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Improving Quit Rates For Tobacco-Dependent Hospitalized Patients

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IMPROVING QUIT RATES FOR TOBACCO-DEPENDENT HOSPITALIZED PATIENTS

by

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Dedication

This work is dedicated in memory of my mother, Charlotte Olivia Kersey Grimes. As a child, she instilled in me the value of education. Throughout this journey, she has been my inspiration and her spiritual presence has sustained me through the many hours of hard work.

I also dedicate this work in honor of my husband, Jim Johnson; my daughter, Olivia Mills; and my sister, Ann Gatlin. They have provided me with love and support beyond measure that can only come from family. Jim kept me focused on the final goal; Olivia gave me joy through her pride of my work; Ann's encouragement gave me confidence to see it through.

Thank you, Ellen Fineout-Overholt for believing in me. Your passion for EBP and your strong faith has been an inspiration to me. Your confidence and assurance kept me going when I grew tired and the going was tough. I am blessed to know you and to have had the opportunity to study with you.

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Thanks to my peers who graduated with me at Arizona State, with a special thanks to Tami Hartzel who provided moral support and editing of my paper. Also, special thanks to Katie LeGros for APA and editing support.

For many of my friends and peers, I cannot possibly list you all in fear that I would miss someone. I'm sure you feel like this topic has been discussed *ad nauseam*. Thank you for your patience, prayers, and words of encouragement.

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Abstract

Purpose: The purpose of this project was to evaluate outcomes of an existing inpatient tobacco cessation counseling program with 30-day follow-up among recently admitted tobacco-dependent patients who were tobacco-dependent.

Background/Significance: Tobacco use is considered the number one most preventable cause of disease, disability, and death in the United States. Despite associated dangers, approximately 21% Americans currently smoke. This has led to increased hospital admissions and chronic disease management, costing the United States approximately $96 billion per year. Decades of research and evidence-based clinical practice guidelines substantiate that inpatient tobacco cessation counseling has the potential to improve quit rates post-hospital discharge.

Method: This quality improvement project utilized existing hospital data containing demographic and medical information about patients and tobacco use behaviors. The goal was to answer the question: Does the provision of a tobacco cessation program initiated during hospitalization for persons who are tobacco-dependent (a) increase quit attempts or (b) reduce tobacco consumption? The electronic medical record was queried for data related to: demographics, insurance type, and diagnosis. Data related to smoking status and the intervention was extracted from a paper chart maintained by the certified tobacco treatment specialist.

Results: Out of 176 tobacco-dependent patients admitted to the hospital, 100 (57%) indicated an intention to quit (at admission time) while only 40 (23%) reported having quit within 30 days post discharge (McNemar Test, p=0.000, n=176). The mean number of cigarettes smoked per day dropped from 19 cigarettes on admission to 13 cigarettes post discharge. [t (158)=6.7476, p=0.000].

Conclusions: This quality improvement project showed that although an inpatient smoking cessation program did not improve quit rates, it did significantly improve reduction in tobacco consumption.

Chapter One: Introduction

Tobacco cessation counseling in conjunction with the use of nicotine replacement therapy and/or tobacco cessation medication has been the standard of care for the treatment of nicotine dependence since 2000, when the first clinical practice guideline was published. Revision to the guideline, *Treating Tobacco Use and Dependence*, was published in 2008 (Fiore et al., 2008). Current U.S. policy encourages the implementation of this clinical practice guideline in the hospital setting and includes follow-up of patients post discharge. This chapter will provide an overview to the problem of tobacco use, the national policies influencing tobacco cessation programs in hospitals, evidence for tobacco cessation counseling interventions, and conclude with the clinical problem and purpose of the project.

Problem of Tobacco Use

Tobacco use is considered the number one most preventable cause of disease, disability, and death in the United States and accounts for more than 435,000 deaths each year (U.S. Department of Health and Human Services [USDHHS], 2010). Despite the dangers associated with tobacco use, it is estimated that 20.6% of Americans (46 million) currently smoke (Morbidity and Mortality Weekly Report, 2009). Smoking is a known cause of cancer, heart disease, stroke, complications of pregnancy, and chronic obstructive pulmonary disease (USDHHS, 2010). Hospital admissions and management of chronic diseases associated with tobacco use costs the U.S. approximately $96 billion per year and another $97 billion in productivity loss due to premature deaths (Centers for Disease Control and Prevention [CDC], 2012).

Policy Influences on Tobacco Cessation Initiatives in Hospitals

Policies that influence tobacco cessation initiatives in hospitals originate from the Centers for Medicare and Medicaid (CMS) and the Joint Commission, and are encouraged by the Partnership for Prevention. The Partnership for Prevention is composed of businesses, nonprofit organizations, and government agencies whose mission is to make evidence-based disease prevention and health promotion a national priority (Partnership for Prevention, 2011). The Partnership's *Action to Quit* (Action to Quit, n.d.) initiative promotes tobacco-use screening and tobacco cessation counseling in health care facilities and primary care.

CMS implemented disease specific quality measures to evaluate hospital quality of patient care in 2001 (CMS, 2011, June 21). Provision of tobacco cessation counseling was identified as a quality measure for tobacco-dependent patients with these diagnoses: acute myocardial infarction, stroke, congestive heart failure, and community-acquired pneumonia. Compliance with the CMS tobacco cessation quality measure requires that patients with these identified conditions receive tobacco cessation counseling during their hospital stay. In the past, CMS has provided financial incentives for hospitals complying with these quality measures. However, the Inpatient Prospective Payment System was developed to reimburse hospitals for inpatient health care services in which a predetermined rate is set for treatment of specific illnesses. Beginning January 1, 2012, hospitals having high percentages of readmissions within thirty days will experience financial penalties.

The Joint Commission accredits and certifies health care organizations and programs in the United States to improve healthcare. The Joint Commission developed and tested a set of comprehensive tobacco cessation performance measures for hospitals. These measures were funded by the Partnership for Prevention and were released for public review on July 1, 2011.

Beginning January 1, 2012, the new measures became active; implementation is currently voluntary. The Partnership for Prevention recommended that the new Joint Commission inpatient tobacco cessation screening and counseling measures be added to the CMS tobacco cessation quality measure and be tied to Inpatient Prospective Payment System (Partnership for Prevention, 2011, June 3). The four Joint Commission tobacco cessation performance measures related to hospitalized patients are as follows:

1. Patients are screened for tobacco use within the past 30 days, during the hospital stay.
2. Patients receive practical counseling to quit and receive FDA-approved cessation medications.
3. Patients are referred to evidence-based outpatient counseling and should receive a prescription for FDA-approved cessation medication upon discharge.
4. Discharged patients are contacted within 30 days after hospital discharge and follow-up information regarding tobacco use status is collected.

Refer to Appendix A for information related to how the performance indicators are measured.

Tobacco Dependence Counseling

Tobacco dependence counseling is known as tobacco cessation counseling or smoking cessation counseling, and consists of individual, group, and telephone counseling. Tobacco dependence counseling is strongly recommended, along with medication treatment, for patients who use tobacco (Fiore et al., 2008). Refer to Appendix B for a brief overview of the Guideline recommendations for clinicians treating tobacco use and dependence (Fiore et al., 2009). The clinical practice guideline defines counseling as a person-to-person (face-to-face) contact between a clinician and a patient for the purpose of tobacco use assessment and/or intervention (Fiore et al., 2008). The two components of counseling identified in the guideline are problem

solving skills training and social support. Problem-solving skills include basic information about smoking and successful quitting, as well as identification and problem-solving to deal with danger situations that increase the risk of smoking or relapse. Social support strategies include encouragement in the quit attempt, communication of caring and concern, and encouraging the patient to talk about the quitting process (Fiore et al., 2008).

A tobacco cessation intervention may be brief (also referred to as intermediate) or intensive. Brief interventions may last 3 to 10 minutes while intensive interventions last more than 10 minutes in duration. The length or intensity of the intervention is determined by how receptive the patient is to the intervention. The Transtheoretical Model (TTM) of behavior change describes the stages of change that are needed to assess behavior modification of smoking: precontemplation, contemplation, preparation, action, and maintenance (Prochaska & DiClemente, 1983). In the precontemplation stage, tobacco-dependent patients are not seriously considering quitting, which is the defining characteristic of precontemplation. Moving to the contemplation stage, the tobacco-dependent patient is seriously considering a quit attempt within the next 6 months, but not within the next 30 days. Those who are seriously considering quitting in the next 6 months and are planning a quit attempt in the next 30 days are in the preparation stage (Hartney, 2009). The 5 A's model for treating tobacco use and dependence is applied to both the brief and intensive counseling intervention (Fiore et al., 2008). The five components of this model are:

1. Asking about tobacco status at every visit.
2. Advising patient to quit, in a strong and personalized manner.
3. Assessing patient willingness to quit.

4. Assisting patient to quit by offering medication and counseling and encouraging a future quit attempt for patients unwilling to quit.
5. Arranging follow-up contacts within the first week of the quit date and/or addressing willingness to quit at the next visit (for those unwilling to quit at the time).

