EDUCATING ACUTE CARE NURSES ABOUT THEIR ROLE IN TOBACCO USE AND CESSATION

A DOCTORAL PROJECT

Submitted in Partial Fulfillment of the Requirements

For the degree of

DOCTOR OF NURSING PRACTICE

By

Mini Thomas

Doctoral Project Committee Approval:

Asma Ali Taha, PhD, RN, CPNP, Project Chair
Cindy Greenberg DNSc, RN, PNP-BC, FAAN, Committee Member

May 2017
ABSTRACT

Tobacco use continues to be the foremost preventable cause of death in the United States. The emergence of newer tobacco products such as electronic cigarettes and hookah are a threat to the current progress in tobacco cessation interventions. Use of newer tobacco products is increasing at a rapid rate among adolescents and young adults. In addition to the known dangers of nicotine, newer tobacco products also bring hazards such as poisoning and explosions. Existing tobacco surveillance and cessation interventions primarily focus on cigarette smoking. A comprehensive tobacco screening method along with specific cessation interventions for each tobacco product must be implemented to address the changing landscape of tobacco use.

Hospital settings are excellent locations where nurses can play a major role in initiating tobacco cessation interventions. Hospitalized patients are in a temporary stage of abstinence from tobacco and have access to counseling services and pharmacotherapy. Nurses can capitalize on this teachable moment while patients are more receptive for initiating tobacco cessation. Nurses would require training to improve their confidence and participation on effective tobacco cessation approaches such as the 5A algorithm (ask, advice, assess, assist, and arrange) as well as interventions based on Stages of Change. An educational program for nurses on tobacco cessation interventions was developed to help in continuing the momentum in the decline of tobacco use.
# TABLE OF CONTENTS

ABSTRACT ................................................................................................................... iii

LIST OF FIGURES ....................................................................................................... vi

ACKNOWLEDGMENTS ............................................................................................. vii

BACKGROUND ........................................................................................................... 1

Local Context........................................................................................................ 3
Purpose Statement................................................................................................. 4
Supporting Framework ........................................................................................ 4
    Iowa Model........................................................................................................ 4
    Triggering Issues.............................................................................................. 5
    Purpose Statement and Priority of the Issue .................................................. 5
    Form a Team ..................................................................................................... 6
Assemble, Analyze, and Synthesize Evidence ................................................ 6
Design, Integrate, and Disseminate Practice Change ........................................ 7

REVIEW OF LITERATURE ........................................................................................ 9

Tobacco Use ......................................................................................................... 9
Tobacco Cessation Interventions ......................................................................... 10
Evidence Based Strategies for the Initiation of Tobacco Cessation Interventions 11
    Screening for Tobacco Use ............................................................................ 11
    Behavioral Interventions ............................................................................... 12
    Nicotine Replacement Therapy ..................................................................... 14
    Follow-Up Care .............................................................................................. 14
    Electronic Health Record .............................................................................. 15
Tobacco Cessation Setting .................................................................................... 15
Delivery of Tobacco Cessation ............................................................................. 16
Training for Tobacco Cessation Intervention ....................................................... 17

METHODS .................................................................................................................... 19
Design ................................................................................................................... 19
Setting ................................................................................................................... 19
Target Audience ................................................................................................. 19
Ethical Considerations ......................................................................................... 20
Procedure ............................................................................................................... 20
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>20</td>
</tr>
<tr>
<td>Topics for the Educational Program</td>
<td>20</td>
</tr>
<tr>
<td>Evaluation of Knowledge and the Program</td>
<td>21</td>
</tr>
<tr>
<td>Evaluation Plan</td>
<td>21</td>
</tr>
<tr>
<td>Implementation</td>
<td>21</td>
</tr>
<tr>
<td>Timeline</td>
<td>22</td>
</tr>
<tr>
<td>Phases of Project</td>
<td>22</td>
</tr>
<tr>
<td><strong>RESULTS</strong></td>
<td>23</td>
</tr>
<tr>
<td><strong>DISCUSSION</strong></td>
<td>24</td>
</tr>
<tr>
<td>Potential Implementation Plan</td>
<td>25</td>
</tr>
<tr>
<td>Implications for Practice</td>
<td>25</td>
</tr>
<tr>
<td><strong>REFERENCES</strong></td>
<td>27</td>
</tr>
<tr>
<td><strong>APPENDIX A:</strong> Tobacco Cessation Education Module: Power Point Handouts</td>
<td>37</td>
</tr>
<tr>
<td><strong>APPENDIX B:</strong> Manuscript Submitted to <em>Journal of Medsurg Nursing</em></td>
<td>47</td>
</tr>
<tr>
<td><strong>APPENDIX C:</strong> Author Guidelines for Medsurg Nursing</td>
<td>66</td>
</tr>
<tr>
<td><strong>APPENDIX D:</strong> Permission to Use Iowa Model</td>
<td>68</td>
</tr>
<tr>
<td><strong>APPENDIX E:</strong> Table of Evidence</td>
<td>69</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conceptual model for Revised Iowa Model</td>
<td>8</td>
</tr>
<tr>
<td>2. Phases of project</td>
<td>22</td>
</tr>
</tbody>
</table>
ACKNOWLEDGMENTS

I thank my project committee Dr. Asma Taha and Dr. Cindy Greenberg for guiding me to complete this task. I am grateful to have an opportunity to complete this project with the prayers and support from my family and friends. I am especially thankful to my husband, Thomas Thampi for the motivation and unconditional love that he showed me at every moment of this journey. I dedicate this work to my children Jaidon, and Joana who have been beside me through all my struggles.
BACKGROUND

Despite the present decline in the number of people who smoke tobacco, 16 million Americans suffer from tobacco related illness (U.S Department of Health and Human Services [USDHHS], 2016c). Smoking is the foremost preventable cause for several major conditions, such as cardiac disorders, cancers, and stroke. Smokers die prematurely by at least a decade before non-smokers due to the negative health consequences associated with smoking (Jha et al., 2013). In addition to nicotine, carcinogenic chemicals and tobacco flavorings may have a harmful effect.

The use of tobacco has many negative consequences, which lead to an increase in morbidity, mortality, and economic burden. Despite the progressive decline in smoking, 4.8 million annual deaths are still attributable to smoking (USDHHS, 2014). The Surgeon General’s report proposes that there should be efforts for eliminating tobacco use through proven tobacco control measures (U.S. Department of Health and Human Services, 2014).

There are 40 million adult smokers in the United States, in addition to 4.5 million adolescents who are tobacco users (USDHHS, 2016a). Smoking is the cause for one in every five deaths, or 1,300 deaths daily (USDHHS, 2016c). Tobacco-related illnesses are costly and it is estimated that the United States spends $170 billion each year on direct medical costs for these illnesses (Xu, Bishop, Kennedy, Simpson, & Pechacek, 2015). In order to reduce the tobacco related disease burden, the U.S. government set the goal to reduce the smoking rate from the current 17% to 12% by 2020 (Office of Disease Prevention and Health Promotion, 2016; USDHHS, 2016a).
In addition to cigarettes, there are other smoked tobacco products such as cigars, pipes, and hookahs. Hookah use is on the rise, with 10-20% of youth consuming this product, which can be equally or more toxic than cigarettes (Cobb, Ward, Maziak, Shihadeh, & Eissenberg, 2010). Non-smoking products, such as chewable tobacco and electronic cigarettes, are also available. Electronic cigarettes have been available in the U.S. market since 2007. According to 2015 National Youth Tobacco Survey, 16% of adolescents use electronic cigarettes, and it is the most commonly used tobacco product (U.S. Department of Health and Human Services, 2016). No tobacco product is safe for use, and the newer products bring with them the known associated risks of tobacco use along with potential unknown risks.

Tobacco use is harmful in any form. Thus, cessation is fully justifiable, since quitting at any age can reduce tobacco’s potential harm by 90% (Jha et al., 2013). There have been efforts to implement tobacco cessation interventions in different settings including acute care. The Centers for Medicare and Medicaid Services (CMS) as well as the Joint Commission have established guidelines for reduction and cessation of tobacco use. The CMS has repeatedly emphasized the need for hospital involvement in tobacco cessation by including tobacco screening and a plan for intervention as part of the hospital admission in order to identify patients who wish to quit smoking. About 96% of U.S. hospitals became tobacco free campuses through the Joint Commission’s tobacco-free hospital campus initiative (Longo et al., 1998). Additionally, Joint Commission included tobacco screening as well as cessation interventions, such as counseling and initiation of cessation medications, as a quality control measure (Joint Commission, 2017).
The hospital setting has been identified as a key environment for tobacco cessation for several reasons. Patients are in a smoke-free environment and are abstinent from smoking temporarily. The diagnosis and disease process can create a teachable moment for the patient (McBride, Emmons, & Lipkus, 2003). Automated referral to tobacco treatment programs through an electronic health record have increased referral volume more than that of health care provider referrals (Rabius, Karam-Hage, Blalock, & Cinciripini, 2014). Hospitalization can be an effective gateway for successful cessation interventions through behavioral support and pharmacotherapy (Murray et al., 2013).

Local Context

Even with a decline in smoking prevalence over the last decade, California accounts for four million smokers, and one in seven smoking related deaths (California Department of Public Health, 2015). California also had an increase in non-cigarette tobacco users. Adult e-cigarettes use doubled in over one year in 2013, and adolescent e-cigarette use tripled, surpassing the conventional cigarette use (Chapman, 2015). The University of California, Irvine Medical Center (UCIMC) serves the health care needs of three million people in Orange County. This acute care hospital has a 411-bed capacity with tertiary and quaternary multi-specialty services. Currently, tobacco cessation education is offered to nurses only upon hiring. This education module provides information such as tobacco use, 5A algorithm, and documentation. However, the module does not include information on various tobacco products and especially the emerging products such as electronic cigarettes and hookah. Additionally, the module is missing the emphasis on hospital environment and role of the nurse as a key component in tobacco cessation.
Purpose Statement

The purpose of this DNP project is to develop an educational program on tobacco use and cessation intervention for acute care nurses. The educational module will include current smoking products, tobacco cessation interventions, and nursing strategies at different stages of change.

Supporting Framework

Theoretical and conceptual frameworks provide direction and help explain the relationships of concepts which leads to the advancement of knowledge and evidence based practice (EBP) (Polit & Beck, 2012). The application of a conceptual framework helps in the utilization of evidence based practice in a systematic manner to resolve a clinical problem. The Iowa Model was the conceptual framework used for this DNP project to provide a structure that helps in organizing the concepts, variables, and their relationships.

Iowa Model

Members of a research committee at the University of Iowa developed the Iowa Model in the early 1990s for use in clinics and hospitals. This model was based on a pragmatic, problem-solving approach. The original model was later revised in 2001, to incorporate research utilization and evidence based practice. The Model was revised in 2015 (Figure 1), with the understanding of the importance of using EBP to improve patient outcomes (Steelman, 2016).

The 2015 Revised-Iowa Model places emphasis on the implementation and sustainability for achieving the best patient outcomes (Hanrahan, 2015). The Iowa Model is used globally across healthcare teams. The Iowa Model places emphasis on
organizational change and is especially useful for large acute care settings (Schaffer, Sandau, & Diedrick, 2013). The revised Iowa Model was applied to the current quality improvement project to enhance a hospital based tobacco cessation program based on EBP. The Iowa Model involves seven steps with three decision making points.

