A CRITICAL LOOK AT ISSUES FACING SMOKING CESSATION PRACTICES IN RURAL POPULATIONS

By

SUSAN FISHER WEEKS RN, BSN

A manuscript submitted in partial fulfillment of the requirements for the degree of

MASTER OF NURSING

WASHINGTON STATE UNIVERSITY
Intercollegiate College of Nursing
Spokane, Washington

DECEMBER 2004
To the faculty of Washington State University:

The members of the committee appointed to examine the Intercollegiate College of Nursing research requirements and manuscript of SUSAN FISHER WEEKS find it to be satisfactory and recommend that it be accepted.

Chair

Lorna Scheeram

[Signature]
ACKNOWLEDGEMENTS

I would like to thank the following people for their contribution in this research project.

Dr. Billie Severtsen, thank you for your willingness to take on the job of manuscript chair with such short notice. Your kindness, expertise and encouragement made it possible to turn this portion of my requirements into a wonderful experience.

Dr. Lorna Schumann for helping me in so many ways; your kindness, always being there for me, and your clinical expertise, strength and attention to detail. I will never forget our trip to Ecuador, which touched me forever.

Dr. Phyllis Eide, for your expertise, encouragement and support.

Dr. Merry Armstrong for your addiction expertise and support of my manuscript and goals.

My husband Tracy, for his patience and love in the absence of his wife.

My daughter Jennifer, for her scholarly expertise and confidence in my abilities.

My daughters Lissa and Nattalie, for their love, support and encouragement.

My daughter Susanne for her patience, understanding and love in spite of my absence at times.

My son Matthew, whose enduring courage, gave me strength and encouragement to continue.

My son Mark, for his faith and encouragement in my abilities to accomplish whatever I put my mind to.

My daughter-in-law Bethany, for her spirit, encouragement and support.

My son-in-law Kelly, for your encouragement and support.

My parents Ralph and Bonnie for their never ending love, encouragement, and
support.

My brothers, Jeff and Greg, for their love, confidence in my abilities and encouragement.

Sally and Ron, for their love, encouragement and support.
A CRITICAL LOOK AT ISSUES FACING SMOKING CESSATION

PRACTICES IN RURAL POPULATIONS

Abstract

By Susan Fisher Weeks
Washington State University
December 2004

Chair: Billie Severtsen

Tobacco use causes over 440,000 premature deaths each year in the United States and is the single most preventable cause of death and disease (CDC, 2002). Tobacco use is a risk factor for many types of cancer, heart disease, chronic pulmonary disease, and stroke. Health costs associated with tobacco use have created an economic health burden of more than fifty billion dollars. Although nationally the current cigarette smoking prevalence is 25% for men and 21% for women, in rural areas adults and adolescents continue to exceed these percentages. As nurse practitioners can play an instrumental role in maintaining the health of rural residents, the Transtheoretical Model (TTM) can be used as a valuable and practical tool to evaluate the patients’ readiness for change and help facilitate interventions in assisting patients in rural communities with smoking cessation.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>v</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>vi</td>
</tr>
<tr>
<td>PURPOSE STATEMENT</td>
<td>1</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>Significance</td>
<td>2</td>
</tr>
<tr>
<td>Definitions</td>
<td>3</td>
</tr>
<tr>
<td>Health Problems Associated with Cigarette Smoking</td>
<td>6</td>
</tr>
<tr>
<td>Character of Rural Populations</td>
<td>9</td>
</tr>
<tr>
<td>Rural health Problems</td>
<td>11</td>
</tr>
<tr>
<td>Barriers to Health Care</td>
<td>13</td>
</tr>
<tr>
<td>Instrumental Role of Rural Practitioner</td>
<td>18</td>
</tr>
<tr>
<td>TRANSTHEORETICAL MODEL</td>
<td>21</td>
</tr>
<tr>
<td>Temporal Dimension – Stages of Change</td>
<td>22</td>
</tr>
<tr>
<td>Dependent Variable Dimension</td>
<td>24</td>
</tr>
<tr>
<td>Independent Variables</td>
<td>24</td>
</tr>
<tr>
<td>Clinical Practice Guidelines</td>
<td>27</td>
</tr>
<tr>
<td>LITERATURE REVIEW</td>
<td>35</td>
</tr>
<tr>
<td>Rural</td>
<td>36</td>
</tr>
<tr>
<td>Elderly</td>
<td>42</td>
</tr>
<tr>
<td>Other Cessation Programs</td>
<td>45</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