The distinquishing characteristics of an intensive counseling intervention includes a comphrensive discussion of health risks, addition of sub-specialist referrals, and more frequent counseling sessions of longer duration (Fiore et al., 2008).

Tobacco Treatment Counseling Providers

Tobacco treatment counseling providers may be trained as a tobacco treatment specialist (TTS) or may be a health or allied health care provider with a special interest in tobacco cessation counseling. The Association for the Treatment of Tobacco Use and Dependence (ATTUD) defines a TTS as "a professional who possesses the skills, knowledge and training to provide effective, evidence-based intervention for tobacco dependence across a range of intensities" (ATTUD, n.d., tobacco treatment specialist). A TTS may work in a variety of community settings, including hospitals, and may be a physician, nurse, or an allied health provider. The ATTUD provides standards of practice and competencies used for the training and credentialing of TTSs (ATTUD, n.d., core competencies). Currently, certification is determined by individual states versus a national credentialing center. For example, both the Tobacco Dependence Program at the University of Medicine and Dentistry of New Jersey and the Florida State University Area Health Education Center (AHEC) Tobacco Program base their TTS training curriculum on the guideline and ATTUD Standards for Core Competencies for Tobacco Treatment Specialists. To meet the requirements for certification, applicants must provide proof

of completion of an ATTUD approved training program, document work experience in tobacco counseling or as a healthcare provider, and pay a registration fee.

Tobacco cessation counseling intervention in a hospital is not restricted nor required to be provided by a certified or ATTUD trained TTS. No policy has been established by the Joint Commission to designate who is authorized to be a tobacco cessation counselor or provider. Medicare, however, reimburses for tobacco cessation services that are provided by a physician or other Medicare-recognized practitioner who has a Medicare provider number. These professionals include: anesthesiologist assistant, certified nurse midwife, clinical nurse specialist, certified registered nurse anesthetist, clinical psychologist, clinical social worker, nurse practitioner, physician assistant or registered dietician or nutrition professional (CMS, 2009). Each of these professionals are trained in their respective fields but are not required to have additional tobacco counseling training.

Abbreviated Literature Review

Evidence supports that tobacco dependence interventions can significantly reduce the risk of tobacco-related diseases and illnesses, and that health outcomes can be improved (Baumeister et al., 2007; Fiore et al., 2008; Rigotti, Munafo, & Stead, 2008; USDHHS, 2010). Using the PICOT format (Melnyk & Fineout-Overholt, 2011), a clinical question was phrased in a manner to yield the most relevant information from a litereature search: In tobacco-dependent hospitalized patients, does tobacco cessation counseling increase quit rates after discharge? PICOT refers to patient population (P), intervention (I), comparison (C), intervention (I), outcome (O) and time (T). Over the past 10 years, three reviews were conducted by Fiore and colleagues (1996, 2000, 2008) that included 8,700 studies obtained from 11 electronic databases. Subsequent meta-analysis of the randomized controlled trials (RCT) among these studies formed

the evidence base for the development of the guideline initiated in 2000 and updated two more times through 2008. The guideline underscores that tobacco treatment counseling, in conjunction with medication, is the standard of care for persons who are tobacco dependent.

There were two systematic reviews conducted since the guideline was published that added significant findings to the body of literature. A review of smoking cessation interventions for hospitalized patients was conducted by Rigotti, Munafo and Stead (2008). Rice and Stead (2009) reviewed nursing interventions for smoking cessation. These were followed by four individual studies that provided additional support for smoking cessation interventions for hospitalized patients (Smith & Burgess, 2009; De Azevedo et al., 2010; Steinberg, Greenhaus, Schmelzer, Richardoson, & Carson, 2011; Joseph et al., 2011).

Results of the literature review show that effective tobacco cessation counseling interventions for patients must be followed for a minimum of 30 days. Abstinence can be measured by point prevalence, prolonged abstinence, or continuous abstinence. Point prevalence is a measure of cessation based on behavior at a particular point in time, or in a relatively brief specified period, such as in 24 hours or 7 days. Prolonged abstinence typically allows a 'grace period' following the quit date (usually about two weeks) to allow for lapses/slips during the first few days when the effect of treatment may still be emerging, whereas continuous abstinence measures cessation involving avoidance of all tobacco use since the quit day until the time the assessment is made (Cochrane Collaboration, 2012). According to Hughes et al. (2003), prolonged abstinence (PA) and point prevalence (PP) abstinence are the two most common outcome measures in clinical trials of smoking cessation. In a study to determine if these measures produced similar results, Hughes, Carpenter and Naud (2010) found that PA and PP are closely related and one can convert PA to PP and vice versa with moderate accuracy.

The Problem

Although tobacco cessation counseling and/or treatment in the hospital has been found to be successful in increasing patient quit rates, most hospitals have not made it a priority to identify tobacco users, record their status, offer quit assistance during hospitalization, or follow-up after discharge (Partnership for Prevention, 2011b). Implementation of the fourth performance measure, post-discharge follow-up, may be the most difficult measure to implement. Barriers to post-discharge implementation may include inadequate staffing to conduct follow-up, lack of a systematic process to identify patients requiring follow-up, failed attempts to contact patients post-discharge, and difficulties with documentation. The quit attempt during hospitalization is often enforced by institutional no-smoking/tobacco use policies, which is not initiated by the patient. The outcome of an in-hospital tobacco cessation counseling program is best measured once the patient returns to the home environment. Providing follow-up post hospital discharge would re-enforce the counseling initiated in the hospital, provide opportunity for recognition of barriers in home or work settings, and suggestions for strategies to overcome barriers, measure tobacco abstinence, and maximize success of tobacco abstinence or renewed commitment to another quit attempt.

The performance measures instituted by the Joint Commission, currently voluntary, are a step towards holding hospitals accountable for encouraging quit attempts among tobacco-dependent hospitalized patients. Consequences of non-compliance with the Joint Commission performance may eventually have an economic impact once the measures become mandatory and are linked to CMS prospective payment. Hospitals who readmit patients within 30 days of discharge for specified conditions may consequently lose reimbursement for that admission if there has not been compliance with established performance measures. Patients who are likely

to be readmitted are those with chronic disease and tobacco dependence (Mohiuddin et al., 2007).

Project Purpose

The purpose of this project was to evaluate outcomes of an existing inpatient tobacco cessation counseling program with 30-day outpatient follow-up among recently admitted persons who were tobacco-dependent. In addition, successful implementation of this project would insure compliance with the fourth Joint Commission Tobacco Measure. The project question was: Does the provision of a tobacco cessation program initiated during hospitalization for persons who are tobacco-dependent (a) increase quit attempts or (b) reduce tobacco consumption.

Definition of Terms

Abstinence

A period of being quit, i.e. stopping the use of cigarettes or other tobacco products (Cochrane Collaboration, 2012).

Bupropion

A pharmaceutical drug originally developed as an antidepressant, but now also licensed for smoking cessation; trade names Zyban, Wellbutrin (when prescribed as an antidepressant) (Cochrane Collaboration, 2012).

Brief (Low Intensity) Counseling

Refers to interventions that involve contact between clinicians and patients that last between 3 and 10 minutes. If the length of contact is unavailable, it is coded based on the description of content of the clinical intervention (Fiore et al., 2008).

Cessation

Also called quitting. The goal of treatment is to help people achieve abstinence from smoking or other tobacco use; also used to describe the process of changing the behavior (Cochrane Collaboration, 2012).

Cigarette (Smoking) Reduction

An approach to reducing tobacco toxic exposure by reduction in the number of cigarettes or amount of smoking by a significant amount, i.e. 50% (Hatsukami et al., 2005).

Continuous Abstinence

A measure of cessation, often used in clinical trials involving avoidance of all tobacco use since the quit day until the time the assessment is made (Cochrane Collaboration, 2012).

Craving

A very intense urge or desire [to smoke] (Cochrane Collaboration, 2012).

Cut Down to Quit

Refers to a use of nicotine replacement therapy as a way to cut down rather than a complete replacement of nicotine from tobacco. It can also be known as 'reduce to stop' (Wang et al., 2008).

Intensive (Higher Intensity) Counseling

Refers to interventions that involve extended contact between clinicians and patients. It is coded based on the length of contact between clinicians and patients (greater than 10 minutes). If time spent is not known, it is coded based on the content of the contact between clinicians and patients (Fiore et al., 2008).

Lapse/Slip

Terms sometimes used for a return to tobacco use after a period of abstinence. A lapse or slip may be defined as a puff or two from a cigarette. This may proceed to relapse, or abstinence

may be regained. Some definitions of continuous sustained or prolonged abstinence require complete abstinence, but some allow a limited number or duration of slips. People who lapse are very likely to relapse, but some treatments may have their effect by helping people recover from a relapse (Cochrane Collaboration, 2012).

Motivational Interviewing

A directive and patient-centered counseling method used to increase motivation and facilitate change (Fiore et al.).

Nicotine Replacement Therapy (NRT)

A smoking cessation treatment in which nicotine from tobacco is replaced for a limited period by pharmaceutical nicotine. This reduces the craving and withdrawal experienced during the initial period of abstinence while users are learning to be tobacco-free. The nicotine dose can be taken through the skin, using patches, by inhaling a spray, or by mouth using gum or lozenges (The Cochrane Collaboration, 2012).