**Triggering Issues**

The first step is to identify a triggering issue or opportunity. Apart from the patient or clinical issues, the trigger may be an organizational, state, or national initiative. The trigger can also be a regulatory or accrediting agency’s requirement or evidence brought to light through a compliance review. The following three triggers were identified in the current project, related to the initiation of a change in a tobacco cessation intervention used in a hospital setting:

1. **Philosophy of care**: Maximize the opportunity for health promotion while the patient is in the hospital since they are most receptive to change their behavior at that time.

2. **Tobacco control**: This is a national initiative and is part of the Healthy People 2020 goal.

3. **Accreditation**: Regulatory and accrediting agencies such as CMS and JACHO emphasize tobacco screening and cessation support for all hospitalized patients.

**Purpose Statement and Priority of the Issue**

In the second step, the clinician formulates the purpose or question concerning the patient population to narrow the topic of interest (Steelman, 2015). The purpose of this DNP project was to develop an educational program on tobacco use and cessation
intervention for acute care nurses. After completing the first two steps, the first decision-making step took place. The decision-making step focused on the significance of the topic, followed by a determination of the feasibility of the project and its implementation potential and sustainability. If the topic was determined not to be a priority, then the clinician had to consider a different topic.

Form a Team

The third step occurs once the topic is deemed a priority. The clinician brings together a team of people interested in solving the issue. In order to improve the relevancy of the project, increase its transparency and enhance its acceptance in the organization, the team should include all stakeholders (Concannon et al., 2012). Since the chosen topic of tobacco cessation is a priority for the organization, a team was formed with members including the manager of the hospital quality, education and research department, the clinical nurse specialist, and the clinical nurse educator.

Assemble, Analyze, and Synthesize Evidence

A body of evidence is assembled, reviewed and then the results synthesized in the fourth step to determine if the investigator needs to conduct additional measures to supplement the body of knowledge, rather than just designing a practice change. The literature review focused on the best evidence available for a nurse implemented tobacco cessation intervention in the hospital setting. The second decision making point involves determining if there is a sufficient body of knowledge to move forward with practice change. Sufficient scientific data are available, suggesting the feasibility and effectiveness of a hospital based tobacco cessation intervention.
Design, Integrate, and Disseminate Practice Change

The fifth step is the designing of the practice change. In designing the practice change, the clinician will analyze the setting for barriers and facilitators, as well as any required approvals, and identification of other interested participants who can be added to the team (Steelman, 2015). In creating the design, baseline data on the current tobacco cessation tools was analyzed for identifying gaps and changes in practice.

The fifth step leads to a decision point about the appropriateness of the practice change. The newly created educational program was evaluated by a committee of experts for its appropriateness for adoption. If the change is not considered appropriate for the adoption in practice, the researcher will look for further alternatives and redesign the change. On the other hand, if the change is appropriate, the sixth step would be to implement the practice change.

The planned design will be submitted to the organization’s Department of Quality, Education, and Research for the feasibility of adoption into practice. The final step in the process is sharing the lessons learned, by disseminating the knowledge to others across the organization and to outside stakeholders. In this step of integrating and sustaining practice change, department directors, managers, and educators will be involved. The result of the project will be disseminated within the organization and at professional conferences.
Figure 1. Revised Iowa Model adapted for tobacco cessation education
REVIEW OF LITERATURE

A literature review of hospital based tobacco screening and tobacco cessation interventions was completed using PubMed, Cochrane Library, and Cumulative Index to Nursing & Allied Health Literature (CINAHL), Science Direct, and Google Scholar. Peer reviewed sources regarding prevalence, incidence, prevention, and cessation of multiple tobacco product use were searched. Keywords for search included, “tobacco,” “hospital based,” “smoking,” “e-cigarettes,” “hookah,” and “chewing tobacco.” The search was limited to articles in English with the publication date from 2010.

The literature searches also included relevant reviews, recommendations, and reports of local, state, federal, and international health agencies regarding hospital based tobacco cessation programs. Websites such as from the WHO, CDC, FDA, American Heart Association, and American Lung Association were also searched for relevant scientific data on hospital based tobacco screening and all intervention programs. The table of evidence (TOE) was organized by topic of interest into the following categories: 1) Tobacco use 2) Effective interventions for tobacco cessation 3) Delivery of tobacco cessation interventions by health care personnel.

**Tobacco Use**

According to the 2014 National Health Institute Survey (NHIS), 40 million American adults were cigarette smokers (Jamal, Homa, et al., 2015). In a survey examining the use of tobacco in children, the National Youth Tobacco Survey (NYTS) studied the use of nine different tobacco products including cigarettes. The NYTS data showed that among middle and high school students, there were 2.4 million e-cigarette users and 1.6 million hookah users (Arrazola et al., 2015). There has been a significant
increase in the use of these products since 2011 (Arrazola et al., 2015). Additionally, there has been an increase in desire to use non-cigarette tobacco products among young adults (Mays et al., 2016). The increase in use, as well as an increase in the desire to use non-cigarette tobacco products, calls for comprehensive surveillance of all tobacco products.

Apart from the emergence of newer tobacco products, the burden of disease and tobacco related illness is also a concern. According to recent statistics, there are 16 million people in the U.S who have smoking related illnesses (USDHHS, 2016c), such as emphysema, cardiac disease, and cancer. Data from 2005-2013 showed that although there was a significant decline in smoking among the general population, the same decline was not observed among people with chronic disease conditions (Stanton et al., 2016). Thus, higher prevalence of tobacco use among people with chronic illnesses requires targeted tobacco control interventions.

**Tobacco Cessation Interventions**

Tobacco cessation interventions can be implemented through various approaches. The Agency for Health Care Research and Quality as well as the CDC recommend the use of the 5A algorithm developed by the World Health Organization (WHO) for tobacco cessation interventions (WHO, 2014). This approach involves five tasks, which are performed by health care workers during tobacco screening: ask about tobacco use, advise to quit, assess readiness for quitting, assist by providing resources, and arrange for follow-up. The National Adult Tobacco Survey findings showed that those who received a 5A intervention during their visit to a health care provider had significant increases in
the use of tobacco cessation counseling and nicotine replacement therapy (NRT) (Kruger, O’Halloran, Rosenthal, Babb, & Fiore, 2016).

While the 5A algorithm can help in initiating the cessation intervention, the Transtheoretical model explains the activities that may be suited for quitting based on the individual’s stage of openness for change (Prochaska & DiClemente, 1986). An individual may be in one of the following five stages: 1) Pre-contemplation—not ready for action 2) Contemplation—plan to change 3) Ready—will take action soon 4) Maintenance—a change is made, attempting to sustain 5) Termination—goal fully achieved, no more desire for returning to the changed behavior. Identifying the individual’s stage of openness to change and providing tailored interventions can significantly decrease their tobacco use (Prochaska, Hall, Delucchi, & Hall, 2014).

Tailored interventions are also known to improve the patient’s engagement in their own health. Unlike in the Transtheoretical Model, which focuses on behavior change, the Patient Activation Model incorporates broader elements such as knowledge, skills, beliefs, and behaviors to improve patient’s activation to quit (Hibbard, Stockard, Mahoney, & Tusler, 2004). Those who had higher patient activation scores based on their beliefs, confidence in managing health-related tasks, and self-assessed knowledge were more likely to avoid smoking behaviors (Hibbard & Greene, 2013).

Evidence Based Strategies for the Initiation of Tobacco Cessation Interventions

Screening for Tobacco Use

In order to initiate tobacco cessation interventions, patients have to be screened for tobacco use. Tobacco screening can be accomplished during a hospital admission. The Joint Commission suggests screening patients within the first three days of admission
for use of tobacco products such as cigarettes, smokeless tobacco, pipe, and cigars (Joint Commission, 2016). However, due to the emergence of newer tobacco products, the FDA has provided a comprehensive list of tobacco products to include products such as e-cigarettes, hookah, all cigar types, nicotine gels and pipe tobaccos as tobacco products (USDHHS, 2016b). No tobacco product is harmless, suggesting that screening for tobacco use should include all types of tobacco products currently in use.

Most tobacco cessation interventions primarily focus on smoking. However, the landscape of tobacco use has changed over the recent years with the emergence of multiple tobacco products. This has necessitated additional strategies and education about other forms of tobacco. A recent study examined a brief tobacco cessation intervention among enrollees of the U.S. Air Force who used nine different non-cigarette tobacco products including e-cigarettes and hookah. There was a significant increase in knowledge about perceived harm caused by non-cigarette tobacco products as well as a decreased intention to use tobacco following the brief tobacco intervention (Little et al., 2016). More studies need to be conducted to fully evaluate the differences required for interventions related to a variety of products.

**Behavioral Interventions**

Successful strategies for abstinence of at least six months post discharge were identified through a meta-analysis of 50 studies using tobacco cessation programs initiated in the hospital setting (Rigotti, Clair, Munafò, & Stead, 2012). Some strategies to increase the rate of abstinence post hospitalization described in the review include intense behavioral interventions such as brief advice, individual counseling, provision of self-help materials, and group therapy.
Motivational interviewing is a successful behavioral strategy for tobacco cessation. Motivational interviewing is directed to mitigate the client’s ambivalence which is first identified and then resolved (Hettema, Steele, & Miller, 2005). Motivational interviewing can significantly increase the quit rate compared to brief advice or usual care (Lindson-Hawley, Thompson, & Begh, 2015). However, nurses may require specialized training and practice along with education to become proficient in motivational interviewing (Efraimsson, Fossum, Ehrenberg, Larsson, & Klang, 2012). Training, therefore, needs to be part of the intervention. Despite the need for education among health care professionals, motivational interviewing has been found to be effective in the medical care setting for a number of disorders including tobacco use (Lundahl et al., 2013).

Apart from motivational interviewing, there are other behavioral interventions that can support tobacco cessation. A review of 13 randomized controlled trials found that interventions provided by health care workers such as brief advice, proactive telephone support, text messaging, and printed self-help materials promoted smoking cessation (West et al., 2015). In a multi-center study conducted in a cessation clinic in Spain, using a combination of individual and telephone counseling found significantly higher rates of abstinence at one year follow up than telephone counseling alone (Ramon et al., 2013).

Self-help materials are yet another behavioral modification tool that has been shown to be effective for tobacco cessation. These materials could be printed or internet based interventions. A Cochrane review on internet based smoking interventions found that such types of interventions are helpful if they are interactive and tailored (Civljak,
Stead, Hartmann-Boyce, Sheikh, & Car, 2013). The effect of printed materials on tobacco cessation showed minimal benefit if no other intervention is available. However, there was no effect found for printed materials when printed materials were used along with other interventions (Hartmann-Boyce, Lancaster, & Stead, 2014).