Transtheoretical Models .................................................47

Benefits and Risks .......................................................51

SUMMARY .................................................................52

REFERENCES ..............................................................57

APPENDIX A ..............................................................65

APPENDIX B ..............................................................67

APPENDIX C ..............................................................68

APPENDIX D ..............................................................69

APPENDIX E ..............................................................70

APPENDIX F ..............................................................73

APPENDIX G ..............................................................74
PURPOSE STATEMENT

The purpose of this manuscript is to assess the magnitude of the problem of smoking in rural settings, address the differences between rural and urban population settings and review the relationship between the Transtheoretical Model of Change and the model's actual potential for developing cessation programs. This manuscript will address the Transtheoretical Model's implications for a practical smoking cessation tool for the Nurse Practitioner to utilize in rural settings.

The objectives of this manuscript will be to identify the prevalence of smoking in rural communities; describe the variables that influence the phenomenon, along with discussion of associated health problems. The manuscript will also provide the reader with some of the difficulties rural Nurse Practitioners face in their practices and discuss the effectiveness of the use of the Transtheoretical Model in addressing the problem of smoking cessation and how Nurse Practitioners can effectively use this model.

The goal of this review of the literature is to evaluate the appropriateness of the Transtheoretical Model as a tool for tobacco cessation in rural populations. In addition, another goal is to discuss formulating interventions that could assist the Nurse Practitioner to motivate the patient along the continuums of change in the Transtheoretical Model, providing a consistent and effective model that can be applied to rural patients who smoke. Due to the lack of evidence-based research regarding smoking cessation with rural populations, the author will address the
appropriateness of the Transtheoretical Model and its application to rural areas through an evidence based literature review.

INTRODUCTION

Significance

Tobacco use causes over 440,000 premature deaths each year in the United States and is the single most preventable cause of death and disease (CDC, 2002). Cigarette smoking is a risk factor for many types of cancer, for heart disease, chronic obstructive pulmonary disease, and stroke (National Cancer Institute, 2000). In conditions where smoking is an etiological factor, one in five deaths has been attributed to cigarette smoking.

With all of the data available to the public, there are still approximately 45 million current smokers in the United States (Henley, Hasselblad, Sloan, Talor & Thun, 2002). Currently, cigarette smoking prevalence among adults in the United States is 25% for men and 21% for women as reported by the National Center for Health Statistics report (p.34, 2003.) The costs to the public are enormous when looking at the mortality and comorbidity associated with cigarette smoking. The economic burden placed on the American taxpayers in actual health costs totals more than fifty billion a year, along with another forty-seven billion in lost productivity (Agency for Healthcare Policy & Research, 1996).

The relevance of this substantial health problem is brought to light by the Center for Disease Control and Prevention (CDC) placing tobacco use among their top ten 2010 Leading Health Indicator used to measure the health of the
nation over the next ten years (CDC, 2000). Because of its significance as a health problem in the United States, television, radio, news media and health professionals are continually educating the public about the harmful affects of cigarette smoking. In spite of what appears to be overwhelming evidence concerning the harmful effects of tobacco use, more than half of the individuals who initiate regular smoking, continue until one year before their death (Garvey, Kinnunen, Krall, Nordstrom, Utman & Vokonas, 2000).

The significance of smoking as a substantial health problem in rural populations is pointed out by the CDC, ‘Health, United States, Urban and Rural Chartbook’ in the most current reported statistics (p.18, 2001), which states, “Adults living in most rural counties are the most likely to smoke (27% of women and 31% of men).”

Definitions

For purposes of this manuscript the relevant concepts of: current smoker, tobacco cessation program, cessation behaviors, smoking cessation programs, health, health promotion, tobacco environmental risk factors, Transtheoretical Model, rural, urban, metropolitan and Nurse Practitioner will be defined below.