Pharmacotherapy

A treatment using pharmaceutical drugs, e.g. NRT, Bupropion, Varenicline (Cochrane Collaboration, 2012).

Point Prevalence Abstinence

A measure of cessation based on behavior at a particular point in time, or in a relatively brief specified period, e.g. 24 hours or 7 days. It may include a mixture of recent and long term quitters (Cochrane Collaboration, 2012).

Prolonged Abstinence

A measure of abstinence that typically allows a 'grace period' following the quit date (usually about two weeks) to allow for lapses/slips during the first few days when the effect of treatment may still be emerging (Cochrane Collaboration, 2012).

Quit Attempt

A planned attempt to quit smoking (Fiore et al., 2008).

Quit Day

"The day of a given cessation attempt during which a patient tries to abstain totally from tobacco use (Fiore et al., 2008, p. 187)." The quit day also refers to when a patient commits to quit tobacco use on a specified day after a motivational intervention.

Quit Smoking Now

The Quit Smoking Now curriculum is a six week class to assist with the quit attempt (Northeast Florida AHEC Network, 2011). The class is facilitated by a TTS and each class lasts approximately one hour. Each participant receives a workbook to keep. The six classes are titled:

1. Tobacco: Friend or Foe?
2. Managing Addiction
3. Let's Quit Now!
4. Develop a Plan for Life – Without Tobacco!
5. Relapse Prevention
6. Congratulations. Now Stay the Course!

Relapse

A return to regular smoking after a period of abstinence (Cochrane Collaboration, 2012).

Tapering

A gradual decrease in dose at the end of treatment as an alternate to abruptly stopping treatment (Cochrane Collaboration, 2012).

Tobacco Cessation Counseling (Practical Counseling)

Refers to a tobacco use treatment in which tobacco users are trained to identify and cope with events or problems that increase the likelihood of their tobacco use. For example, quitters might be trained to anticipate stressful events and to use coping skills, such as distraction or deep breathing, to cope with an urge to smoke. Relapse interventions are coping skill training, relapse prevention, and stress management (Fiore et al., 2008).

Tobacco Dependence

Dependence on any forms of tobacco, including but not exclusive to cigarettes, pipes, cigars, and chewing tobacco (Fiore et al., 2008).

Tobacco Treatment Specialist

"A professional who possesses the skills, knowledge and training to provide effective, evidence-based interventions for tobacco dependence across a range of intensities" (ATTUD, n.d., tobacco treatment specialist, para. 2).

Varenicline: Non-Nicotine

FDA-approved smoking cessation medication. Its mechanism of action is thought to be a function of its ability to serve both as a partial nicotine receptor agonist and a nicotine receptor antagonist. It is available by prescription only. Trade name is Chantix (Fiore et al., 2008).

Withdrawal Symptoms

"A variety of unpleasant symptoms (e.g., difficulty concentrating, irritability, anxiety, anger, depressed mood, sleep disturbance, and craving) that occur after use of an addictive drug

is reduced or stopped. Withdrawal symptoms are thought to increase the risk for relapse" (Cochrane Collaboration, 2012; Fiore et al., 2008, p. 193).

Summary

Chapter One introduced the problems associated with tobacco use and dependence, and described the policies that influence hospital tobacco programs. Tobacco cessation interventions and providers were defined and follow-up within 30 days after discharge was supported by the evidence found in the literature. The significance of this project is that it will build on an existing in-hospital tobacco cessation counseling program provided by a certified tobacco treatment specialist applied in the "real world." The clinical significance for tobacco-dependent patients is that it would reinforce their in-hospital quit attempt and focus on supports needed in the home/work environments to potentially improve health outcomes and decrease post-discharge readmission rates.

Chapter Two: Review of Literature

A review of the research evidence and evaluation of existing clinical practice guidelines was completed to identify how tobacco cessation counseling affects quit rates among hospitalized patients. This chapter will describe the literature search process, the process used to evaluate the clinical practice guidelines, and discuss systematic reviews and individual studies. A critical appraisal of the literature will also be provided.

Sources and Search Process

A literature search was conducted using Cochrane Library, Cumulative Index of Nursing and Allied Health Literature (CINAHL), and MEDLINE databases for high level evidence using the following combination of key terms: tobacco cessation counseling, smoking cessation counseling, hospitalized patients, quit rate(s), abstinence, outcomes, clinical outcomes, follow-up, and discharge follow-up. Articles dating back to 2007 that had two of the key terms were reviewed. Internet websites for ATTUD and USHHS were reviewed for policy information and practice guidelines. Approximately 163 research articles were found and then narrowed to 8 based on the strength of the evidence, their relevance to the treatment of tobacco use and dependence, and the treatment of hospitalized tobacco-dependent patients.

Evaluation of the Clinical Practice Guideline

The clinical practice guideline, *Treating Tobacco Use and Dependence: 2008 Update* (Fiore et al., 2008), was evaluated using the Appraisal of Guidelines for Research and Evaluation II (AGREE) criteria (Brouwers et al., 2010). AGREE provides a framework to assess the quality of a guideline and determine applicability to practice using an objective method of evaluation.

The AGREE tool criteria consist of 23 questions and are organized into 6 domains: scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability, and editorial independence.

Scope and Purpose

The need for the guideline was clearly stated. Need was based on multiple factors, which included tobacco use prevalence, tobacco use related morbidity and mortality, the economic burden imposed by tobacco use, variation in clinical practice, availability of methods for improvement of care, and availability of data on which to base recommendations for care. The stated clinician audience for the guideline is professionals who provide healthcare to tobacco users (Fiore et al., 2008).

Stakeholder Involvement

The group responsible for the development of the guideline included members of a consortium of organizations and individuals who were committed to the treatment of tobacco use and dependence, and dedicated to improving U.S. public health. It was a partnership among Federal Government agencies and nonprofit organizations. Those represented included: Agency for Healthcare Research and Quality; Centers for Disease Control and Prevention; National Cancer Institute; National Heart, Lung, and Blood Institute; National Institute on Drug Abuse; Robert Wood Johnson Foundation; American Legacy Foundation; and University of Wisconsin School of Medicine and Public Health's Center for Tobacco Research and Intervention (Fiore et al., 2008).

Rigor of Development

The guideline was developed as a result of multiple meta-analyses of the available scientific literature published between 1975 and 2007. The panel of experts identified

randomized placebo/comparison controlled trials that met the inclusion criteria and formed the body of evidence upon which the guideline is based. The result of this review of the scientific literature is ten guideline recommendations for clinicians (see Appendix B). The method used for the development of the recommendations was clearly described. The individual studies have strength of evidence that provided a relationship between the recommendation and the supporting evidence. The components of tobacco dependence treatment were divided into seven chapters. Within the chapters, tables provided the supporting evidence for the recommendation.

External review of the guideline was supplied in written comments by 81 invited reviewers and 15 members of the public which included clinicians, healthcare administrators, social workers, counselors, health educators, researchers, consumers, key personnel at selected Federal agencies, and State tobacco control programs. The criteria for evaluation of the guideline were based on five criteria: validity, reliability, clarity, clinical applicability, and utility (Fiore et al., 2008). Two individuals made oral presentations to the guideline panel during an invited open presentation period. Financial disclosure statements of the reviewers were provided.

Clarity of Presentation

The guideline recommendations for practice are specific and based on a goal that clinicians recommend the use of effective tobacco dependence counseling and medication treatments to patients who use tobacco. Healthcare systems, insurers, and purchasers are encouraged to assist clinicians in making effective treatments available. The ten key guideline recommendations are clear and concise. The easy-to-read tables provide the supporting evidence for each recommendation, making it easy for the clinician/user to apply the guideline to his or her clinical practice.

Applicability

Facilitators and barriers to clinical practice were described within each recommendation as it was discussed in the guideline. Topics that required additional research were provided at the end of each chapter. Areas requiring additional research for hospitalized patients were identified: effectiveness of interventions provided by different hospital personnel, including nurses and respiratory therapists; effectiveness of counseling and medications with hospitalized patients; and relapse prevention once the patient leaves the hospital, including use of fax-to-quit programs (Fiore et al., 2008). These topics were included in the guidelines, but are frequently identified as barriers that need to be addressed.

Editorial Independence

This guideline provides a comprehensive list of effective treatment strategies for tobacco use and dependence. The recommendations are appropriate for use by clinicians who practice in hospitals. The strengths of the guideline are objectively identified using the AGREE II tool.

All domains of the AGREE II tool resulted in a perfect score except for applicability. The reason for a less than perfect score in applicability related to the lack of research related to hospitalized patients. This highlights the need for the evaluation of a tobacco cessation program within a hospital and the effectiveness of tobacco cessation counseling is provided by a nurse who has been trained and/or certified as a tobacco treatment specialist.

Systematic Reviews

Two systematic reviews of tobacco cessation studies were published after the guideline was disseminated. One review examined tobacco cessation efforts among hospitalized patients and the second review focused on the tobacco cessation interventions performed by nurses. Both

reviews indicate that hospital tobacco cessation programs have positive effects on patient quit attempts and sustained abstinence.