**Nicotine Replacement Therapy**

Nicotine Replacement Therapy is another example of a successful tobacco cessation intervention. A Cochrane review on the success of quit rate was performed by comparing different types of NRT, placebo, and non-NRT group (Stead et al., 2012). The results of the review showed that NRT in any form can assist in quitting by 50%-70% regardless of the setting in which it was provided. While NRT can be helpful by itself, a review of different types of cessation interventions found that intense counseling along with NRT significantly increased quit rate rather than counseling alone (Rigotti et al., 2012). The Joint Commission also suggested that hospitals offer a prescription for NRT upon discharge. Study of the adherence rate of NRT after hospital discharge identified that initiation of NRT during hospitalization and insurance coverage was found to be associated with higher use of NRT during post-discharge than those with no health coverage (Tague et al., 2016).

**Follow-Up Care**

The behavioral interventions initiated during hospitalization need to be followed up after discharge to assist in sustained abstinence. The Joint Commission’s recommendation for tobacco treatment suggests that follow-up contact occurs between 15 and 30 days post discharge. A randomized clinical trial compared standard care with post-discharge tobacco intervention (Rigotti et al., 2014). The post discharge tobacco
intervention with an automated telephone call and free NRT for 90 days showed higher abstinence rates at six months’ post-discharge than usual care. In a randomized controlled trial, the intervention group received psychosocial and pharmacological tobacco cessation support for four months post-discharge from a psychiatric hospital (Stockings et al., 2014). The follow-up care was found to have significantly increased quitting behavior and reduced nicotine dependence and daily consumption.

**Electronic Health Record**

Utilization of electronic health records can facilitate the delivery of tobacco cessation information. The volume of referrals to tobacco treatment programs increased significantly when patients were identified as tobacco users and were given an automated electronic referral (Rabius et al., 2014). A similar finding was observed with a 13-fold increase in cessation treatment enrollment when an automated electronic referral was made rather than providing a quit line referral card (Vidrine et al., 2013).

**Tobacco Cessation Setting**

Tobacco cessation can be initiated in a private or public setting as well as through a clinic visit or an in-patient care setting. At least 70% of smokers visit physicians annually, which provides an opportunity for initiating tobacco cessation (Jamal, Dube, & King, 2015). However, the data from 2005-2010 indicates that two-thirds of out-patient visits had tobacco screening only a quarter of the time (Jamal, Dube, et al., 2015).

Apart from obtaining cessation services through the health care systems, individuals also have the opportunity to utilize a free quitline service or web based programs. It was found that quitline users had a 32% abstinence rate compared to 27% for the web based users. Additionally, quitline users were older, less educated, and were
less likely to be employed. Apart from helping clients to choose different methods of cessation support tailored to the individual’s needs, factors such as age, educational status, and employment should be considered when providing support.

Hospitalization provides a valuable opportunity for successful initiation of tobacco cessation measures. Generally, tobacco users are over-represented among hospitalized patients due to tobacco related illnesses, and this enables health care staff to address a wider audience (Fiore, Goplerud, & Schroeder, 2012). Smoking is banned in hospitals, which require patients to be temporarily abstinent from nicotine. When compared with outpatient surgical patients, inpatient surgical patients had a significant increase in quit rate (Shi & Warner, 2010). Furthermore, smokers can be assisted in cessation through the provision of nicotine replacement therapy and counseling services, while being treated for their primary reason for hospitalization.

**Delivery of Tobacco Cessation**

Tobacco cessation interventions can be delivered by a variety of personnel such as physicians, nurses, pharmacists, dentists, and trained therapists. A review of trials comparing no advice versus brief advice by physicians in an in-patient and out-patient settings showed that there was a significant increase in the quit rate through brief advice by physicians (Stead et al., 2013). However, the data from National Ambulatory Care Survey showed that only 20.9% of tobacco users received tobacco counseling and 7.6% received the prescription for NRT during their ambulatory care visits (Jamal et al., 2012). A recent study on the integration of 5A algorithm by nurses in the acute care facilities showed that hospitals with established standing orders for tobacco cessation and nicotine withdrawal were five times more likely to help patients quit tobacco use (Heath et al.,
The routine practice of recommended 5A algorithm by the nurses can lead to a lasting impact on the health of their patients.

A review of the effects of a nursing intervention on tobacco cessation found that a nursing intervention can increase the likelihood of quitting both among in-patient and out-patient settings (Rice, Hartmann-Boyce, & Stead, 2013). The review also reported that the effect is better when the nurse’s primary role is tobacco cessation or health promotion. Another study compared the nurse intervention with that of a physician and quitline services (Zwar et al., 2015). The result showed that patients who received partial or complete support from the nurse were more likely to have sustained abstinence for a longer period. No studies were identified on the combined effect of nurse and physician support on tobacco cessation, applicable in both in-patient and out-patient settings.

**Training for Tobacco Cessation Intervention**

Even though evidence based strategies are available for tobacco cessation interventions among hospitalized patients, several barriers, and facilitators exist in the delivery of these interventions. An ethnographic study conducted in Canada identified that cessation strategies were not implemented as intended, possibly due to increased workload and relatively poor knowledge among nurses about nicotine dependence (Schultz, Bottorff, & Johnson, 2006). Nurses also reported that lack of skill in counseling, skepticism about the effectiveness of counseling, resistance from patients, lack of time and resources as reasons for non-adherence to tobacco cessation guidelines (Katz et al., 2013).

It may be necessary to provide health care professionals with training to help them promote tobacco cessation services available in the hospitals. Educational training
of clinical staff has been shown to increase confidence in providing tobacco cessation services to hospitalized patients (Fore, Karvonen-Gutierrez, Talsma, & Duffy, 2014). Educational training can be offered through a convenient web based program. Nurses who received online education on tobacco cessation intervention reported significant likelihood to provide cessation interventions to their patients (Bialous et al., 2017). Delivery of tobacco cessation interventions significantly increased in the areas of advice, assess, assist, and arrange categories of the 5A model following a web based tobacco education program (Gordon, Mahabee-Gittens, Andrews, Christiansen, & Byron, 2013). Furthermore, the emergence of multiple newer tobacco products requires updated knowledge in counseling patients.

The literature review suggests that nurses can play a key role in tobacco cessation intervention among hospitalized patients through evidence-based approaches. Adequate education and training can empower nurses to perform this task with knowledge and confidence.
METHODS

Design

The purpose of this DNP project was to develop a tobacco cessation education program for staff nurses in an acute care facility. This quality improvement project was focused on improving nurse tobacco cessation screening knowledge and intervention conducted for hospitalized patients. Patients who use tobacco and are hospitalized are most receptive to tobacco cessation conversations and nurses are in the ideal position to initiate this process.

Setting

The project will be implemented in a tertiary university medical center. This acute care magnet designated hospital has a 411-bed capacity. The hospital provides tertiary and quaternary multi-specialty services. There are seven medical-surgical units, six intensive care units, two step down units, three perinatal units, procedural services, psychiatry services, emergency room, and an acute rehabilitation unit within the hospital. Nurses in the hospital setting are required to participate in educational activities through web based learning program. Currently, there are no ongoing educational activities offered to nurses regarding tobacco use and cessation strategies.

Target Audience

The target audience for this project will be the 1300 clinical nurses working within the acute care hospital. Travelling and registry nurses will be excluded from participation in this educational program due to their limited length of assignment at the institution.
Ethical Considerations

This is a quality improvement project and as such, there are no foreseeable risks associated with the implementation of the project.

Procedure

The project involved the development of an educational program for nurses. The objective of the training is to help nurses understand the current trends in tobacco use, to promote tobacco screening and to initiate cessation interventions among patients at varying stages of change. The following procedures will be implemented:

Resources

Program development began with a review of pertinent literature detailing the contents of other educational programs as well as policy statements and clinical guidelines related to tobacco cessation. This included recommendations and guidelines by organizations such as the CDC, Joint Commission, and CMS. Tobacco cessation education programs developed for health care professionals, especially for nurses, were also be reviewed. The program is also based on evidence based practices on tobacco cessation.

Topics for the Educational Program

a) Information about the prevalence and the multiple tobacco products used

b) Screening patients about tobacco use utilizing the 5A algorithm. The 5A algorithm includes

- Ask about tobacco use including multiple tobacco products
- Advise to quit tobacco use
- Assess stage of change per Transtheoretical model
- Assist to quit according to the stage of change and offer the different cessation interventions available
- Arrange a follow up through quitline or follow up visit

**Evaluation of Knowledge and the Program**

Pre- and post-test of nurse’s knowledge, as well as a post-test on the satisfaction of the educational program is included into the educational program to be delivered once the program is developed.

**Evaluation Plan**

An expert review panel evaluated the educational program and provided feedback and modification of the program. The expert panel included an expert in pedagogy, public health expert, health educator, and clinical educator. The expert panel evaluated the educational module for the quality of the format, appropriateness of the content, facilitation of learning, and the ability to meet the objectives. The educational program was revised based on feedback obtained from the expert panel.

**Implementation**

The completed educational program will be submitted to the UCIMC Department of Quality, Education, and Research for approval to disseminate to the nurses. The educational program can be modified to an on-line module if it is determined to be the best method of delivery by the organization. The implementation of the educational program will occur after the completion of the DNP program due to lack of time available within the program to complete the process.
Timeline

Fall 2016: Review of pertinent resources

Winter 2017: Development of tobacco cessation educational program and evaluation of tobacco cessation education program

Spring 2017: Submission of the educational program to the hospital for approval and dissemination

Phases of Project

Figure 2. Phases of project.
RESULTS

The product of this project was development of an educational program for acute care nurses about tobacco cessation, found in Appendix A. The prepared educational module will be submitted to UC Irvine Health Medical Center for implementation as part of the annual competency training. Additionally, a manuscript was written as part of this project. The prepared manuscript (Appendix B) will be submitted to the Journal of MEDSURG Nursing. Author guidelines for the Journal of MEDSURG Nursing is given in Appendix C.
DISCUSSION

Tobacco use continues to be a major public health challenge even after 50 years of efforts directed on tobacco control. Utilizing the Revised Iowa model, this project considered tobacco cessation as a triggering issue due to its priority for the accrediting and regulatory agencies as well as the nation. Additionally, the hospital setting being a key environment for tobacco cessation, patients can be assisted to initiate the cessation intervention through nurses.

Since newer tobacco products are emerging, this is an ideal time to strengthen interventions on tobacco cessation. Besides, health care professionals need to expand focus to include diverse tobacco products rather than focusing solely on traditional cigarette smoking. Comprehensive tobacco control measures should include all tobacco products since nicotine in any form is harmful. Acute care nurses can play a major role in sustaining the trends of declining rate of tobacco use seen over the last fifty years.

The literature review showed that evidence-based strategies could be successfully applied for tobacco cessation in the hospital setting. Additionally, nurses can serve a pivotal role in initiating tobacco cessation by utilizing the “teachable moment” during hospitalization. The University of California Medical Center has already initiated an electronic health record system to screen tobacco users and to initiate cessation interventions. Training of health care professionals is one of the initial major steps in implementing tobacco cessation strategies in a health care environment. Training nurses about tobacco cessation can resolve the potential barriers of lack of skill and confidence in adhering to tobacco cessation initiative.
The purpose of this project was to develop an educational module for acute care nurses about tobacco cessation. A tobacco cessation education module was developed, incorporating evidence-based practices, and content accuracy verified by evaluation of the module by an expert committee. Additionally, a manuscript was developed for dissemination of the project through the journal *MEDSURG Nursing*. Even though tobacco cessation is not a novel idea, nurses can benefit from updates about trends in tobacco use and current recommendations for practice through the manuscript.