Current smoker is defined as a person who has smoked at least 100 cigarettes in their entire life time and who now smokes every day, or some days. The number of cigarettes smoked every day or some days is not pertinent in the definition of current smoker (CDC, 2003). Tobacco cessation programs are defined as programs designed to promote health and wellness and provide a structure to motivate individuals to stop smoking altogether (Albright, McBride,
Sargent & Tilson, 2001). Cessation behaviors are defined by the Oxford Dictionary of English, (Simpson, 2004) as ceasing, discontinuance or stopping permanently a manner of conducting oneself in the external relationship of life. Smoking cessation programs are defined by the United States Coast Guard/Homeland Security Department: Health and Safety Directorate (2004) as a program intended to assist people who desire to stop smoking through awareness, education and intervention.

Pender (1996) defines health as a concept that evolves over time. “Health is the actualization of inherent and acquired human potential through goal directed behavior, competent self-care, and satisfying relationships with while adjustments are made as needed to maintain structural integrity and harmony with relevant environments” (p.22). Health promotion is defined by Pender (1996) as strategies related to personal choices and to lifestyles that increase the individual’s level of well-being (Newell-Withrow, 2000).

Tobacco environmental risk factors are defined as the availability and accessibility of tobacco products, cigarette advertising and promotion practices, cigarette prices making cigarettes generally affordable, culture’s perception that tobacco use is normal, peers and family use and approval (Healthy People 2010, 2004).

The Transtheoretical Model (TTM) and Stages of Change are identified by the literature as an influential theoretical model within the discipline of health psychology. The TTM addresses a motivational readiness continuum of changes in unhealthy behaviors. The TTM is divided into three dimensions: the temporal
dimension which is the stages of change construct, the dependent variable
dimension, which includes behavior, decisional balance, and self-efficacy or
temptation, and the independent variables that include the processes of change
construct (Johnston, O’Donnell & Neff-Smith, 2001). See Appendix A for a brief
description of the core constructs of the Transtheoretical Model, (Glanz, Lewis &
Rimer, 2002).

The definition of rural is defined by the U.S. Census Bureau (2000) as a
census designed place with fewer than 2,500 inhabitants who are located outside
of an urbanized area. Urban is defined by the U.S. Census Bureau (2000) as any
incorporated place or Urban area as a city and its surroundings that is a densely
settled territory with a combined population of 50,000 or more and a population
density of 1000 people or more per square mile and a total population exceeding
100,000 or one with at least 50,000 people. Metropolitan is defined as a county or
counties that contain one, all or part of the main city or urbanized area, which are
metropolitan in character and are economically and socially integrated with the
main city.

Nurse Practitioner (NP) is defined as a registered nurse who has advanced
education and clinical training in a health care specialty area. In rural areas NP’s
often practice independently, performing many of the health care duties usually
provided by physicians. These duties include obtaining medical histories and
performing physical examinations, diagnosing and treating acute health problems
and chronic diseases (University of Alaska, Anchorage, 2004).
Health Problems Associated with Cigarette Smoking

Cigarette smoking is a risk factor for many types of cancer, heart disease, chronic obstructive pulmonary disease, and stroke (National Cancer Institute, 2000). In order to understand the relationship between smoking and cessation, it is imperative to understand nicotine's addictive nature and the health problems associated with cigarette smoking. Nicotine contains many dangerous compounds, including carbon monoxide, tar, aromatic hydrocarbons, hydrogen cyanide, ammonia, and nitrosamines. Cigarettes contain more then 4,000 substances, 43 being known carcinogens including arsenic and formaldehyde. When a patient smokes, the chemicals vaporize. Nicotine wraps around the tar and is absorbed into the lungs. Within seven seconds of inhalation nicotine interacts with nicotine receptors in the brain in high concentrations, with the average smoker delivering 200 to 300 boluses of nicotine to their brain each day (Cody, 2001). The drug then immediately produces a feeling of stimulation and pleasure/reward, greater alertness, along with many physical sensations. As little as one episode of smoking in susceptible people can cause physical addiction to nicotine (Cody, 2001).