Rigotti, Munafo, and Stead (2008) conducted a systematic review of thirty-three trials including randomized controlled trials and quasi-randomized trials of patients who were hospitalized. Patients included in these trials were currently smoking, or had recently quit and/or those who planned to quit smoking after discharge. This study found that intensive counseling interventions begun during hospitalization and continued supportive contacts for one month after discharge increased smoking cessation rates after discharge. Further, tobacco programs are effective when they are administered to all hospitalized smokers, regardless of admitting diagnosis. In this review, there was one trial of intensive intervention including counseling and pharmacotherapy for smokers admitted with cardiovascular disease (Mohiuddin et al., 2007). Over a two year follow-up period, there were significant reductions in all-cause mortality and hospital readmission rates. This project reinforces follow-up after discharge to improve quality as well as clinical outcomes.

In 2009, Rice and Stead conducted a systematic review to determine the effectiveness of nursing-delivered smoking cessation interventions. When reviewers compared a nursing intervention to a control or usual care, 31 of the 42 studies found the smoking cessation intervention to significantly increase the likelihood of quitting. Since the largest healthcare workforce is comprised of nurses, the authors sought to determine the benefits of smoking cessation advice and/or counseling given by nurses to patients. Although there is the potential for an effective intervention, the evidence was weaker when the interventions were brief and provided by nurses whose main role is not health promotion or smoking cessation. This adds

strength to the role of a tobacco treatment specialist who has the skills and training to provide an opportunity for treatment that includes reinforcement, follow up, and possibly medication.

Individual Studies

Smith and Burgess (2009) conducted a RCT of a smoking cessation intervention initiated during a hospital stay of patients who were diagnosed with coronary artery disease. Two hundred seventy-six sequential patients admitted with acute myocardial infarction (AMI) and/or coronary artery bypass graft (CABG) were randomly assigned to intensive or minimal smoking cessation interventions. Continuous 12-month abstinence was 57% in the intensive group and 39% in the minimal smoking intervention group ($p < 0.01$). Abstinence was also significantly higher among patients admitted for CABG than those admitted with AMI. The results of this project provides additional evidence for targeting patients by diagnosis and suggests that hospitalized patients may be more receptive or "ready" to accept tobacco cessation interventions during serious health events.

Studies emphasize that extending smoking cessation programs post-hospitalization improves smoking abstinence. One randomized controlled trial found that smoking cessation rates were 44.9% for individuals receiving a high intensity intervention, 41.7% for individuals receiving a low intensity intervention, and 26.3% for individuals receiving usual care ($p < 0.03$) (DeAzevedo et al., 2010). High intensity care consisted of a 30-minute counseling session by a trained counselor who performed a motivational interview. Low intensity care consisted of a 15-minute counseling session by a trained counselor advising the patient to stop smoking. Usual care patients were discharged without counseling since tobacco assessment and counseling was not the standard practice of the hospital. None of the patients received smoking cessation pharmacotherapy during hospitalization or at discharge. The program was conducted during an

8-month period and patient results were reported at 6 months. Similarly, Steinberg and colleagues (2011) reported that 40% of patients who used post-discharge behavioral treatment had significantly higher rates of tobacco abstinence than those who did not participate in a post discharge program (53.1% versus 8.5%, $p < 0.01$). Meanwhile, Joseph and colleagues (2011) compared an eight-week, or usual care (UC), post hospital tobacco intervention of telephone follow-up and mailed nicotine replacement therapy to a long-term tobacco intervention for 48 weeks. Longitudinal care (LC) counseling targeted repeated quit attempts and smoking reduction for those who relapsed. After 18 months, 30.2% of the LC participants reported tobacco abstinence for six months compared to only 23.5% of participants in the UC group. Additionally, predictors of abstinence at 18 months were the number of baseline cigarettes smoked per day and smoking in the first 14 to 21 day interval post discharge. The LC participants who did not quit smoking reduced the number of cigarettes smoked compared to the UC group at 12 months, $p < 0.03$.

These individual studies emphasize the importance of post-discharge follow-up and continued intervention. Joseph et al. (2011) identified the 14th to 21st day post discharge as a predictor for eventual abstinence and provides evidence that post discharge follow-up programs need to minimally target interventions during the first four weeks post discharge. Also, studies conducted after the publication of the guideline cite the use of the combination of brief or intensive counseling with medication management to improve quit rates.

Strength of the Evidence

The purpose of the literature review was to appraise the evidence related to quit attempts and tobacco abstinence among hospitalized patients as a result of tobacco cessation counseling intervention. The body of evidence is extensive, spans over three decades, and has been

consistently and systematically reviewed. It includes one evidence-based clinical guideline that is based on meta-analyses of three systematic reviews of randomized controlled trials and two systematic reviews. A systematic review (SR) is a compilation of like studies to address a specific clinical question using a comprehensive search strategy and rigorous appraisal for summarizing, appraising, and communicating the results and implications of all the research available. It is the most rigorous approach to minimization of bias in summarizing research and is considered to be the strongest level (Level I) of evidence (Melnyk & Fineout-Overholt, 2011). The four individual randomized controlled trials are considered to be Level II evidence, which is "evidence generated from at least one well-designed randomized clinical trial" (Melnyk & Fineout-Overholt, 2011, p. 188).

Conclusion

The strength for application of the evidence from meta-analyses of RCTs, systematic reviews, and individual RCTs shows that tobacco cessation counseling with follow up within 30 days after discharge increases quit rates. Based on findings in this literature review, interventions provided by someone whose main role is health promotion and/or tobacco cessation is more effective for increasing quit rates.

The findings in this literature review strongly support the purpose of this project: evaluating outcomes of an existing inpatient tobacco cessation counseling program with 30-day outpatient follow-up among hospitalized persons who were tobacco-dependent. The literature also provides support for the fourth Joint Commission performance measure: Tobacco users should receive at least one follow-up contact within 30 days of hospital discharge to assess tobacco use status and to offer support and encouragement to increase quit attempt success for sustained abstinence (Joint Commission, 2011, August 8.)

Chapter 3: Methodology

This chapter will describe the project design, data source, sample, data collection, measures, and data analysis. Feasibility of this project and protection of human subjects will also be described. The project will answer the question: Does provision of a tobacco cessation program initiated during hospitalization for persons who are tobacco-dependent (a) increase quit attempts or (b) reduce tobacco consumption.

Project Design, Sample, and Data Collection

A descriptive design using existing hospital data containing demographic and medical information about patients and tobacco use behaviors was used in this project. Data was collected from patients admitted to a rural 48-bed full-service hospital accredited by the Joint Commission between January 1, 2012 and April 30, 2012. The sample consisted of adults (over 18 years of age) who self-identified using tobacco products upon admission to the hospital. Data was collected by hospital staff and recorded in the patient electronic medical record (EMR) and in a paper chart managed by a certified tobacco treatment specialist (CTTS). Upon admission, patients were asked about their tobacco use, specifically if they smoked cigarettes anytime during the past 12 months prior to hospital arrival or if they used other tobacco products. Patients who were tobacco-dependent were referred to the CTTS. The CTTS visited the patient within 24-48 hours of admission. Data collected by the CTTS was documented in the EMR and paper record of the patient intervention was provided. Refer to Figure 1 for the patient path through the admission, hospitalization, and post-discharge process in the tobacco treatment program.