**Potential Implementation Plan**

The implementation of tobacco cessation training for nurses will be done by the nursing education department at UC Irvine Health. The target audience will be about 1300 acute care nurses at UC Irvine Health. The tobacco cessation education module will be submitted to the Nursing Education Department for approval and dissemination. The module will be formatted in the UC Learning computer program before dissemination. The educational module will be delivered to nurses through computer-based training. The training will be repeated by nurses as part of the annual competency. The data from the evaluation of the educational module will be used for revision of the module in future.

**Implications for Practice**

Evidence supports the need for continued tobacco cessation intervention for hospitalized patients. An organizational-wide initiative for tobacco cessation and provision of resources and infrastructure can help in assisting patients to quit tobacco. Designing the electronic health record system for comprehensive tobacco screening and
cessation interventions can be beneficial for monitoring and evaluating the tobacco cessation initiative.

Hospital nursing educators should provide regular training for nurses about tobacco cessation. The educational module should be revised and updated periodically to reflect the changing patterns of tobacco use within the community. Furthermore, the nurses should incorporate tobacco cessation initiatives as part of the standard of care.

Clinical nurses should assume the major role in helping the tobacco users to make the best choice for their health by quitting tobacco use. Front-line nurses should participate in assessing and documenting patient’s tobacco use during their patient encounter. Nurses also should ensure delivery of cessation interventions based on the recommended 5A algorithm. Obtaining training on tobacco cessation can help acute care nurses to carry out their role in tobacco cessation with adequate skill and confidence.
REFERENCES


Klesges, R. C. (2016). Efficacy of a brief tobacco intervention for tobacco and
nicotine containing product use in the US Air Force. *Nicotine & Tobacco
Research, 18*(5), 1142-1149.

Longo, D. R., Feldman, M. M., Kruse, R. L., Brownson, R. C., Petroski, G. F., & Hewett,

Lundahl, B., Moleni, T., Burke, B. L., Butters, R., Tollefson, D., Butler, C., & Rollnick,
S. (2013). Motivational interviewing in medical care settings: a systematic review
and meta-analysis of randomized controlled trials. *Patient education and
counseling, 93*(2), 157-168.

Openness to using non-cigarette tobacco products among US young adults.

teachable moments: the case of smoking cessation. *Health Education Research,
18*(2), 156-170.

(2013). Systematic identification and treatment of smokers by hospital based
cessation practitioners in a secondary care setting: cluster randomised controlled


doi:10.1002/14651858.CD001188.pub4

doi:10.1002/14651858.CD001837.pub3


APPENDIX A

TOBACCOcessation EDUCATION MODULE: POWER POINT HANDOUTS

Course goal: To broaden acute care nurses’ knowledge on tobacco use and cessation interventions in the hospital.

Pre-test and Post-test

1. When completing the patient’s admission profile, what is the most appropriate response for patients who are tobacco users:
   a. “You really should quit smoking, since you are interested in it”.
   b. Do not comment as the hospitalization itself is the priority.
   c. “The hospital is a great environment for starting a tobacco cessation program”.
   d. “Hospitals are smoke-free, so you can’t smoke here”.

2. An electronic cigarette or vape is a newer type of smoking product. If your patient is using it, it’s best to tell the patient:
   a. “I am glad that you have chosen to use a safer product than regular cigarettes. Water vapor is better than nicotine”.
   b. “You made the right decision, vaping instead of smoking cigarettes. It’s a good way to quit smoking”.
   c. “Can you tell me the reason that you decided to vape”?
   d. “That’s cool, I wish all smokers would learn about vaping”.

3. Where can you find patient education materials on tobacco use:
   a. I have never looked for information on this subject before.
b. I can ask a co-worker or supervisor where to find it.

c. I know where to locate patient educational materials on tobacco.

d. I’m not sure how to find accurate information on this topic.

4. Your patient is not interested in quitting his or her tobacco use. It is best to respond with:

a. “I’m concerned about your health. Would you be willing to at least let me refer you to a quitline service?”

b. “We can start you on a Nicotine patch during your hospital stay”.

c. “Smoking is harmful. You should really rethink your decision”.

d. Since the patient is not ready to quit smoking, leave it at that.

Objectives

At the end of this training, the learner will be able to:

- Identify the need for comprehensive tobacco screening in the hospital
- Identify emerging tobacco products
- Explain the 5 A model
- Advise patients according to stages of change
- Select appropriate tobacco cessation resources

Health effects of tobacco

Tobacco use is the foremost preventable cause of several major conditions and death.

Tobacco use can cause
o multiple types of cancers
o heart disease
o stroke
o complications of pregnancy
o chronic obstructive pulmonary disease (COPD)
o oral health issues
o exacerbates many conditions such as asthma and diabetes
o compromises wound or surgical healing

**Burden of tobacco use**

There are 40 million adult smokers in the United States (U.S.), in addition to 4.5 million adolescents who are tobacco users.

 Majority of smokers (90%) start smoking before the age of 18.

 United States spends $170 billion each year on direct medical costs for these illnesses.

 One in five deaths in the United States is related to cigarette smoking

**Tobacco advice by nurses is effective**

Results from 35 studies suggests that advise and or counseling given by nurses can help patients to quit tobacco use.

**Tobacco in any form is harmful: Recognize and educate**

Cigarettes
Tobacco smoke from cigarettes contain more than 7,000 chemicals including 70 carcinogens.

Smoking is harmful to nearly every organ of the body.

Nicotine in tobacco is highly addictive, more people are addicted to it than any other drug.

**Electronic cigarettes (vape)**

- E-cigarettes have increased in popularity as an alternative to cigarette smoking or as a cessation aid for smoking. E-cigarettes are replacing the conventional smoking especially among adolescents.

- E-cigarettes contain a cartridge filled with varying concentration of nicotine containing liquid, flavorings, and chemicals, a battery, and a heating device or vaporizer.

- The safety of this device is questionable and effectiveness of this product as a quitting aid is controversial. Currently, e-cigarettes are not a recommended quitting aid.

**Hookah**

- Hookah is a water pipe that delivers tobacco with attractive flavors.

- Hookah use can be equally or even more harmful than cigarette use.

- The toxins from tobacco and other chemicals in hookah are associated with major health risks including cancer.
Smokeless tobacco

- Smokeless tobacco is available in a variety of forms and flavors: chewable, dissolvable, or sniffed.
- Smokeless tobacco is associated with several health hazards of nicotine including oral diseases.

Quitting tobacco

- Quitting at any age can reduce tobacco’s potential harm by 90%
- Nearly 7 out of 10 smokers want to quit
- Quitting is difficult and may need several attempts and relapses are common
- Smokers who receive advice from physicians or nurses are 50% more likely to quit.

Hospitals: A key environment for tobacco cessation

- Patients are in tobacco abstinence while in hospital and could benefit from additional resources to continue quitting upon discharge
- Patients are more receptive to tobacco cessation education when admitted for a tobacco related illnesses
- Patients can benefit from cessation advice from health care team and obtain nicotine replacement therapy such as nicotine patch or nicotine gum
- The time spent giving brief advice by the nurse could prevent another hospitalization for stroke, cancer, or cardiac disease
Recommended approach to Tobacco Cessation

5A Algorithm

- Ask about tobacco use
- Advise to quit
- Assess readiness for quitting
- Assist by providing resources
- Arrange for follow up

5A Algorithm: Ask about tobacco use

- A comprehensive screening during the initial encounter sets the
- stage for appropriate interventions
Ensure patients are screened for use of any tobacco products, rather than, just cigarette smoking.

Thus patients who are using any form of tobacco products can be captured during the screening process.

**Screening for tobacco use**

Documentation in QUEST during admission as part of Patient Profile.

---

**5A Algorithm: Advising to quit**

**What to advise?**

- “Quitting tobacco could be the best thing that you can do for yourself during this hospital visit.”
- “Since you cannot use tobacco in the hospital, you are in the first step of the quitting process.”
- “If you are interested, we can provide you with needed resources to continue the quitting process.”

---

**5A Algorithm: Assess for the Stage of Change**

**How people change behavior?**
According to the Transtheoretical model, behavior change consists of five different stages.

Patients might be in one of the five stages of change.

Patients will need appropriate intervention at each of the stages.

**Strategies at different Stages of Change**

<table>
<thead>
<tr>
<th>Stage 1: Pre-contemplation</th>
<th>Stage 2: Contemplation</th>
<th>Stage 3: Ready</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the dangers of tobacco</td>
<td>Talk about the risk and benefits identify barriers</td>
<td>Talk about developing a plan of action</td>
</tr>
<tr>
<td>• Advise to rethink</td>
<td>• Encourage their confidence to quit</td>
<td>• Pharmaco-therapy • Quitline referral support system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 4: Action</th>
<th>Stage 5: Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage to stay in the quit plan</td>
<td>Continue to promote social support and environmental change</td>
</tr>
<tr>
<td>• Change the environment of tobacco and tobacco users</td>
<td>• Treat craving and withdrawal • Prevent relapse</td>
</tr>
</tbody>
</table>

**5A Algorithm: Assist by providing resources**

Patient educational material from intranet on tobacco cessation
Additional resources

- Patient education channel on television about stop smoking

- The following links are different resources available: 24/7 telephone services, text messaging, or to download a mobile app
5A Algorithm: Arrange for follow up

- In-patients can be followed up through quitline services while they are at home
- Patient’s progress can also be followed-up during their out-patient visits by the nurses in the clinic

Please respond:

This educational material was informative and will help me to provide better care to my patients who have a positive tobacco history:

- Strongly agree
- Agree
- Unsure
- Disagree
- Strongly disagree
APPENDIX B

MANUSCRIPT SUBMITTED TO
JOURNAL OF MEDSURG NURSING

Cover Letter

Mini Thomas MSN, RN, CCRN
4337 W Sirius Ave
Orange, CA 9286
(213) 239 3653
minimaliyil@gmail.com

January 23, 2017

Dottie Roberts
Editor
MEDSURG Nursing

Dear Dr. Roberts

Please find attached a manuscript on “Tobacco cessation in hospitals: Update for practice”. This manuscript addresses a current and significant health concern and provides clinicians with suggestions for evidence based interventions. The manuscript adheres to the styles requirements for “MEDSURG Nursing”.

Thank you for your consideration of our manuscript.

Mini Thomas
UC Irvine Health
Orange
CA 92868
Title: Tobacco Cessation in Hospitals: Updates for Practice

Authors:
Mini Thomas MSN, RN, CCRN
Mini Thomas is a clinical nurse at UC Irvine Health and a Doctor of Nursing Practice student at California State University, Fullerton.

Asma Ali Taha, PhD, RN, CPNP
Asma Taha is the Associate Professor, School of Nursing at California State University, Fullerton.

Cindy Greenberg DNSc, RN, PNP-BC, FAAN
Cindy Greenberg is the Associate Dean, Interim, College of Health and Human Development and Professor, School of Nursing at California State University, Fullerton.

