health.

16. Sarna L, Bialous SA, Chan SSC, Hollen P, O'Connell KA (2013) Making a difference: Nursing scholarship and leadership in tobacco control. Nursing Outlook 61: 31-42.

17. Sarna L, Bialous SA, Kralikova E, Kmetova E, Flebrova V, et al. (2014) Impact of a smoking cessation program on nurses' interventions. Journal of Nursing Scholarship 46: 314-321.

18. Sarna L, Bialou, SA, Rice VH, Wewers ME (2009) Promoting tobacco dependence treatment in nursing education. Drug and Alcohol Review 28: 507-516.

19. Rostron BL, Change CM, Pechacek TF (2014) Estimation of cigarette smoking attributable morbidity in the United States. Journal of the American Medical Association Internal Medicine 174: 1922-1929.

20. Galaznik A, Chapnick J, Vietri J, Tripath S, Zou, KH, et al. (2013) Burden of smoking on quality of life with chronic obstructive pulmonary disease. Expert Reviews Pharmacoeconomics Outcomes Research 13: 853-860.

21. Andrews JO, Heath J, Barone CP, Tingen M (2008) Time to quit? New strategies for tobacco dependent patients. The Nurse Practitioner 33: 34-42.

Appendices(A-C)

Appendix A

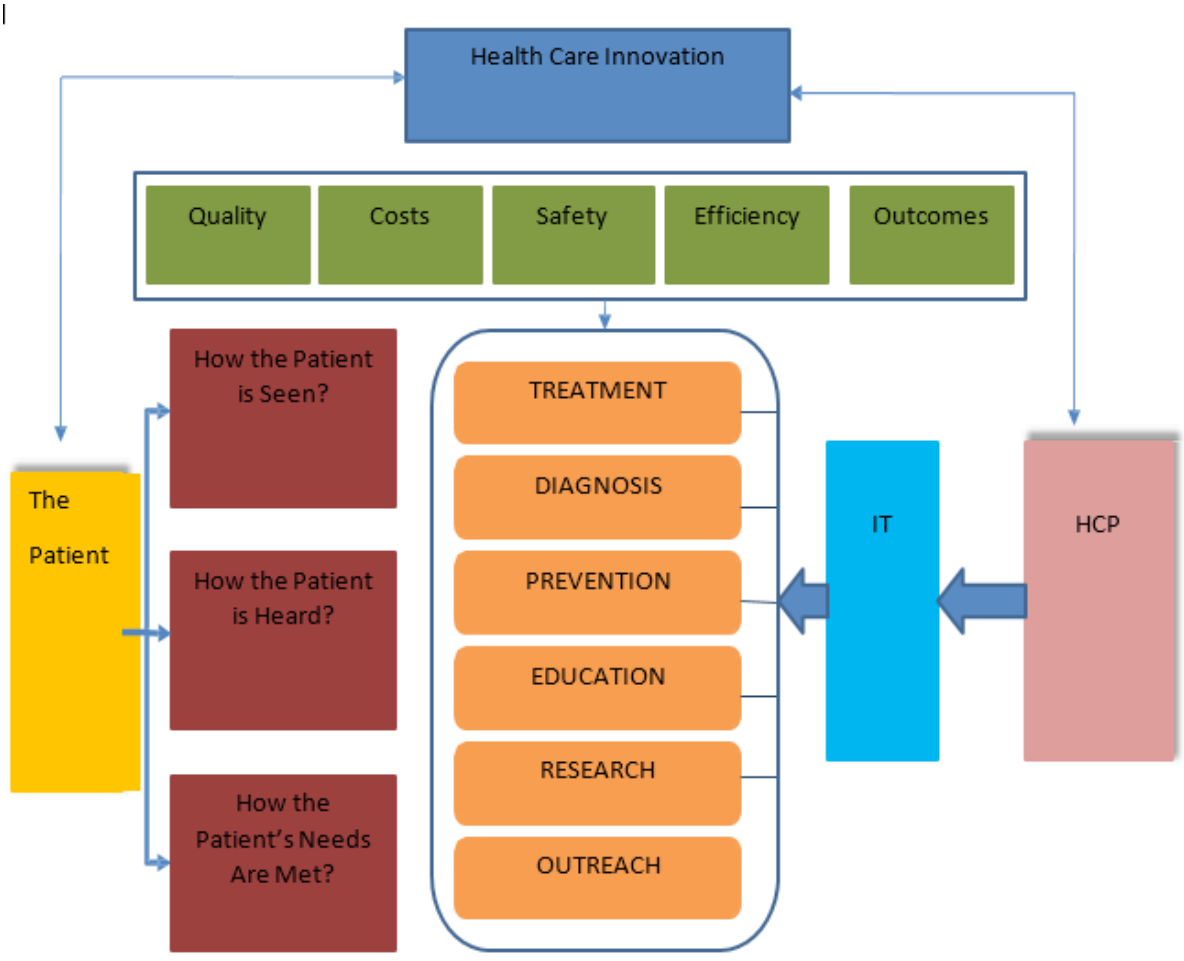

Figure 1: Conceptual Framework for Innovation in Healthcare.

Appendix B

Tobacco Use Data Collection Form Cover Sheet

Patient Name: _____

Date of Birth: _____

Tobacco Use Data Collection Form Start Time_____

ASK

Have you ever used?	**How many years did you use _____?**	**Have you used _____in the past 30 days?**	**Before today did you use_____**	**On the days that you used ____, how much did you typically use?**	**How soon after you wake up do you use____? Hard to be around smokers?**
Cigarettes ____ yes____no	# of years _____	___yes___no - how long did you stop using cigarettes? ___days___ months___years	____daily____non-daily	Per day amount____ cigarettes____packs	_____minutes___ yes ___no