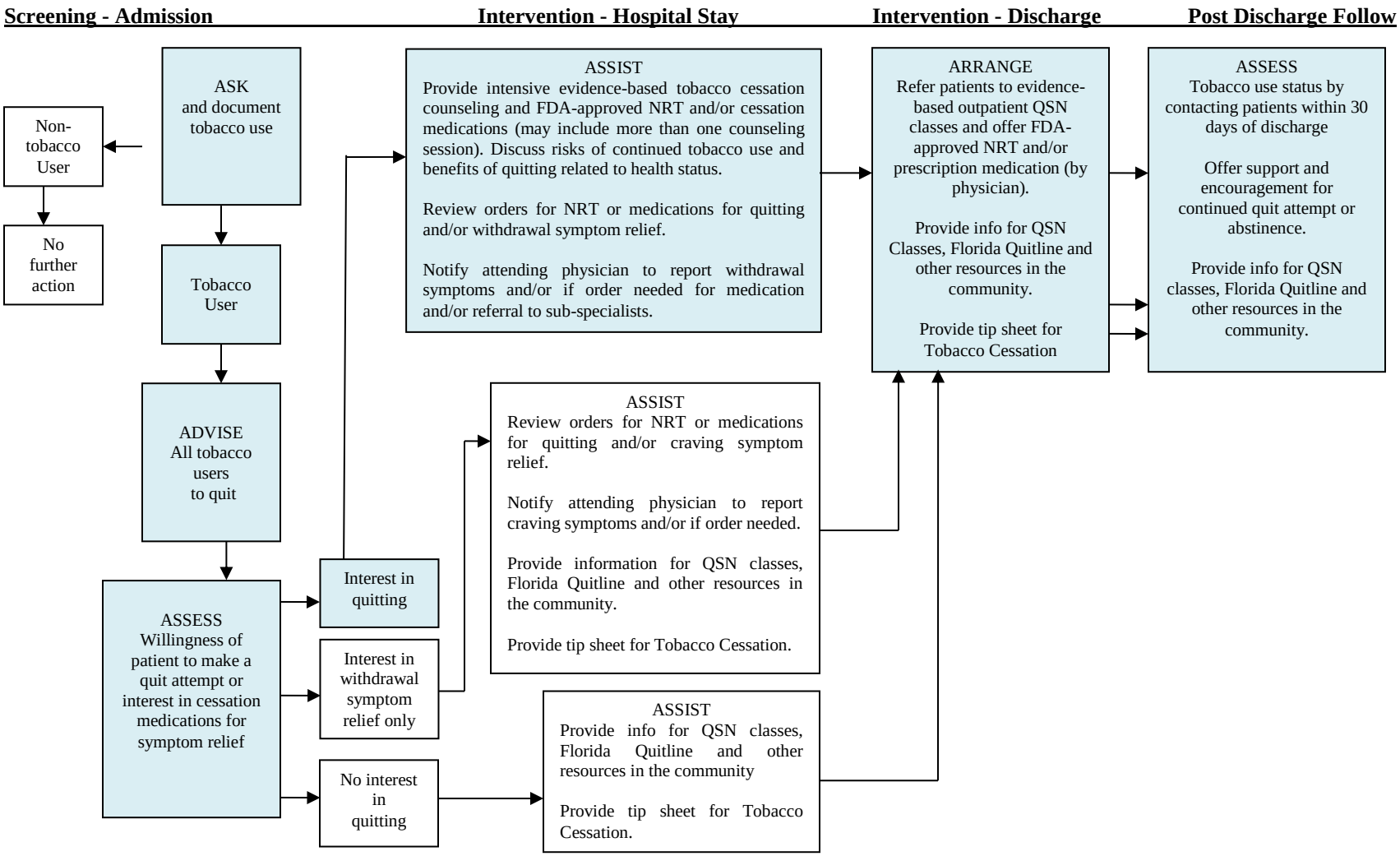

Figure 1. The Patient's Path through the Tobacco Treatment Program: Admission through Follow-up after Discharge. Adapted from "Helping patients quit: Implementing the Joint Commission tobacco measure set in your hospital," by the Partnership for Prevention, 2011, Washington, DC: Partnership for Prevention.

Measures

Descriptive Variables

Patient demographic data included age in years, gender, admitting diagnosis, type of health insurance, and type of tobacco products used. Age (in years) and gender (male or female) helped to describe the population sample. Admitting diagnosis distinguished among congestive heart failure, chronic obstructive pulmonary disease, myocardial infarction, pneumonia, any surgical diagnosis, and any other medical diagnosis. This categorization for diagnosis is used by CMS (2011, October 4) to establish priority diagnoses for tobacco cessation counseling. Insurance type was categorized as none, private, Medicare, Medicaid, other private/public, and unknown. Access to insurance coverage is an enabling factor that has ramifications for patient ability to obtain nicotine replacement or medications post discharge. Patients identified the type of tobacco product they used and were asked about the number consumed per day of the type of product used. Types of products included cigarettes, cigars, pipe, and cans/pouches of dip/chew.

Treatment measures related to the tobacco cessation counseling intervention performed by the CTTS included type of visit conducted in the hospital, number of visits, and post discharge contact within 30 days of hospital discharge. The intervention was provided according to the conceptually driven evidence-based 5 A's model for treating tobacco use and dependence described in detail in Appendix C. The TCC contact was coded by type of intervention provided (none, brief, or intensive). A brief intervention is defined as lasting between 3 and 10 minutes, while an intensive intervention lasts 10 or more minutes per the clinical practice guidelines. All tobacco-dependent patients received at least one brief intervention from the CTTS while in hospital. Patients were contacted by telephone one to two weeks post discharge through the 30th day as needed to complete the follow-up. A successful telephone contact occurred when the call

resulted in a conversation with the patient. An unsuccessful telephone contact was recorded when the number reached was not correct, no one answered, or the patient did not respond to a message left on an answering machine. During the phone call, patients were asked about their quit attempt and about the types and number of type of tobacco products used since the time of their discharge from hospital. The number of post discharge Quit Smoking Now (QSN) classes attended were also recorded by the CTTS who conducted the classes.

Outcome Variables

The outcomes of interest in the project were quit attempt, measured categorically as "yes" or "no," and the number of tobacco products, by type, consumed daily. Hospitalization precipitates an involuntary quit for patients. At admission, quit attempt was measured by asking patients whether or not they intended to quit using tobacco products after discharge ("yes" or "no"). Post discharge, quit attempt was measured by asking patients whether or not they had stopped using tobacco products since their discharge ("yes" or "no"). Patients who responded "no," that they did not quit, were asked about the number and type of tobacco products used. Respondents who did not quit were given a reminder of the services available in the community to help them quit, which includes the Quit Smoking Now classes available at the hospital. Quit attempt was coded as a "no" response when the patient answered "no," "not sure," or were unable to be contacted/lost to follow-up. This coding is consistent with what is reported in the literature (NAQC, 2009). A list of variables and their coding is displayed in Table 1.

Table 1

Variables Used for Project and Their Coding

Descriptive Variables (Participants)	*Coding*
Age in years	0-99 years
Gender	1=male 2-female
Diagnosis	1 Congestive heart failure 2 Chronic obstructive pulmonary disease 3 Myocardial infarction 4 Pneumonia 5 Any surgical 6 Any medical
Insurance type	1 None 2 Private 3 Medicare 4 Medicaid 5 Other 6 Unknown
Type tobacco used: cigarettes	0=no, 1=yes
Type tobacco used: cigars	0=no, 1=yes
Type tobacco used: dip / chew	0=no, 1=yes
Type tobacco used : other (pipe)	0=no, 1=yes
Intervention Measures(Treatment)	
Type of tobacco cessation counselor contact	0=none 1=brief 2=intensive
Total number TCC contacts	0-99 contacts
Quit smoking now (QSN) classes	0-6 sessions
Post-discharge successful telephone contact	0=no, 1=yes
Outcome Measures (Tobacco Use)	
Quit attempt intention at admission	0=no, 1=yes
Quit post discharge from hospital	0=no, 1=yes
Number cigarettes smoked per day, at admission	0-99
Number cigarettes smoked per day, after discharge	0-99
Number cigars smoked per day, at admission	0-99
Number cigars smoked per day, after discharge	0-99
Number daily tobacco use: dip/chew, at admission	0-99
Number daily tobacco use: dip/chew, after discharge	0-99
Number pipes smoked per day, at admission	0-99
Number pipes smoked per day, after discharge	0-99

Data Analysis

Data was extracted from the EMR and tobacco program paper chart and manually entered into an Excel file by the CTTS and cleaned by the principal investigator. Data was analyzed using SPSS® statistical software (Version 17.0, 2008). Categorical variables were described using counts and percentages, while continuous variables were described using mean and standard deviation. The McNemar test (MedCalc, 2012), a non-parametric test used to compare a dichotomous categorical variable in a dependent population, was used to compare intention to quit at admission and actual quit attempt post discharge. The paired sample t test was used to compare means related to number of tobacco products used just prior to admission and post discharge.

Feasibility

This project was feasible and did not require additional resources. The tobacco cessation program has been implemented in the local hospital since the fall of 2010 with a grant from the State of Florida. The program is integrated into usual hospital care and the data had already been collected. The principal investigator is an employee of the institution and has support of the hospital administrator.

Protection of Human Subjects

Institutional Review Board (IRB) approval was received from the University of North Florida and the Baptist Health Institutional Review Committee (IRC) prior to starting the project (See Appendix D). Since this project used retrospective de-identified hospital data collected by the tobacco cessation program, the risk to patients was considered to be minimal and individual patient informed consent was not sought.

Chapter Four: Results

This chapter reports results that answer the quality improvement project question: Does provision of a tobacco cessation program initiated during hospitalization for persons who are tobacco-dependent (a) increase quit attempts or (b) reduce tobacco consumption? Existing de-identified data of 176 patients admitted to a local hospital between January 1, 2012 and March 31, 2012 who were tobacco-dependent and visited by a tobacco treatment specialist were used. Results describe the sample, the intervention, and report the project outcomes.

Project Sample

There were 176 tobacco-dependent patients in this project; 43% were male and 57% were female (see Table 2). Participants ranged in age from 18 years of age to 87 years with a mean of 51 years (SD = 15.67 yrs.) and median of 54 years. The majority of patients (86%) were admitted for medical management while 13.64% were admitted for surgery. Medicare and Medicaid insurance type accounted for 40% of health insurance coverage for patients and private insurance with a combination of some other public insurance accounted for 35% of coverage, while 25% of the patients had no insurance coverage. The majority (91%) of the tobacco-dependent patients smoked cigarettes compared to smoking cigar or pipe or chewing dip.