Address for correspondence:
Mini Thomas
4337 W Sirius Ave
Orange
CA 92868
minimaliyil@gmail.com
Phone: 213 239 3653 (day & evening)
Fax: 714 621 0094

Abstract
Tobacco cessation continues to be a priority for the nation, regulatory authorities, and professional organization. Changing trends among the tobacco landscape necessitates nursing practices to be updated and strengthened with utilization of evidence-based knowledge.
**Tobacco Cessation in Hospitals: Updates for Practice**

Tobacco use is one of the major preventable causes of morbidity and mortality in the United States (U.S.) despite the decline in the smoking rate. Smokers prematurely die at least a decade before non-smokers due to the negative health consequences associated with smoking (Jha et al., 2013). There are 40 million adult smokers in the U.S., in addition to 4.5 million adolescents who are tobacco users (U.S Department of Health and Human Services, 2016a). Tobacco-related illnesses are costly, and it is estimated that the U.S. spends $170 billion each year on direct medical costs for these illnesses (Xu, Bishop, Kennedy, Simpson, & Pechacek, 2015). To reduce the tobacco-related disease burden, the U.S. government set the goal to reduce the smoking rate from the current 17% to 12% by 2020 (Office of Disease Prevention and Health Promotion, 2016; U.S Department of Health and Human Services, 2016a).

**Diverse Tobacco Products**

In addition to cigarettes, there are other smoked tobacco products such as cigars, pipes, and hookah. Hookah use can be equally or more toxic than cigarettes and is on the rise especially among youth (Centers for Disease Control and Prevention, 2014). Non-smoked products, such as chewable tobacco and electronic cigarettes, are also available. Electronic cigarettes (e-cigarettes) have been available in the U.S. market since 2007. According to the 2015 National Youth Tobacco Survey, 16% of adolescents use electronic cigarettes, and it is the most commonly used tobacco product among adolescents (U.S. Department of Health and Human Services, 2016). No tobacco product is safe for use, and the newer products bring with them the known associated risks of
tobacco use along with potential unknown risks. Tables 1 and 2 gives some facts about electronic cigarettes and hookah.

Table 1.

Electronic cigarettes: Are they better cigarettes?

E-cigarettes are battery operated smoking devices which typically deliver nicotine, flavorings, and other chemicals in the form of vapor.

- The Food and Drug Administration (FDA) warns against the use of e-cigarettes, especially among youngsters as it can be a gateway to conventional cigarette smoking
- E-cigarettes are not approved by the FDA as a cessation agent for quitting
- The safety of the electronic cigarette device is disputed due to reports of explosions and poisoning (Chatham-Stephens et al., 2014; Rudy & Durmowicz, 2016)
- The contents of e-cigarettes can be harmful to human beings (Food and Drug Administration, 2016)

Table 2.

Hookah: Is it a safer tobacco?

Hookahs are water pipes for smoking special tobacco with flavors passed through water.

- Hookah smoke is as dangerous to health as cigarette smoke
- Hookah smokers may inhale higher nicotine than cigarette users (American Lung Association)

- Sharing of the hookah mouthpiece can lead to infections such as tuberculosis, herpes, influenza, and hepatitis (Centers for Disease Control and Prevention, 2014)

- Filtering mechanism in hookah does not make the nicotine any safer to use (Morris, 2012)

- Hookah labeled as “herbal” or “tobacco-free” also contained toxic chemicals and carcinogens (Hammal et al., 2013)

**Tobacco Cessation: A priority for Nursing, Regulatory Bodies and Professional Organizations**

Apart from the nation’s initiative to reduce tobacco use, regulatory and accrediting agencies of hospitals have also made it a priority to involve hospitals in tobacco control. The Joint Commission recommends hospitals to be smoke and vape free environments. The Joint Commission set tobacco treatment as one of the performance measurement areas for hospitals with specific guidelines for tobacco screening and cessation interventions. The Centers for Medicare and Medicaid Services (CMS) also emphasize the need for hospital involvement in tobacco cessation by including tobacco screening and a plan for intervention as part of the hospital admission process. Furthermore, professional nursing organizations such as the Academy of Medical-Surgical Nurses and the Oncology Nursing Society also support tobacco control activities in the hospitals. Hospitals and health care agencies can follow the directive from the
accrediting and professional agencies by developing a culture of tobacco cessation initiatives within the organizations.

**Hospitals: A Key Setting for Tobacco Cessation Interventions**

Hospitalization provides a valuable opportunity for successful initiation of tobacco cessation measures. Generally, tobacco users are over-represented among hospitalized patients due to tobacco-related illnesses, and this enables health care staff to address a wider audience (Fiore, Goplerud, & Schroeder, 2012). Smoking is banned in hospitals, which requires patients to be temporarily abstinent from nicotine. Furthermore, smokers can be assisted in cessation through the provision of nicotine replacement therapy and counseling services, while being treated for their primary reason for hospitalization.

Tobacco cessation interventions can be delivered by a variety of personnel such as physicians, nurses, and pharmacists. Review of the effects of the nursing interventions on tobacco cessation found that nursing interventions can increase the likelihood of quitting both among in-patient and out-patient settings (Rice, Hartmann-Boyce, & Stead, 2013). Professional organizations such as the Academy of Medical-Surgical Nurses support establishing tobacco cessation interventions as part of the standard of care (Academy of Medical-Surgical Nurses, 2016). Nurses and doctors are well positioned for screening and counseling. Nurses contribute to health maintenance and promotion in different settings including the acute care arena. The potential strength and experience of nurses can be capitalized on to address tobacco dependence by integrating tobacco control measures as a standard of care with equal significance as treating patient’s physical disorders.
Economic Benefits from Tobacco Cessation

The return on investment through tobacco cessation interventions can have valuable economic benefits for hospitals and health care systems. However, tobacco cessation interventions are underutilized by the health care professionals. According to the recent publication of a monograph by the WHO and the National Cancer Institute, utilization of evidence-based practices is justified for economic and public health benefits. Cost-effectiveness calculation of a brief annual tobacco counseling for youth and adults would yield a net benefit of $225 and $580 per person through prevention of tobacco-related harm (Maciosek et al., 2017). Furthermore, tobacco abstinence can reduce hospitalization and readmissions related to cardiovascular related disorders (U.S. National Cancer Institute and World Health Organization, 2016). Thus hospitals can adopt tobacco-cessation interventions as a means to reduce readmissions. Additionally, the cost for tobacco cessation services and treatments are covered by most insurances and the Affordable Care Act.

Best Practices

Comprehensive tobacco cessation program. Vehicles to use tobacco are changing with the emergence of multiple tobacco products that replace conventional cigarettes. Due to the emergence of newer tobacco products, the FDA has provided a comprehensive list of tobacco products to include products such as e-cigarettes, hookah, all cigar types, nicotine gels and pipe tobaccos as tobacco products (U.S Department of Health and Human Services, 2016b). No tobacco product is harmless which suggests that screening for tobacco use should include all types of tobacco products currently in use. Thus, new strategies and education about newer forms of tobacco become essential for
comprehensive tobacco cessation programs. A recent study examined a brief tobacco cessation intervention among enrollees of the U.S. Air Force who used nine different non-cigarette tobacco products including e-cigarettes and hookah. There was a significant increase in knowledge about perceived harm caused by non-cigarette tobacco products as well as a decreased intention to use tobacco following the brief tobacco intervention (Little et al., 2016). Provision of brief counseling by front-line nurses during patient encounters can be beneficial to initiate tobacco cessation for patients.

**Training nurses about tobacco cessation programs.** Training of health care professionals is recommended as the initial step for integrating tobacco cessation initiatives in the health care systems. Educational training of clinical staff has been shown to increase confidence in providing tobacco cessation services to hospitalized patients (Fore, Karvonen-Gutierrez, Talsma, & Duffy, 2014). Training healthcare professionals including nurses can significantly increase implementation of smoking cessation interventions such as tobacco screening, counseling, provision of resources, and follow-up care (Carson et al., 2012). To provide comprehensive tobacco cessation services, the training should include newer products such as e-cigarettes (Pepper, McRee, & Gilkey, 2014).

Nurses who are also patient educators can be given specific training for tobacco cessation through different methods. Nurses trained through a tool kit including power point presentation, a pocket card along with supportive protocol, and documentation tool showed an increased quit rate for in-patient tobacco users (Duffy et al., 2016). Face to face training on tobacco cessation for health care professionals including nurses also has shown an increase in perceived ability and knowledge to deliver tobacco cessation
treatment (Chen et al., 2015). Adequate training can improve a nurse’s skill in tobacco cessation and thus resolve barriers to adherence.

**Use of electronic health records.** Utilization of electronic health records can facilitate the delivery of tobacco cessation information. Use of electronic health records increased tobacco cessation interventions from 23% to 54% in 19 community health centers in New York City (Silfen et al., 2014). The volume of referrals to tobacco treatment programs was increased significantly when patients were identified as tobacco users and were given an automated electronic referral (Rabius, Karam- Hage, Blalock, & Cinciripini, 2014). Furthermore, meaningful use criteria of electronic health records by CMS requires health professionals to record the patient’s smoking status.

Electronic health records can help in surveillance of tobacco use in patients along with navigation of tobacco cessation interventions. Utilization of the electronic health record for documentation of e-cigarettes enabled researchers to identify information such as prevalence, purpose, and side-effects associated with e-cigarette use (Winden et al., 2015). Community health centers in New York city identified a lack of tobacco screening and cessation interventions through retrieval of electronic health record data, providing an opportunity for quality improvement (Silfen, Cha, Wang, Land, & Shih, 2015). Hospitals can utilize the electronic health record as a tool for implementing and monitoring tobacco cessation interventions.

**Strategies for the Initiation of Tobacco Cessation Interventions.** Tobacco cessation interventions can be implemented through various approaches. The Agency for Health Care, Research and Quality as well as the CDC, recommend the use of the 5A algorithm developed by the WHO for tobacco cessation interventions (WHO, 2014). This
approach involves five tasks, which are performed by health care workers during tobacco screening: ask about tobacco use, advise to quit, assess readiness for quitting, assist by providing resources, and arrange for follow-up. The National Adult Tobacco Survey findings showed that those who received a 5A intervention during their visit to a health care provider had significant increases in the use of tobacco cessation counseling and nicotine replacement therapy (NRT) (Kruger, O’Halloran, Rosenthal, Babb, & Fiore, 2016).

Provision of training, infrastructure and a culture of tobacco cessation in acute care hospitals can help in promoting utilization of 5A algorithm by nurses. A recent study on the integration of 5A algorithm by nurses in the acute care facilities showed that hospitals with established standing orders for tobacco cessation and nicotine withdrawal were five times more likely to help patients quit tobacco use (Heath et al., 2016). The routine practice of recommended 5A algorithm by the nurses can lead to a lasting impact on the health of their patients.

While the 5A algorithm can help in initiating the cessation intervention, the Transtheoretical model explains the activities that may be suited for quitting based on the individual’s stage of openness for change (J. O. Prochaska & DiClemente, 1986). An individual may be in one of the following five stages: 1) Pre-contemplation - not ready for action 2) Contemplation - plan to change 3) Ready - will take action soon 4) Action – started abstaining from tobacco 5) Maintenance - a change is made, attempting to sustain the change and prevent relapse. Illustration of strategies at different Stages of Change is shown in Figure 1. Identifying the individual’s stage of openness to change and providing
 tailored interventions can significantly decrease their tobacco use (J. J. Prochaska, Hall, Delucchi, & Hall, 2014).