Cigars____ yes____no	# of years _____	___yes ___no - how long did you stop using cigars? ___days___months ___years	____daily____non-daily	Per day amount ____ cigars	_____minutes ___ yes ___no
Hookah____ yes____no	# of years_____	___yes ___no - how long did you stop using hookah? ___days___months ___years	____daily____non-daily	On the days you used hookah, how many "heads" or "bowls" did you use per day?_____	_____minutes ___ yes ___no
Oral smokeless tobacco (OST) ____yes____no	# of years _____	___yes ___no - how long did you stop using OST? ___days___months ___years	____daily____non-daily	On the days you used OST how much did you use per day? ____cans ____pouches ____ pinches	_____minutes ___ yes ___no
e-Cigarette____ yes____no	# of years _____	___yes ___no - how long did you stop using e-Cigarettes? ___days___ months ___years	____daily____non-daily	On the days you vaped, how many times do you use an e-Cigarette per day? ____times	_____minutes ___ yes ___no

Do others use tobacco in the home? ____yes _____no

How many quit attempts (of at least 24 hours) have you made in the past _____attempts?

What is the longest period of time you have quit for? _____days _____weeks _____months _____years

What methods and/or smoking cessation aids did you use to quit during your most recent quit attempt?

__Just quit on my own, with no help

__Attended a Stop Smoking class

__Called the Arkansas Tobacco Quitline

__Got a prescription medication from my healthcare provider

__Nicotine Patch

__Nicotine Gum

__Nicotine Lozenge (L or mini)

__Nicotine Inhaler

__Bought nicotine replacement therapy over the counter

__Bought and used a e-cigarette

__Nicotine Nasal Spray

__Zyban/Wellbutrin

__Chantix/Varenicline

ASSESS (0-10 scale, 0 is worst, 10 is best)

How motivated are you to quit tobacco?

__0 __1 __2 __3 __4 __5 __6 __7 __8 __9 __10

How confident are you that you can quit tobacco?

__0 __1 __2 __3 __4 __5 __6 __7 __8 __9 __10

How important is it to quit tobacco?