Intervention and Post-Discharge Follow-Up

The TTS visited all patients for brief and/or intensive interventions while they were in hospital and referred patients to *Quit Smoking Now* (QSN) classes. All patients received at least one tobacco cessation counseling intervention session while they were hospitalized (see Table 3) even if they stated that they were not interested in quitting. This allowed the TTS to make sure

that patients had appropriate nicotine replacement therapy ordered by their physician while in the hospital.

Table 2

Description of Project Participants

	n = 176	% Percent	Mean (SD)	SD
Age in years				
18-37 years	38	21.59%	51 yrs.	16.67
38-57 years	73	41.47%		
58-87 years	65	36.93%		
Gender				
Male	76	43.18%		
Female	100	56.82%		
Diagnosis				
Congestive heart failure	6	3.41%		
Chronic obstructive pulmonary disease	33	18.75%		
Pneumonia	3	1.70%		
Any Surgical	24	13.64%		
Any Medical	110	62.50%		
Insurance type				
None	44	25.00%		
Private	33	18.75%		
Medicare	53	30.11%		
Medicaid	17	9.66%		
Other public or private	29	16.48%		
Type tobacco used				
Cigarettes	160	90.91%		
Dip / chew	8	4.55%		
Cigars	7	3.98%		
Other (pipe)	1	0.57%		

The TTS made 298 in-hospital visits on behalf of these 176 patients with 123 (41%) visits classified as brief interventions and 175 (59%) visits classified as intensive interventions. The majority of patients (55%) received at least one TTS contact visit in hospital. Some patients received only brief interventions, some received only intensive interventions, and some received both brief and intensive interventions. A majority of patients (75%) did not attend the post discharge QSN classes.

Table 3

Tobacco Counseling Intervention Visits in Hospital

	Patients (n)	n (visits)	% Percent
In-hospital Intervention Type	176	298	
Brief Intervention	90	123	41.28%
Intensive Intervention	145	175	58.72%
Number of in-hospital Visits	176	298	
One Visit	95	95	53.98%
Two Visits	48	96	27.27%
Three Visits	28	84	15.91%
Four Visits	2	8	1.14%
Five Visits	3	15	1.70%

Post discharge patient contact was attempted with 116 (66%) of the 176 patients, between the 14th and 30th day post discharge, and completed with 74 (42%) of the hospitalized patients (see Table 4). Most (70) patients were contacted by telephone, while contact was made with 4 patients at a QSN session. The remaining 42 patients who were contacted by telephone and for which the telephone intervention was not completed were either left a message (38 calls) they did not return, did not answer the call (2), or hung up the phone (2). Of the 60 patients who did not receive a follow-up phone call, 41 were not contacted and the reason was not specified, 9 patients had incorrect phone numbers, 6 were not contacted at patient request, and 4 patients had no phone number. Overall, 102 (57.95%) patients were lost to post hospital discharge follow-up.

Table 4

Results of Post Discharge Contact

	n=176	% Percent
Completed Call or QSN class contact	74	42.05%
Incomplete – message left on machine	38	21.59%
Incomplete – hang up or no answer	4	2.28%
No telephone call attempted	41	23.30%
Wrong number / no number	13	7.38%
Patient requested no contact	6	3.41%

Outcomes

At discharge, only 40 (23%) patients reported quitting tobacco use compared to 100 (57%) of the same patients who reported "yes," that they intended to quit smoking once they were discharged. This change in patients who intended to quit but did not was significant (McNemar Test, $p = 0.000$, n = 176). Consistent with the interpretation of quit attempts in the literature (NAQC, 2009), the 102 (58%) patients who were not contacted post discharge were coded as not having quit using tobacco, which may have underestimated quit attempts. Using the sub-sample of patients for whom post discharge data was collected, 34 (46%) of the patients reported quitting tobacco use post discharge compared to 52 (70%) of the same patients who reported a positive intention to quit smoking at time of admission. The significant difference between intent during admission and actual behavior at discharge is in a negative direction. Patients who said they would quit smoking did not do so. (McNemar Test, $p = 0.003$, n = 74).

The second outcome related to the amount of tobacco product used at admission in comparison with the number of the same product used at discharge. Comparison was made only for the patients who smoked cigarettes as the number of patients who smoked cigars, pipes, or chewed dip was very small. Of the 159 tobacco-dependent patients who smoked cigarettes, 122 (77%) reported not quitting smoking. For these non-quitters, the mean number of cigarettes smoked post discharge (M = 13, SD = 12.64) was significantly fewer than the mean number of

cigarettes (M = 19, SD = 12.10) smoked at admission [t (158) = 6.7476, p = 0.000]. Again, consistent with the literature, patients who were not contacted post discharge were coded as using the same number of tobacco products they used at admission. Consequently, this analysis was repeated on the sub-sample of patients (n = 69) who continued to smoke cigarettes and for whom post discharge data was collected. The mean number of cigarettes smoked post discharge (M = 7, SD = 10.58) was significantly lower than the mean number of cigarettes (M = 19, SD = 13.09) smoked at admission [t (68) = 7.5096, p = 0.000].

Summary

The results of this project validate the effectiveness of a tobacco cessation program within a hospital setting. All patients received a minimum of one brief tobacco cessation counseling contact. Although only 23% of smokers had quit, those smokers who continued to smoke reduced their cigarette consumption significantly after discharge.

Chapter 5: Discussion

This chapter will discuss the major findings of the quality improvement project, their relationship to the existing research, explore clinical relevance to nursing practice, acknowledge limitations, and recommend direction for future research. The results of this quality improvement project demonstrate that an evidence-based inpatient smoking cessation program provided by a dedicated hospital nurse with tobacco cessation counseling training is feasible and reduces patient tobacco consumption.

Current approaches to treating tobacco use and dependence reflect the perspective that tobacco dependence is a chronic disease. Tobacco dependence often requires repeated interventions and multiple attempts to quit (Steinberg et al., 2008). The focus on chronic disease management is in direct alignment with one of the key recommendations of the CPG (Fiore et al., 2008). In a randomized control trial, Joseph et al. (2011) found that smoking interventions that are based on chronic disease management principles of care are approximately 75% more effective at accomplishing long term abstinence than delivery of an isolated episode of care.

Clinical Relevance

In alignment with the Joint Commission Tobacco Measures (Joint Commission, 2011, August 8), all patients in this project were screened for tobacco use during their stay, received counseling to quit, received FDA-approved cessation medications, and were referred to outpatient counseling and offered FDA-approved cessation medication upon discharge. A combination of classes and the use of nicotine replacement therapy to reduce symptoms associated with nicotine withdrawal are recommended as the standard for tobacco cessation

treatment. Recently, Rigotti, Clair, Munafo, and Stead (2012) published an update regarding interventions that begin during the hospital stay and include at least one month of supportive contact after discharge. A review of fifty trials found that tobacco cessation counseling during a hospital stay with follow-up support for at least one month after discharge increases smoking cessation. This confirms and validates the implementation of a hospital program to provide tobacco cessation counseling to tobacco-dependent hospitalized patients.

Application to Nursing Practice

At this hospital, the initial assessment of smoking status is collected within the first 24 hours in the admission assessment completed by the admitting nurse. This provides information for the admitting physician who might not have a complete health history on the patient. Timely notification can result in appropriate administration of tobacco cessation medication for nicotine withdrawal symptoms to avoid patient discomfort. According to Rigotti et al. (2008), nurses are in a good position to aggressively assess smoking status and counsel patients on effective methods for patients to quit smoking. However, there are significant barriers to nurses providing tobacco cessation counseling. These include time, knowledge, and comfort level of providing counseling. Competing nursing priorities while caring for unstable or critically ill patients is evident, but the greatest barrier for nurses is lack of tobacco cessation knowledge and training. This lack of knowledge and training translates to a low comfort level in providing adequate counseling to support a quit attempt upon discharge. Motivational interviewing, which is the cornerstone of effective tobacco cessation counseling, not only takes training but also considerable practice. At this facility, there is a registered nurse who is a certified tobacco treatment specialist. This person provides counseling using a chronic disease management model that emphasizes short and long term health benefits of quitting tobacco. Hospitalized

patients frequently experience life-threatening events that become highly teachable moments for encouraging a quit attempt. Rigotti (2008) also found that supportive contact for over 1 month after discharge increases the odds of smoking cessation by 65% at 6 to 12 months. Having a registered nurse with specialized training providing this support is essential since nurses at the bedside cannot follow-up with patients after discharge. This type of model lends support to all healthcare providers for integration of tobacco cessation interventions in their daily practice. Physicians at this facility have become more involved in including tobacco cessation into their daily rounds by supporting the counseling that is being provided by the TTS. It also creates an opportunity for the multidisciplinary team to provide positive reinforcement of the tobacco cessation intervention. Hearing the same message from the entire team sends a strong message to the patient.

Limitations

This project targeted the beginning phase of a tobacco cessation program that is in alignment with the Joint Commission tobacco measures within a hospital setting. A descriptive design using existing quantitative hospital data about patients and their behaviors related to tobacco use was used in this project. This convenience sample approach using existing hospital data restricts findings that might be validated with a randomized controlled clinical trial design to measure the differences in standard care versus interventional care.