Figure 1. Strategies at different Stages of Change

<table>
<thead>
<tr>
<th>Stage 1: Pre-contemplation</th>
<th>Stage 2: Contemplation</th>
<th>Stage 3: Ready</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the dangers of tobacco</td>
<td>Talk about the risk and benefits identify barriers</td>
<td>Talk about developing a plan of action</td>
</tr>
<tr>
<td>• Advise to rethink</td>
<td>• Encourage their confidence to quit</td>
<td>• Pharmaco-therapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Quitline referral support system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 4: Action</th>
<th>Stage 5: Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage to stay in the quit plan</td>
<td>Continue to promote social support and environmental change</td>
</tr>
<tr>
<td>• Change the environment of tobacco and tobacco users</td>
<td>• Treat craving and withdrawal</td>
</tr>
<tr>
<td></td>
<td>• Prevent relapse</td>
</tr>
</tbody>
</table>

Strategies to increase the rate of abstinence post hospitalization include intense behavioral interventions such as brief advice, individual counseling, provision of self-help materials, and group therapy (Rigotti, Clair, Munafò, & Stead, 2012). A higher rate of quit attempt is observed when assistance is offered to all smokers rather than assisting only those who show interest in quitting (Aveyard, Begh, Parsons, & West, 2012). Such services are also reimbursed for by those states which have expanded Medicaid eligibility under Affordable Care Act.

Behavioral Interventions. Strategies to increase the rate of abstinence post hospitalization include intense behavioral interventions such as brief advice, individual counseling, provision of self-help materials, and group therapy (Rigotti, Clair, Munafò, & Stead, 2012). While motivational interviewing by trained personnel can be an effective
tool, measures such as proactive telephone support and text messaging too can be useful behavioral interventions for tobacco users to quit.

**Pharmacotherapy.** Nicotine Replacement Products (NRT) are available in the form of lozenges, patches, gum, inhaler or nasal spray. Any form of NRT can assist in increasing the quit rate by 50%-70% regardless of the setting in which it is provided (Stead et al., 2012). While NRT can be helpful by itself, a review of different types of cessation interventions found that counseling along with NRT significantly increased quit rate rather than counseling alone (Rigotti et al., 2012). The Joint Commission also suggests that hospitals offer a prescription for NRT upon discharge. Non-nicotine medications such as bupropion SR (Zyban®) and varenicline tartrate (Chantix®) are also recommended forms of pharmacotherapy for cessation.

**Technology for cessation.** Apart from traditional telephone services for cessation counseling, tobacco users can also choose text messaging help, cessation software applications, and social media for assistance to quit. A Cochrane review on internet based smoking interventions found that such types of interventions are helpful if they are interactive and tailored (Civljak, Stead, Hartmann-Boyce, Sheikh, & Car, 2013). While many of these technological cessation services are offered free, nurses are in a position to educate and provide tailored resources for tobacco users about the available technological assistance.

**Follow up care.** The behavioral interventions initiated during hospitalization need to be followed up after discharge to assist in sustained abstinence. The Joint Commission’s recommendation for tobacco treatment suggests that follow-up contact occurs between 15 and 30 days post discharge. Patients exposed to a post-discharge
tobacco intervention with an automated telephone call and free NRT for 90 days showed higher abstinence rates at six months’ post-discharge than usual care (Rigotti et al., 2014).

Conclusion

Nurses can play a pivotal role in tobacco cessation intervention among hospitalized patients through evidence-based approaches. An organization-wide commitment for tobacco cessation initiatives, along with proper infrastructure can help in achieving comprehensive tobacco cessation among hospitalized patients. Designing electronic health record systems with a clinical workflow that allows for comprehensive tobacco screening and interventions will help with performance improvement. Hospital based patient education departments should actively engage in developing educational material that trains nurses on tobacco screening and interventions to aid patients in making a behavioral change. Adequate education and training can empower nurses to perform this task with the necessary skill and confidence. Thus, nurses can partner in reducing the preventable mortality and morbidity caused by tobacco use through actively participating in tobacco cessation within the hospitals.
References


tobacco cessation training program in a large health care system. *American Journal of Health Education, 46*(3), 165-173.


doi:10.1002/14651858.CD001188.pub4

doi:10.1002/14651858.CD001837.pub3


doi:10.1002/14651858.CD000146.pub4


APPENDIX C

AUTHOR GUIDELINES FOR MEDSURG NURSING

*MEDSURG Nursing*, the official journal of the Academy of Medical-Surgical Nurses, is a scholarly journal dedicated to advancing evidence-based medical-surgical nursing practice, clinical research, and professional development. The journal's goal is to enhance the knowledge and skills of medical-surgical nurses to promote health, prevent and manage disease, and improve the health status of patients and their families. Unless clearly specified, the views expressed in articles, editorials, and letters published in *MEDSURG Nursing* represent the opinions of the authors and do not reflect the official policies of AMSN.

The journal accepts original articles: case studies, letters, descriptions of clinical care, and research. Query letters are welcome, but not required. Material must be original and never published before. Material is submitted for review with the understanding that it is not being submitted to any other journal simultaneously.

*MEDSURG Nursing* is a refereed journal. All manuscripts submitted undergo review by the editor and blind review by members of the manuscript review panel and/or editorial board members. Each manuscript is reviewed on its timeliness, importance, clarity, accuracy, and applicability to adult health/medical-surgical nursing. Upon acceptance of the manuscript, the author will yield copyright to *MEDSURG Nursing*. Acquiring permission to reprint previously published materials is the responsibility of the author. Authors have the responsibility to verify that they have read all the materials cited in their manuscript and, if necessary, have contacted the relevant authors to verify the accuracy of cited material. Manuscripts are subject to copy editing. The author will receive proofs via email for review prior to publication.

**Manuscript Preparation**

Manuscripts must be typewritten, double-spaced, on 8.5 x 11 inch white paper; maximum length is 15 pages (3,750 words). References, photographs, tables, and all other details of style must conform to the Publication Manual of the American Psychological Association (APA, 6th ed., 2010).

- **Software**: As a general rule, all files should be saved as MS Word. Manuscripts must not contain reference software codes, and the use of reference software is highly discouraged.
- **Title Page**: Include the manuscript title, authors' names, credentials, and a brief biographic statement. Also include an address for correspondence, email address (required), day and evening phone numbers, fax number, and a brief abstract of 40 words or less.
- **Research Manuscripts**: Include a brief explanation of introduction, purpose, method, findings, and conclusions.
- **Subheadings**: Include subheadings in the manuscript where possible. Type all subheadings flush to the left margin.
- **References**: Manuscripts that do not comply with reference and style requirements of the APA Manual (6th ed.) may be returned to the author for revision before peer review. References in the text should be cited by author and
date, for example (Evans, 2009), with page numbers cited for direct quotations. The reference list at the end of the manuscript should include only those references cited in the text, and be arranged alphabetically by author. **Important:** All references must be current, and from the last 3-5 years. If you are citing a study that is considered "classic," please include a current citation to validate the information.

All citations should reference primary sources. The use of secondary sources (material analyzed or interpreted from the primary source) is discouraged. If necessary, locate a copy of the original work and credit it as such. Sample references are:
APPENDIX D

PERMISSION TO USE IOWA MODEL

You have permission, as requested today, to review/use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care (The Iowa Model Collaborative, (in review). The Iowa Model Revised: Development and Validation.) Click the link below to open the model.

Copyright of The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care will be retained by The University of Iowa Hospitals and Clinics.

Permission is not granted for placing the Iowa Model on the internet.

The Iowa Model - 2015

In written material, please add the following statement:

- Used/Reprinted with permission from the University of Iowa Hospitals and Clinics. Copyright 2015. For permission to use or reproduce the model, please contact the University of Iowa Hospitals and Clinics at (319) 384-9098.

If you have questions, please contact Kimberly Jordan at 319-384-9098 or kimberly-jordan@uiowa.edu.
### APPENDIX E

#### TABLE OF EVIDENCE

**Summary of Studies Including** tobacco use, cessation interventions, cessation settings, and training for tobacco cessation