__0 __1 __2 __3 __4 __5 __6 __7 __8 __9 __10

Cues to Smoke: ___ feeling happy ___ feeling bored ___feeling unhappy (rate 1= least, 3 = most)

Reasons to Quit: ___health ___ cost ___ kids ___ grandkids ____ smell; other reasons: _____

Target Quit/Reduction Commitment (select one only):

__ Already quit - more than 30 days (maintenance phase)

__ Already quit - within the past 30 days (action phase)

__ Not quit, but ready to do so today (action phase)

__Not quit, but plan to stop within the next 30 days (contemplation phase)

__ Not ready to quit but will try to reduce the amount of tobacco used (pre-contemplation phase)

__ Not ready to quit and no interest in changing tobacco behavior at the time (pre-contemplation phase)

Alcohol Use

Do you use alcohol? ____yes ____no; If yes, do you associate tobacco use with alcohol use? __yes __no

ASSIST

Cognitive strategies discussed:

__ Personal reasons/benefits of quitting __ Identify backdoor excuses __ Level of addiction

__ Think positively __ Identify activities to avoid, alter or use an alternative __ Identify a reward

Behavioral strategies discussed:

____ Cope with urges (delay, deep breath, drink water, distraction)

____ Support from friends/family __ Manage stress __ Maintain healthy weight/physical activity

____ Stop tobacco use brochure/handouts provided/tobacco cessation pearls

____ PiCO smokerlyzer exhaled carbon monoxide tested ____ ppm _____%COHb

____ Pharmacotherapy recommended

Type of pharmacotherapy recommended or provided (if a prescription and/or medications are provided at this time)

Type	Patch	Patch	Patch	Gum	Lozenge	Inhaler	Nasal Spray	Zyban/Wellbutrin	Chantix/Varenicline
Dose	7 mg	14 mg	21 mg	2 mg	2 mg	2 mg	1-2 sprays	150 mg	0.5 mg
Dose	28 mg	35 mg	42 mg	4 mg	4 mg	4 mg	(0.5 -1 mg) in each nostril/hour	300 mg	1.0 mg

ARRANGE

Next clinic visits _____ month/day/year Further treatment needed ____ yes ____no

Call patient for follow- up (their preference):

Dates of the following follow-up: 2 weeks_____; 30 days_____; 60 days_____

__ Early am (0700- 0900) __ Morning (0900-1200) __ Afternoon (1300-1700)

__ Evening (1800-2100) __ No preference

__ Sunday __ Monday __ Tuesday __ Wednesday __ Thursday __ Friday __ Saturday

Preferred Phone Number _____ Secondary Phone Number _____

Text Messages okay? ____yes ____no Would you prefer text messages? ____ yes ___ no

Email okay? Email address _____

Inpatients only:

____ Not available for bedside counseling ____ Too ill for bedside counseling____ Refused

____ Condition not appropriate for bedside counseling (intubated, unable to communicate)

____ Scheduled follow-up calls (see above)

____ End time

Tobacco cessation counseling time in minutes _____

Pharmacotherapy cessation counseling time in minutes _____

Appendix C

Tobacco Use Data Collection Follow-Up Form **Patient ID Number_____**

Date of follow-up _____ Follow-up conducted _____ by phone _____ face to face

Additional Counseling Provided? _____yes _____no; (topics covered, check all that apply):

Cognitive strategies discussed:

__ Personal reasons/benefits of quitting __ Identify backdoor excuses __ Level of addiction

__ Think positively __ Identify activities to avoid, alter or use an alternative __ Identify a reward

Behavioral strategies discussed:

____ Cope with urges (delay, deep breath, drink water, distraction)

____ Support from friends/family __ Manage stress __ Maintain healthy weight/physical activity

____ Stop tobacco use brochure/handouts provided/tobacco cessation pearls

Tobacco Use Status: (circle letter that corresponds to response)

Q = Quit

R = Reduced

NC = No change in consumption

I = Increased consumption

Compliance with pharmacotherapy regimen? _____yes _____no _____ N/A

Reasons for NO (check all that apply):

___ Cost___ Wasn't covered by my insurance____ Bad taste____ Bad texture_____ Didn't work for me

New cessation plan? _____yes _____no

Provide brief details:

CO measurement:

_____ppm _____%coHgB Next follow-up date: _____