Quit rates were only evaluated within 30 days post discharge. Fiore et al. (2008) suggested that follow-up should continue for a minimum of 6 months to accurately evaluate the effects of tobacco cessation interventions. In addition, the results are limited by the validity of self-report of smoking status versus biochemical validation. According to Gorber, Schofield-

Hurwitz, Hardt, Levasseur, and Tremblay (2009), self-reports tend to underestimate their smoking status.

Implementation of the fourth performance measure, post-discharge follow-up within 30 days post discharge and follow-up information regarding tobacco use status is collected, proved to be the most difficult measure to implement. One unanticipated barrier included a lack of correct contact information for patients. It was discovered after the project period and during the data analysis that a problem existed where updated contact information collected on admission in an electronic billing data program was not "flowing over" to the EMR. This could explain the large percentage of patients who were not reached. Gadomski, Gavett, Krupam Tallman, and Jenkins (2011) experienced similar difficulties when using the EMR as a data source and lead to missing data. This has an effect on the variables in the analysis and is present in the real world hospital setting.

Lost to Follow-Up

In the best of circumstances, follow-up can be difficult; data will always be missing. How to handle missing outcome data requires an informed decision while calculating abstinence rates. In reporting outcomes measures for abstinence rates, there are two approaches: Intention-to-Treat (ITT), where all non-respondents are considered to be smoking; and responder rate (RR), which represents/includes only those who respond. When determining which approach to use as an outcomes measure, it is important to understand the limitations of each approach. In the conduct of clinical research, it is assumed that individuals who do not complete a treatment or protocol are considered "lost to follow-up" and have worse outcomes than those who complete it. The RR approach ignores the association and leads to a systematic overestimate of the true quit rate. ITT adopts an extreme position that all individuals not completing the follow-

up evaluation are considered treatment failure, and tends to underestimate the true quit rates (NAQC, 2009). The majority of the population lost to follow-up could underestimate true quit rates. Recognizing the risks of over- and underestimation of quit rates, NAQC recommends an approach that most closely approximates the true quit rate. For the purposes of this project, using the responder rate (RR), of the 74 (42%) patients who received follow-up, 34 (46%) reported quitting. Completion of follow-up not only assesses the success rate but in doing so, completes the fourth JC tobacco measure. However, a larger number of responders might have improved the quit rate for those who intended to quit.

Fiore et al. (2008) found that follow-up contact should begin soon after the quit date, preferably during the first week with a second follow-up within the first month. Findings from the 2007 Cochrane Systematic Review (Rigotti et al., 2008) indicated that post-hospitalization follow-up is a key component of effective interventions. The challenges associated with follow-up post discharge for hospitalized tobacco-dependent patients during implementation of this project are documented.

Future Research

Future research should include identifying strategies for increasing patients' recognition of the need for individual counseling and/or social support through group treatment as well as use of pharmacotherapy to manage nicotine withdrawal and cravings. Integrating new forms of technology as a training method, such as computer applications and internet technology should be considered. More research is also needed on relapse prevention to identify successful strategies that will assist in sustained abstinence.

Conclusion

Quit attempts dropped from admission to post discharge and there was a significant decrease in the amount of cigarettes smoked post discharge compared to number of cigarettes smoked prior to admission. Despite the large number lost to follow-up, more than 23% of the total number reported being quit. Based on the findings from Joseph et al. (2011), this would indicate eventual abstinence for those patients receiving tobacco cessation counseling during their hospitalization.

Twenty-four percent of the project group had an admitting diagnosis of CHF, COPD, and/or pneumonia. When tobacco-dependent patients are admitted to the hospital, evidence-based disease management is provided in addition to tobacco cessation guidelines. Readmissions within 30 days for the patients in this project were less than 2% (3 patients). This is significantly less than the Florida state average 30-day all-cause readmission rate average of 19.7% and a national average of 18.5% (Florida Medical Quality Assurance Inc. [FMQAI], 2012). Providing guidance to managing symptoms associated with chronic disease has been shown to be effective in preventing readmissions (Krumholz et al., 2002; Smith & Burgess, 2009). For a hospital that treats Medicare patients, this is significant. The new CMS policy that began January 1, 2012, penalizes hospitals having high percentages of preventable readmissions within thirty days for all-cause readmissions, as well as readmissions for CHF, COPD, Pneumonia, and Acute Myocardial Infarction. This supports the CMS, Joint Commission and the Partnership for Prevention guidelines for developing or using comprehensive tobacco cessation strategies to reduce death and disability related to tobacco use. Rigotti (2012) found that intensive counseling interventions are effective when provided to all hospitalized smokers, regardless of admitting diagnosis. The establishment of this tobacco cessation program helps

meet our hospital quality and national performance measures, and by reducing of readmissions, improves the financial bottom line. Lastly, by addressing and treating the deadly effects of tobacco use, an opportunity exists for improving the quality of life for patients with chronic diseases tied to tobacco use.

This quality improvement project demonstrated an inpatient smoking cessation program conducted by someone whose main role is health promotion and/or tobacco cessation is effective for improving outcomes. Outcomes included a 23% quit rate, a decrease in tobacco consumption, and a reduction in readmission rate within 30 days post discharge. Although the primary goals of improving quit rates was not met, reduction in tobacco consumption for those unable to quit were met. Therefore, this quality improvement project established the effectiveness at this hospital and has established that outcomes may further improve through the use of additional counseling/support following hospital discharge.

Appendix A
The Joint Commission Tobacco Measure Set

Measure Identification Number	Tobacco Measure Set Specifications
TOB-1 Tobacco Use Screening	Numerator: The number of patients who were screened for tobacco use status. Denominator: The number of hospitalized inpatients 18 year of age and older.
TOB-2 Tobacco Use Treatment Provided or Offered	Numerator: The number of patients who received or refused practical counseling to quit and received or refused US Food and Drug Administration (FDA) approved cessation medications. Denominator: The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.
TOB-2a Tobacco Use Treatment	Numerator: The number of patients who received practical counseling to quit and received FDA-approved treatment cessation medications. Denominator: The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.
TOB-3 Tobacco Use Treatment Provided or Offered at Discharge	Numerator: The number of patients who were referred to or refused evidence-based outpatient counseling and received or refused a prescription for FDA-approved cessation medication at discharge. Denominator: The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.
TOB-3a Tobacco Use Treatment at Discharge	Numerator: The number of patients who were referred to evidence-based outpatient counseling and received a prescription for FDA-approved cessation medication at discharge. Denominator: The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.
TOB-4 Tobacco Use: Assessing Status after Discharge	Numerator: The number of discharged patients who are contacted within 30 days after hospital discharge and follow-up information regarding tobacco use status is collected. Denominator: The number of hospitalized inpatients 18 years of age and older identified as current tobacco users.

Appendix B
Guideline Recommendations for Clinicians Treating Tobacco Use and Dependence

1. Tobacco dependence is a chronic condition that often requires repeated intervention. However, effective treatments exist that can produce long-term or even permanent abstinence.
2. It is essential that clinicians and health care delivery systems consistently identify and document tobacco use status and treat every tobacco user seen in a health care setting.
3. Tobacco dependence treatments are effective across a broad range of populations. Clinicians should encourage every patient willing to make a quit attempt to use the counseling treatments and medications recommended in this Guideline.
4. Brief tobacco dependence treatment is effective. Clinicians should offer every patient who uses tobacco at least the brief treatments show to be effective in this Guideline
5. Individual, group and telephone counseling are effective, and their effectiveness increases with treatment intensity. Two components of counseling are especially effective and clinicians should use these when counseling patients making a quite attempt: Practical counseling (problem solving/skills training) and social support delivered as part of treatment.
6. Numerous effective medications are available for tobacco dependence, and clinicians should encourage their use by all patients attempting to quit smoking – except when medically contraindicated or with specific populations for which there is insufficient evidence of effectiveness (i.e. pregnant women, smokeless tobacco users, light smokers, and adolescents). Seven first-line medications (5 nicotine and 2 non-nicotine) reliably increase long-term smoking abstinence rates: Bupropion SR, Nicotine gum, Nicotine inhaler, Nicotine lozenge, Nicotine nasal spray, Nicotine patch, and Varenicline. Clinicians also should consider the use of certain combinations of medications identified as effective in this Guideline.
7. Counseling and medication are effective when used by themselves for treatment tobacco dependence. The combination of counseling and medication, however, is more effective than either alone. Thus clinicians should encourage all individuals making a quit attempt to use both counseling and medication.
8. Telephone Quitline counseling is effective with diverse populations and has broad reach. Therefore, clinicians and health care delivery systems should both ensure patient access to Quitline and promote Quitline use.
9. If a tobacco user currently is unwilling to make a quit attempt, clinicians should use the motivational treatments shown in this Guideline to be effective in increasing future quit attempts.
10. Tobacco dependence treatments are both clinically effective and highly cost-effective relative to interventions for other clinical disorders. Providing coverage for these treatments increase quit rates. Insurers and purchasers should ensure that all insurance plans include the counseling and medication identified as effective in this Guideline as covered benefits.