<table>
<thead>
<tr>
<th>Purpose (Author(s), year)</th>
<th>Design &amp; Key Variables</th>
<th>Sample &amp; Setting</th>
<th>Measurements</th>
<th>Results or Findings</th>
<th>Author’s Conclusions; Limitations &amp; Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The purpose of the study was to identify the current trend in the national tobacco prevalence among youth (Arrazola et al., 2015)</td>
<td>Quantitative study</td>
<td>22,007 middle and high school students</td>
<td>Current use = use of a tobacco product ≥1 day during the past 30 days.</td>
<td>In 2014, 4.6 million youths, including 3.7 million high school and 900,000 middle school students, reported tobacco use on one or more days in the past 30 days. From 2011 to 2014, e-cigarette and hookah use increased significantly among high school and middle school students, use of cigarettes, cigars, tobacco pipes, bidis, and snus decreased significantly.</td>
<td>Use of emerging tobacco products (e-cigarettes and hookahs) is increasing and thus comprehensive tobacco control and prevention strategies should address all tobacco products and not just cigarettes. Limitations: data were collected from public or private schools and might not be generalizable to all middle and high school-aged youth. Notes: Supports need for comprehensive tobacco screening</td>
</tr>
<tr>
<td></td>
<td>Demographic data</td>
<td>2011- 2014 National Youth Tobacco Surveys (NYTS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tobacco use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Supports need for comprehensive tobacco screening
<table>
<thead>
<tr>
<th>Purpose (Author(s), year)</th>
<th>Design &amp; Key Variables</th>
<th>Sample &amp; Setting</th>
<th>Measurements</th>
<th>Results or Findings</th>
<th>Author’s Conclusions; Limitations &amp; Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The purpose of the study was to identify potential use of non-cigarette tobacco products among young adults (Mays et al., 2016).</td>
<td>Quantitative study</td>
<td>60,192 interviews 18-29 years old respondents</td>
<td>Non-current smoker = have tried at least once in the past</td>
<td>Potential of young adults using hookah was 28.2%, e-cigarettes 25.5% and cigars 19.1% in the next year</td>
<td>Prevention strategies should focus on young adults to avoid future non-cigarette tobacco use</td>
</tr>
<tr>
<td></td>
<td>Demographic data, cigarette use status, non-cigarette use status, openness to using non-cigarette product</td>
<td>2012-2013 National adult tobacco survey</td>
<td>Current smoker = smokes daily or some days</td>
<td>Former tobacco product users are more likely to use non-cigarette products in the next year 36,697 respondents aged ≥18 years</td>
<td>Limitation: study finding is limited to young adults Note: Apart from increasing use, there is also increased desire to start using non-cigarette products which will change the landscape of tobacco prevalence in future</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Former smoker = smoked at least 100 cigarettes in the lifetime past</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Openness to using non-cigarette product = likelihood of using non-cigarette tobacco product in the next year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The purpose of the study was to determine the prevalence of tobacco use and identify current use trends among people with chronic conditions (Stanton et al., 2016)</td>
<td>Quantitative study</td>
<td>N= 335,080 respondents</td>
<td>Current tobacco user = use of the listed tobacco products in the past 30 days</td>
<td>29.6% had both tobacco use and chronic condition</td>
<td>Tobacco cessation services should be targeted for people with chronic conditions</td>
</tr>
<tr>
<td></td>
<td>Socio demographic data Tobacco use includes (cigarette, cigar, pipe, smokeless tobacco) Chronic disease conditions</td>
<td>National Survey on Drug Use and Health</td>
<td>Chronic conditions included were reported as the following 10 conditions told to be existing for the respondents by a medical professional in the past 12 months: heart disease,</td>
<td>From 2005-2013 tobacco use among adults without chronic condition declined from 30.2% to 26.1% Tobacco use among people with chronic condition remained stable from 37.2% to 36.4%</td>
<td>Limitations: self-reported data, findings applicable only to 10 different chronic conditions, direction of causal relationship between chronic condition and tobacco use is not predictable</td>
</tr>
<tr>
<td>Purpose (Author(s), year)</td>
<td>Design &amp; Key Variables</td>
<td>Sample &amp; Setting</td>
<td>Measurements</td>
<td>Results or Findings</td>
<td>Author’s Conclusions; Limitations &amp; Notes</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>--------------</td>
<td>---------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>The purpose of the study was to assess the association of 5As and use of cessation treatments (Kruger, O’Halloran, Rosenthal, Babb, &amp; Fiore, 2016)</td>
<td>Demographic characteristics, receipt of 5A, receipt of cessation intervention</td>
<td>N= 10,801 current cigarette smokers from 2009-2010 National Adult Tobacco Survey</td>
<td>hypertension, stroke, diabetes, asthma, lung cancer, hepatitis, human immunodeficiency virus (HIV) infection, anxiety, depression, and substance abuse</td>
<td>Among current cigarette only smokers 88.3% were ‘Asked’ about tobacco use, 66.4% were ‘Advised’ to quit, 43.4% were ‘Assessed’ for their willingness to quit, 38.6% were ‘Assisted’, and 6.3% were ‘Arranged’ a follow-up</td>
<td>Notes: high prevalence of tobacco use among people with chronic conditions, and is not declining unlike in general population</td>
</tr>
<tr>
<td></td>
<td>Current cigarette smoker= have smoked at least 100 cigarettes in the life time and currently smoke daily or some days and only use cigarettes</td>
<td>Receipt of smoking cessation intervention= receipt of 5A questions, cessation advice, and NRT during the last 12 months while visiting physician, dentist, nurse, or any other health care personnel</td>
<td></td>
<td>Health care professionals should be encouraged to provide all 5As for smokers</td>
<td>Limitations: subject to recall bias due to self-reported data, causal relationship between 5As and cessation treatment not identified due to cross sectional design, data did not categorise between the different types of health care professionale</td>
</tr>
<tr>
<td>Purpose (Author(s), year)</td>
<td>Design &amp; Key Variables</td>
<td>Sample &amp; Setting</td>
<td>Measurements</td>
<td>Results or Findings</td>
<td>Author’s Conclusions; Limitations &amp; Notes</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------</td>
<td>------------------</td>
<td>--------------</td>
<td>---------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>The purpose of the study was to evaluate the efficacy of tobacco cessation intervention during acute inpatient psychiatric hospitalization (Prochaska, Hall, Delucchi, &amp; Hall, 2014)</td>
<td>Randomized controlled trial</td>
<td>N= 224 patients</td>
<td>No smoking = biochemical verification of expired CO sample</td>
<td>Abstinence rate at 18 months post-intervention was greater (OR =3.15 ; 95% CI)Stage tailored intervention increased participants readiness to quit over the study time</td>
<td>Stage tailored tobacco cessation intervention supports tobacco cessation in hospitalized psychiatric patientsLimitation: single site study,Note: The study used Trans theoretical model for tailored intervention</td>
</tr>
<tr>
<td>The purpose of the study was to assess the prevalence of e-cigarette use among hospitalized patients (Rigotti et al., 2015)</td>
<td>Quantitative study Socio-demographic data, e-cigarette use</td>
<td>N= 4,660 cigarette smokers Nine acute care hospitals from five U.S. cities e-cigarette use= self-report of one or more e-cigarette use in the past 30 days prior to hospitalization</td>
<td>From 2010-2013, 14% of all cigarette smokers admitted used e-cigarettes In 2013, prevalence of e-cigarette use increased to 18% among hospitalized patients There is increasing prevalence in the e-cigarette users over 3.5 years</td>
<td>There is substantial increase in the use of e-cigarette use among hospitalized patients, requiring hospitals to consider developing regulations regarding e-cigarettesLimitations: data is from enrollees for a different study and thus some data may be missed, if smokers didn’t want to quit. Variation in the question asked among different centers would</td>
<td></td>
</tr>
<tr>
<td>Purpose (Author(s), year)</td>
<td>Design &amp; Key Variables</td>
<td>Sample &amp; Setting</td>
<td>Measurements</td>
<td>Results or Findings</td>
<td>Author’s Conclusions; Limitations &amp; Notes</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------</td>
<td>------------------</td>
<td>--------------</td>
<td>---------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>The purpose of the study was to assess the utilization of MI by RNs after education on MI based communication (Efraimsson, Fossum, Ehrenberg, Larsson, &amp; Klang, 2012; Lindson-Hawley, Thompson, &amp; Begh, 2015)</td>
<td>prospective observational study</td>
<td>Nurse led COPD clinics in Sweden</td>
<td>Motivational interviewing treatment integrity scale Evocation= extent to which the nurse understands the patient’s motivation for change Collaboration= extent to which the nurse behaves as if the communication is occurring between two equal partners Autonomy= extent to which the nurse supports and actively fosters patient perception of choice Direction= degree to which the nurse maintains appropriate focus on specific target behaviors Empathy= extent to which the nurse attempts to ‘try on’ what the patients feel or think</td>
<td>Except for Direction, nurses scored low scores on all MI behaviors such as evocation, autonomy, and empathy</td>
<td>MI based communication education did not help in motivational interviewing for tobacco cessation Nurses like to give more information than supporting motivation for change Limitations: videotaping can affect nurse’s behavior, participant bias since they knew about the study Note: Education alone may not be sufficient to practice MI</td>
</tr>
</tbody>
</table>

have affected the sample
<table>
<thead>
<tr>
<th>Purpose (Author(s), year)</th>
<th>Design &amp; Key Variables</th>
<th>Sample &amp; Setting</th>
<th>Measurements</th>
<th>Results or Findings</th>
<th>Author’s Conclusions; Limitations &amp; Notes</th>
</tr>
</thead>
</table>
| The purpose of the study was to identify the effectiveness of combining individual and telephone counselling in smoking cessation interventions as compared to individual counselling or telephone counselling alone (Ramon et al., 2013) | Multi center randomized trial  
IV: Individual counselling, telephone counselling and combination of both  
DV: sustained smoking abstinence | N= 600 participants  
Six smoking cessation clinics in Spain | Sustained smoking abstinence= absence of smoking for 52 weeks measured by exhaled CO | Individual counselling and combined individual and telephone counselling had significantly higher abstinence rate than telephone counselling | Individual counselling and combined individual and telephone counselling are both effective in tobacco cessation  
Limitation: abstinence was measured through self-report until the 52 week  
Telephone group had high attrition rate  
Note: Supports individual counseling |
| The purpose of the study was to examine the impact of telephone-delivered care coordination on utilization of and adherence to cessation pharmacotherapy after hospital discharge (Tague et al., 2016) | Randomized controlled trial  
IV: counseling with care coordination  
DV: Adherence to pharmacotherapy | N= 487 participants  
In-patient university hospital setting | Adherence to pharmacotherapy= self-reported utilization, duration of use, and type of medication during the 3 months post-discharge | Use of pharmacotherapy post-discharge was significantly associated with use of pharmacotherapy during hospitalization  
Counselling alone or counselling with care coordination did not show difference in adherence to pharmacotherapy post-discharge | Insurance coverage and use of medications during the hospitalization are associated with higher use of evidence-based treatment post-discharge.  
Note: supports initiation of pharmacotherapy during hospitalization |
### Study 1: Tobacco Screening and Cessation Assistance

**Purpose**
The purpose of the study was to assess the tobacco screening and cessation assistance done through outpatient setting (Jamal, Dube, & King, 2015).

**Design & Key Variables**
- Quantitative study
- Demographic data, tobacco use, tobacco assistance received

**Sample & Setting**
- N = 148,727 outpatients
- 2005–2010 National Hospital Ambulatory Medical Care Survey

**Measurements**
- Tobacco use = current use cigarettes, cigars, snuff, or chewing tobacco
- Cessation assistance = documentation of either tobacco counseling or cessation medications

**Results or Findings**
- Tobacco screening was done for 63% of outpatient visits
- 24.5% of the screened tobacco users received cessation assistance
- Smoking cessation was significantly higher among those who visited a doctor compared to those who did not visit a doctor

**Author’s Conclusions; Limitations & Notes**
- Opportunities for tobacco screening and cessation assistance is missed during outpatient visits
- Limitations: screening did not include all tobacco products
- Notes: 75% of tobacco users are not receiving the cessation assistance through outpatient clinic visits

### Study 2: Quitline vs. Web-based Cessation Intervention

**Purpose**
The purpose of the study was to describe the differences between users of quitline and web based tobacco cessation intervention with respect to demographics, smoking and quitting behaviors, smoking abstinence rates, and predictors of successful quitting (Neri et al., 2016).

**Design & Key Variables**
- Quantitative study
- Socio demographic data, tobacco use

**Sample & Setting**
- N=4,086 participants
- Enrollees of state tobacco cessation program from Alabama, Arizona, Florida, and Vermont

**Measurements**
- Self-report questionnaire recommended by North American Quitline Consortium: 37 questions including basic demographic data, reason for enrolling in quitline or Web-based services, the referral source, and smoking-related question

**Results or Findings**
- Quitline users were older and less educated, less likely to be employed, more likely to be single, and heavier smokers than web based users
- At 7 months follow-up, abstinence rate was 32% for quitline users and 27% for web-based users