In Buchanan’s (2003) examination of theories of dependence, Buchanan describes how nicotine use leads to adaptation, resulting in tolerance for that individual. The nervous system adapts to nicotine and withdrawal occurs when nicotine is withdrawn. To avoid withdrawal consequences, the person continues to smoke. The dependency model acknowledges that once a person becomes
addicted and to prevent withdrawal syndrome, that person must continue to maintain a constant blood level of nicotine. Upon cessation from using nicotine, the physical addiction effects usually last from two to four weeks. During this period most relapses occur and are related to physical withdrawal symptoms and psychological cravings for nicotine (Johnston, Neff-Smith, & O’Donnell, 2001). Physical withdrawal can be characterized by a fall in basal metabolic rate; heart rate, blood pressure and a change in electroencephalogram rhythms and rapid eye movement sleep patterns. A common complaint of physical withdrawal is a craving for nicotine. Other physical side effects of withdrawal include, restlessness, inability to concentrate, daytime drowsiness, fatigue, headache, nausea, increased appetite, and alteration in bowel habits, restlessness and irritability. Although physical withdrawal is significant, it appears that the psychological addiction can last much longer, from several years up to the lifetime of the individual (Buchanan, 2003).

Evaluating the smoker’s level of nicotine addiction is an important part of the assessment process for the Nurse Practitioner. Measuring the patient’s level of nicotine addiction does not come in one simple test. There are a variety of paper and pencil tests and physiological instruments used to assess a patient’s level of addiction. The Fagerstrom nicotine dependence instrument (FTND) (Appendix B) and the Brief Fagerstrom test for nicotine dependence (Appendix C) (Johnston, Neff-Smith & O’Donnell, 2001), provides the Nurse Practitioner with reliable and valid information for evaluating nicotine dependence (Buchanan, 2003; Johnson, Neff-Smith & O’Donnell, 2001). Within 30 minutes
of rising, heavily addicted smokers tend to have their first cigarette. They also smoke more and have increased difficulty not smoking for several hours. For the nurse practitioner, this information is crucial when counseling and formulating interventions specific to the individual (Buchanan, 2003).

Nicotine is not only addictive; it is also very dangerous to one’s health. Tobacco related diseases include lung cancer, emphysema, hypertension, stroke and heart disease. Types of cancer associated with smoking includes esophagus, larynx, kidney, pancreas and cervical. Each day in the United States there are 1,205 people who die from smoking related diseases. Smoking is responsible for 87% of the lung cancers, 18% of deaths from stroke, and 82% of the deaths from Chronic Obstructive Pulmonary Disease, and 21% of the deaths from heart disease (American Lung Association, 2003). In the Surgeons General’s 2004 Report: ‘Health consequences and smoking on the human body,’ the list of diseases has been expanded that are caused by smoking to include aortic aneurysm, acute myeloid leukemia, cataracts, pneumonia, periodontitis, stomach cancer, reproductive problems and SIDS. In understanding how one chemical in smoking can be so devastating to an individual’s health, the Surgeon General’s 2004 report points out that Benzene is a known cause of acute myeloid leukemia. Ninety percent of Benzene exposures are from smoking. In 2003, 10,500 Acute Myeloid Leukemia cases were diagnosed.

Although avoiding initiating cigarette smoking altogether would be the primary prevention goal, there is a significant reduction in the risk, disease and deaths, which can be directly related to smoking cessation. The health benefits
for smokers before and after 65 years of age are mostly pulmonary and cardiovascular (Cataldo, 2001). According to Cataldo (2001) research studies continue to emphasize that the greatest benefits from smoking cessation continue to be for those who quit smoking before the age of forty. No matter the age, if the smoker quits smoking, there is clearly an increase in lung function compared to those who continue to smoke regardless of the age of smoking initiation, age of smoking cessation or number of cigarettes smoked each day. This benefit is shown within 24 hours of smoking cessation and is reflected in decreased carbon dioxide levels. Pulmonary cilia function begins to improve within several days of smoking cessation, along with sputum volume decreasing within several weeks. Studies show that within five years of quitting, the risk of cancer of the esophagus, bladder, mouth, throat and stroke are reduced by 50%. Within ten years of quitting, pancreatic and lung cancer risks are reduced by 50% and there is also a significant reduction in the risk of peripheral artery disease, coronary heart disease and ulcer occurrence. After five to fifteen years of abstinence, the risk of stroke is reduced to that of a nonsmoker (Adams-McNeill, Calabro & Reeve, 2000). Pregnancy, fetal and infant complications decrease upon cessation and the risk of low birth weight infant decreases, if cessation is initiated during the first three to four months of pregnancy (Mazzei & Make, 2004).