Fiore, M. C., Jaén, C. R., & Baker, T. B, Bailey, C. W., Benowitz, N. L., Curry, S. J.,…Wewers, M. E. (2009). *Treating Tobacco Use and Dependence: 2008 Update. Quick Reference Guide for Clinicians.* Rockville, MD: US Department of Health and Human Services, Public Health Service.

Appendix C
Tobacco Cessation Counseling Intervention Provided by TTS

Using the 5A's model as a guide, the TTS visits each patient that has been identified through the admission assessment:

Ask/Advise/Assess about tobacco use:

TTS might say
"Good morning, do you mind if we talk about smoking? [Asking permission]
Since you have been admitted, you have not been allowed to smoke. How are you feeling? Are you using medication to help with the craving symptoms?

Information provided includes: If the patient is having symptoms, the orders are reviewed for NRT or medications for quitting. Physician is notified to report craving symptoms and/or to obtain orders. If approved by the attending physician, nicotine replacement therapy and/or medication are offered throughout the hospital admission to assist with cravings. If NRT or medications for symptom relief are contraindicated, other techniques are discussed. Diversion tactics that can help deal with cravings are discussed, such as *The 4D's*. They include the following:

Delay – No matter how strong the craving is, convince yourself that you can wait 5 or 10 minutes.
Deep Breaths – Deep breathing is a technique than can help you relax and possibly make the craving go away.
Drink Water – Drinking cold water helps cravings go away and helps keep your hands and mouth busy.
Distract – Distract yourself by getting up or making yourself active. In the hospital, suggestions such as reading or watching TV may work if the patient is bedridden. If the patient is able to get out of bed, making an effort to change their environment, such as walking in the hall is suggested.

Once craving symptoms are resolved and/or recognized, using motivational interviewing techniques, permission to talk about smoking is again requested with more emphasis on a quit attempt. This communicates respect.

Assess/Advise to quit: Motivational interviewing:

TTS might say
"Do you mind if we talk about your smoking?"
"What do you know about the effects of smoking on your health?
"Do you think smoking has contributed to the reason you were admitted to the hospital?"
"Would you be interested in learning more about the effects of tobacco smoking on your health?"

Information provided includes: For smokers who are not interested in a quit attempt, tobacco cessation counseling from the TTS is brief, typically lasting less than five minutes.

Another approach is:
"What I hear you saying is that it's not causing you any problems at this time…what might it take for you to quit?" Although a brief advice to quit may not accomplish a quit attempt at discharge, the patient has an opportunity to learn valuable information which may lead to a quit attempt at a later date.

For those patients who want to consider a quit attempt, using reflective listening, *the TTS might say,* "I get the sense that you want to quit, but you are not sure. What are your concerns?" In most cases, this leads to more than a brief intervention. For this unsure patient the TTS continues to provide counseling as long as the patient continues to be interested and/or continues to ask questions.

Assist in quit attempt: The patient who desires to make a quit attempt/set a quit date.

Information provided includes: The TTS provides individualized intensive evidence-based tobacco cessation counseling, conducts a more extensive assessment of smoking habits, triggers, and coping strategies - and helps the smoker develop a quit plan to increase the chance of a successful quit. If approved by the attending physician, nicotine replacement therapy is offered throughout the hospital admission to assist with cravings. Planning for discharge, patients are offered free nicotine replacement therapy that has been provided through a grant from the State of Florida, Department of Health. All patients are referred to Quit Smoking Now classes that are offered at the hospital at two different days and times of the week. They are also given information regarding other classes within the community and are given the number for the Florida Quitline.

Arrange for follow-up:

Information provided includes: At the end of hospitalization, the TTS provides information for continuation of tobacco treatment after hospital discharge. The goal is to link the smoker with smoking cessation counseling and resources for NRT/medication after discharge. For those patients who are attempting to quit, they are offered free NRT that will last for their first two weeks post hospital discharge. In addition, they are referred to free on-site classes that are facilitated by the TTS on two different days/times of the week where they can also receive additional NRT. Contact information for community-based resources including the State telephone Quitline, local programs, websites and a resource tip sheet are provided for all patients at discharge, including those hospitalized patients who stated they did not want to quit. The TTS informs the patient that she will follow up with them by phone after discharge. The telephone number is verified and the TTS states that she will call within the next week.

Assess/Advise/Arrange Follow-up after discharge:

Post discharge contact is initiated within the first week after discharge if possible. The TTS phones the patient. At the time of the phone call, the patient is asked for permission to talk with them about their quit attempt. If there is no answer, she leaves a message – if she doesn't hear from them she gives another call. If there is no phone number, a post card reminder is sent.

With permission, tobacco status is assessed and cessation support is offered. Tobacco cessation support includes: identification of barriers to abstinence in the home and/or work environment, reassessment of medications and/or NRT, and motivational support. Those who are abstinent are congratulated on their success; however, if tobacco use has occurred, an offer to review the circumstances and offer appropriate advice and/or counseling is provided. If the patient has relapsed, then problem-solving techniques can be reviewed to assist patients to resume a quit attempt. Patients have the opportunity to identify problems they have encountered and challenges that they anticipate with continuing their quit attempt. Patients are reminded to refer to their tobacco cessation tip sheet. Reminder for QSN classes and quit lines are also prompted.

Appendix D
IRB Approval Documents

Office of Research and Sponsored Programs
1 UNF Drive
Jacksonville, FL 32224-2665
904-620-2455 FAX 904-620-2457
Equal Opportunity/Equal Access/Affirmative Action Institution

MEMORANDUM

DATE: April 23, 2012
TO: Ms. Marion Mann
VIA: Dr. Barbara Kruger
Nursing
FROM: Dr. Katherine Kasten, Chairperson
On behalf of the UNF Institutional Review Board
RE: Review of New Submission by the UNF Institutional Review Board
IRB# 317125-1:
"IMPROVING QUIT RATES FOR TOBACCO-DEPENDENT HOSPITALIZED PATIENTS"

This is to advise you that your project, "IMPROVING QUIT RATES FOR TOBACCO-DEPENDENT HOSPITALIZED PATIENTS" was reviewed on behalf of the UNF Institutional Review Board. You are receiving this waiver because this project was declared "not research involving human subjects" based on the federal definition of research involving human subjects as stated in the U.S. Department of Health and Human Services Code of Federal Regulations 46.102. Therefore, it is not necessary for this project to be reviewed and approved by the UNF IRB.

Thank you for submitting your work for IRB review. We appreciate that you understand the value of IRB review of research and projects conducted at UNF. Any unanticipated problems involving risk and any occurrence of serious harm to subjects and others shall be reported promptly to the IRB. This waiver should be kept for your records and applies to your project in the form and content as submitted to the IRB for review.
Any variations or modifications to this waived project as related to dealing with human subjects must be cleared with the IRB prior to implementing such changes.

Should you have questions regarding your project or any other IRB issues, please contact the research integrity unit of the Office of Research and Sponsored Programs by emailing IRB@unf.edu or calling (904) 620-2455.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within UNF's records.

BAPTIST Medical Center Downtown

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Institutional Review Committee

MEMORANDUM

TO: Marion Mann, MSN, RN, CNS-BC, CTTS

Signature Deleted

FROM: Michael Joyce, MD, PhD

DATE: June 7, 2012

RE: **Expedited Review - Approval**

The Institutional Review Committee (IRC) of Baptist Medical Center (BMC) met on June 6, 2012, and the following amendment was reviewed and approved via expedited review:

#10-64, Baptist Health, "Improving Patient, Employee, and Family Health Outcomes Through Implementation of a Tobacco Cessation Program".
-Amendment. Review existing data under “Improving Quit Rates for Tobacco Dependent Hospitalized Patients”.

If you have any questions, please contact the IRC office immediately. The BMC IRC meets the requirements in 21 CFR 56 (Rev.), 45 CFR 46 (Rev.) and ICH (E6) GCP guidelines.

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Vita

Marion Mann was born . Her nursing career began when she moved to Savannah, Georgia in 1983 after completing an Associate Degree in Nursing from Abraham Baldwin Agricultural College. During the next 14 years she completed a Bachelor and Master of Science (Clinical Nurse Specialist) in Nursing at Armstrong Atlantic State University. In 2006, she moved to Fernandina Beach, Florida with her husband, Jim Johnson. In 2009, she began the journey to complete the Doctor of Nursing Practice by completing the Post Graduate Certificate in Evidence-Based Practice at Arizona State University in 2010 followed by transfer to the University of North Florida.

Mrs. Mann is currently employed by Baptist Medical Center, Nassau, Fernandina Beach, Florida as a Clinical Nurse Specialist. During her five year tenure, she was successful in application for grant funding to implement a hospital tobacco cessation program. She maintains certification as a Clinical Nurse Specialist through the American Nurses Credentialing Center (ANCC) and Advanced Practice, CNS licensure through the State of Florida, Board of Nursing. She is a Certified Tobacco Treatment Specialist through Addiction Professionals, The Certification Board, Inc. and the State of Florida, Certification Board. A member of the National Association of Clinical Nurse Specialists (NACNS), she has served on the National Marketing Committee. Honors include membership in Rho Psi Chapter and Lambda Rho Chapter at Large, The Honor Society of Nursing, Sigma Theta Tau International.