**Author’s Conclusions; Limitations & Notes**
- Demographic and smoking characteristics differ among quitline and web based cessation program users
- Limitations: study focused only on self-selected, state based tobacco cessation program, Study focused on single intervention users while many users might be using different programs at the same time
<table>
<thead>
<tr>
<th>Purpose (Author(s), year)</th>
<th>Design &amp; Key Variables</th>
<th>Sample &amp; Setting</th>
<th>Measurements</th>
<th>Results or Findings</th>
<th>Author’s Conclusions; Limitations &amp; Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The purpose of the study was to identify the impact of surgery on tobacco cessation among in-patients and out-patients (Shi &amp; Warner, 2010)</td>
<td>Quantitative study</td>
<td>N= 5,498 subjects</td>
<td>Number of quit events=number of quitters undergoing a procedure x (incidence rate ratio- 1)/incidence rate ratio</td>
<td>From 1992-2004, 44.5% of smokers quit smoking. Quitting was higher among those undergoing major surgery 20.6/100 person years of follow-up and 10.2/100 person-years among out-patient surgeries. The quit rate was estimated as 6.27/ 100 person years. Quitting was higher among persons who had at least one major surgery. Quitting was higher among persons who had at least one major diagnosis.</td>
<td>Surgical event is a teachable moment for tobacco cessation. Cessation is more likely with major procedures than out-patient surgeries. Limitations: secondary analysis of data providing only an estimate, self-reported data, only four surgical categories were analyzed, data does not suggest what intervention contributed to cessation. Note: Major in-patient procedures are associated with higher tobacco cessation, requiring cessation services.</td>
</tr>
<tr>
<td>The purpose of the study was to evaluate the effectiveness of tailored smoking cessation support by the practice nurse (PN), cluster randomized controlled trial IV: Quitline referral, PN intervention, Usual care</td>
<td>N= 2390 smokers</td>
<td>Sustained abstinence = ≥1-month abstinence at the 3-month follow-up point and ≥10 months at the 12-month follow-up</td>
<td>The sustained and point prevalence abstinence rates, respectively, at 3 months by group were: PN intervention 13.1% and 16.3%; Quitline</td>
<td>No difference was noted among the three groups of intervention, however those who received intense PN...</td>
<td></td>
</tr>
<tr>
<td>Purpose (Author(s), year)</td>
<td>Design &amp; Key Variables</td>
<td>Sample &amp; Setting</td>
<td>Measurements</td>
<td>Results or Findings</td>
<td>Author’s Conclusions; Limitations &amp; Notes</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------</td>
<td>------------------</td>
<td>--------------</td>
<td>---------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>and compare this to other forms of cessation support. (Zwar et al., 2015)</td>
<td>DV: smoking abstinence</td>
<td></td>
<td>point prevalence abstinence= ≥7 days sustained abstinence at the 3- and 12-month follow-up points</td>
<td>referral 10.8% and 14.2%; Usual GP care 11.4% and 15.0%. At 12 months, the rates were: PN intervention 5.4% and 17.1%; Quitline referral 4.4% and 18.8%; Usual GP care 2.9% and 16.4%.</td>
<td>intervention is more likely to quit. Limitation: intervention did not vary in number of contacts depending on nicotine dependence, lost participants might have relapsed smoking, no biochemical validation for cessation was performed. Note: event though no difference was observed through PN intervention, PN intervention shows comparable effect to that of GP and quitline referral.</td>
</tr>
<tr>
<td>The purpose of the study was to identify facilitators and barriers for adherence to tobacco cessation guidelines by nurses (Katz et al., 2016)</td>
<td>Mixed method design IV: Perceived barriers and facilitators to tobacco cessation guideline DV: Self-reported adherence to Tobacco cessation guideline</td>
<td>N = 245 nurses for survey N= 218 nurses for interview IC: Nurses in the Medical Unit EC: Float nurses, registry nurses, Licensed Practical Nurses</td>
<td>Decisional balance questionnaire-20 item questionnaire to assess positive and negative attitude towards tobacco cessation (Park et al., 2001) Semi-structured interview to assess</td>
<td>Barriers for adherence: lack of skill in counselling, skepticism about effectiveness of counselling, resistance from patients, lack of time and resources such as electronic referral. Nurses need training to negotiate behavioral change and to integrate cessation interventions into workflow. Limitations: Only nurses from Medical Unit was surveyed.</td>
<td></td>
</tr>
<tr>
<td>Purpose (Author(s), year)</td>
<td>Design &amp; Key Variables</td>
<td>Sample &amp; Setting</td>
<td>Measurements</td>
<td>Results or Findings</td>
<td>Author’s Conclusions; Limitations &amp; Notes</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------</td>
<td>-----------------</td>
<td>--------------</td>
<td>---------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Experimental study</td>
<td>Experimental study</td>
<td>N= 39 subjects</td>
<td>Wisconsin smoking withdrawal scale (Welsch et al., 1999) and Positive and Negative Affect Schedule (Watson, Clark, &amp; Tellegen, 1988)</td>
<td>High overall satisfaction on cessation intervention</td>
<td>Intervention was feasible and acceptable for patients</td>
</tr>
<tr>
<td>IV: tobacco cessation intervention</td>
<td>DV: tobacco cessation</td>
<td>IC: Smokers from U.S university hospital in-patient setting EC: Patients in intensive care unit, Neurology, and psychiatry unit</td>
<td></td>
<td>93% smoked at least one cigarette after discharge</td>
<td>More intensive interventions needed for cessation</td>
</tr>
<tr>
<td>The purpose of the study was to examine the feasibility and acceptability of a tobacco cessation intervention (Schulte et al., 2016)</td>
<td>N= 39 subjects</td>
<td>IC: Smokers from U.S university hospital in-patient setting EC: Patients in intensive care unit, Neurology, and psychiatry unit</td>
<td></td>
<td>No one used tobacco quit-line after discharge</td>
<td>Limitations: small sample, high attrition Note: proactive referral and NRT not used in this study</td>
</tr>
<tr>
<td>Quantitative study</td>
<td>N= 333 Clinical Staff</td>
<td>1. Survey on satisfaction and perception of knowledge at 2 months and then 15 month post tobacco training</td>
<td>86% of participants delivered tobacco cessation interventions 15 months post-training (p&lt;.0002)</td>
<td>Extreme satisfaction with the training showed significant</td>
<td>Training health care staff can increase the confidence level and delivery of cessation services.</td>
</tr>
<tr>
<td>IV: examining effect of training at 2 months and then 15 months post education</td>
<td>Midwestern VA Medical Center</td>
<td>IC: All clinical staff members in VA medical center (mostly RNs)</td>
<td></td>
<td></td>
<td>Limitation: Limited generalizability due to low survey response rate time 1 and time 2. Potentially different participants at time 1 and time 2.</td>
</tr>
<tr>
<td>IV: Clinical staff training (mostly nurses)</td>
<td>DV: Self-reported delivery of a tobacco cessation intervention and comfort with delivery</td>
<td>No exclusion criteria mentioned</td>
<td>2. Self-reported survey on how often tobacco cessation message was provided to patients</td>
<td>Nearly 75% of participants anticipated barriers in implementing tobacco tactics intervention</td>
<td></td>
</tr>
<tr>
<td>Purpose (Author(s), year)</td>
<td>Design &amp; Key Variables</td>
<td>Sample &amp; Setting</td>
<td>Measurements</td>
<td>Results or Findings</td>
<td>Author’s Conclusions; Limitations &amp; Notes</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------</td>
<td>------------------</td>
<td>--------------</td>
<td>---------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>increase in confidence level for providing cessation intervention</td>
<td>Self-reported measurement from staff rather than recorded data</td>
<td>Notes: Significance of staff education in increasing confidence</td>
</tr>
</tbody>
</table>
Reviews on tobacco cessation

<table>
<thead>
<tr>
<th>Purpose (Author(s), year)</th>
<th>Design &amp; Key Variables</th>
<th>Sample</th>
<th>Measurements</th>
<th>Results or Findings</th>
<th>Study Limitations &amp; Your Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>To provide a concise review on efficacy, effectiveness, and affordability of health-care interventions to promote tobacco cessation support (West et al., 2015)</td>
<td>Cochrane review of randomized controlled trials&lt;br&gt; IV: tobacco cessation intervention&lt;br&gt; DV: abstinence rate, effectiveness, affordability</td>
<td>N= 13 studies&lt;br&gt; IC: Systematic reviews of the efficacy of health-care tobacco cessation from interventions&lt;br&gt; Cochrane library&lt;br&gt; EC: Mass media campaign, e-cigarettes</td>
<td>Health-care intervention= pharmacological treatment, advice or support from a health-care worker, printed materials or automated systems delivered to individuals or groups</td>
<td>Brief advice from a health care worker during a health care service can promote smoking cessation.&lt;br&gt; Proactive telephone support, text messaging programmes and printed self-help materials can assist to quit, and are affordable globally.&lt;br&gt; NRT combined with behavioral support is effective in helping to quit.</td>
<td>The review did not include non-cigarette tobacco products&lt;br&gt; The review does not provide the effect of health care setting on the outcome&lt;br&gt; Notes: High level of evidence&lt;br&gt; Supports use of proactive telephone and educational hand-out</td>
</tr>
<tr>
<td>The purpose of the review was “to determine the effectiveness of interventions for smoking cessation that are initiated for hospitalised patients”. (Rigotti, Clair, Munafò, &amp; Stead, 2012)</td>
<td>Intervention review&lt;br&gt; IV: Smoking cessation intervention done for hospitalized patients&lt;br&gt; DV: Abstinence rate</td>
<td>50 trials between 1990-2011&lt;br&gt; IC: randomized and quasi randomized controlled trials of tobacco interventions done for hospitalized patients&lt;br&gt; EC: patients admitted to psychiatry and substance abuse treatment&lt;br&gt; Studies without abstinence rate&lt;br&gt; Studies without 6 months follow up</td>
<td>Abstinence from smoking at least 6 months after intervention&lt;br&gt; Biochemically validated quit rate&lt;br&gt; Self-reported quit rate</td>
<td>Hospital based tobacco cessation counselling and follow up for at least one month increases smoking cessation rate&lt;br&gt; NRT along with intensive counselling significantly increases cessation rate</td>
<td>If the tobacco intervention is of low intensity, there is no evidence of effect on cessation</td>
</tr>
<tr>
<td>Purpose (Author(s), year)</td>
<td>Design &amp; Key Variables</td>
<td>Sample</td>
<td>Measurements</td>
<td>Results or Findings</td>
<td>Study Limitations &amp; Your Notes</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------</td>
<td>--------</td>
<td>--------------</td>
<td>---------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>The purpose of the study was to determine whether or not motivational interviewing (MI) promotes smoking cessation (Lindson-Hawley et al., 2015)</td>
<td>Randomized controlled trials</td>
<td>28 studies N = 16,803</td>
<td>Tobacco cessation= sustained abstinence for minimum 6 months, preferably with biochemical verification</td>
<td>MI has a modest but significant increase in quitting (risk ratio (RR) 1.26; 95% CI , compared to brief advice or usual care Single session MI increase the likelihood of quitting than multiple sessions MI delivered by physicians had higher cessation rate than nurses and counselors</td>
<td>MI may support people for quitting</td>
</tr>
<tr>
<td>The purpose of the study was to assess the potential of MI as a treatment within health care setting (Lundahl et al., 2013)</td>
<td>Ranomized controlled trials</td>
<td>N= 48 studies 9618 participants</td>
<td>Medical outcome= prognostic markers, disease endpoints, risk reduction behaviors, physical functioning and quality of life, substance abuse, patient adherence to medical advice and treatment protocols, patient approach to change</td>
<td>The overall magnitude of the effect of MI was OR = 1.55 (95% CI: 1.40–1.71) MI had statistically significant effect on smoking abstinence OR= 1.34 (95%CI:1.05/1.70)</td>
<td>Effect of MI is robust across different medical setting and for medical outcomes and efficacious in brief sessions Limitations: only published studies are used, only 8 studies tested for fidelity</td>
</tr>
</tbody>
</table>

*Note. DV=dependent variable; EC= exclusion criteria; IC= inclusion criteria; IV= independent variable; NRT=nicotine replacement therapy; MI=motivational interviewing*