Character of Rural Populations

The importance of understanding the demographic variables, diversity issues, socioeconomic and environmental risk factors and the challenges associated with living in rural communities are important for all Nurse
Practitioners working with this population. Fifty million people or 20% of the United States population live in rural areas, yet only 9% of the nation’s physicians practice in these areas (Ricketts, 1999).

To understand the diversity of rural populations and the challenges associated with living in a rural area, one only has to look at the array of descriptions and definitions by various experts and agencies in their attempt at define rural. Definitions of rural vary widely depending on the source. Boik and Weinert (1995) acknowledge that too many, rural implies images of cornfields, livestock, orchards, recreation opportunities and dessert landscape. To others, it represents a place to get away, take a break from the business of urban and metropolitan life styles, and may even translate into descriptions of little traffic, unlocked doors at night, a farmer in suspenders, or talking about your neighbor who is a mile or more away.

For others, rural means frontier, outhouses, living without electricity and running water. For an example of frontier, one would only have to look at areas in the state of Montana, where a population density of less than one person per square mile is typical (Boik and Weinert, 1995). To local, state and federal agencies, the descriptors become even more confusing, with breaking down population centers into detachable units of distance and populations related to urban and metro that provides a more confusing definition of what a rural area represents.

Stamm (2004) reflects that no approach to defining rural populations is altogether satisfactory. Definitions are “always arbitrary and many important
variables are not taken into account” (p. 24). In their quest to provide a clearer description, Boik and Weinert (1995) believe current definitions and typologies fail to adequately capture the inherent variability of the urban/rural continuum. The authors developed the Montana State University Rurality Index, to measures the degree of rurality in a community. Primary variables include county population and the distance to emergency care. Acknowledging the vast number of variables, the variety of definitions and difficulties in defining rural, for purposes of this paper, rural will be defined by the U.S. Census Bureau as any census defined place with less than 2500 inhabitants outside of an urban area (U.S. Census Bureau, 2000).

Rural Health Problems

Twenty percent of the nation’s population lives in rural counties. Health, United States, Urban and Rural Chartbook (2001) is the most current statistical publication and is produced by the National Centers for Disease Control. It is a compilation of statistical data on adverse health behaviors, health outcomes and access issues of rural residents in the Urban and Rural areas. The significant data specific to rural areas, acknowledges rural counties in the United States as having:

- The highest death rates for children and young adults.
- The highest death rates for unintentional and motor vehicle traffic-related injuries.
- Among men, the highest mortality for ischemia heart disease and suicide.
- High levels of adolescent smoking. Over 80 percent of the adults, who are addicted to tobacco, began smoking as adolescents. Adolescent rates in
rural counties are approximate 19%, considerably higher than in large
metro areas with rates of 11%.

- Poverty in the rural counties is higher in the South and West, with the
  Southern rural counties having the most poverty at 19%. The poverty level
  nationally ranges from 11 to 19%. Poverty status is based on family size,
  family income, and number of children in the family and with families with
  two or fewer adults, the age of the adults in the family.

- Residents of the rural counties are less likely to have a dental visit during
  the past year and there are fewer specialist physicians and dentists per capita
  in rural counties.

- Rural counties have high percentages of adult residents with activity
  limitations caused by chronic health conditions.

- Residents of rural counties have the highest obesity rates at 23%. In large
  metro area the prevalence is 16%.

- Adults living in the rural counties are the most likely to smoke (27% of
  women and 31% of men in 1997-98) when compared to the national average
  of 21% of women and 25% of men.

- Rural counties have a high percentage of residents with no health insurance.

The data emphasizes the important differences between rural and urban
populations, along with identifying health concerns specific to rural residents.
Rural residents have greater health needs than their urban counterparts due to
overall poorer health status and inadequate health care resources (Burman &
Weinert, 1994). Rural residents rely more on informal networks with an emphasis
on self-reliance and what some call an overall distrust of outsiders (Leight, 2003; Johnson, 1999). Rural residents often describe their health as poor or fair, and indicate that the types of health care they receive and its timeliness compares unfavorably with their urban counterparts (Rickets, 1999). Rural residents defined health in themes related to hardiness, independence, self-reliance, ruggedness and the ability to perform (Leight, 2003) which is no surprise to many who work in rural communities. Information regarding adverse health behaviors, access issues, resources and rural perceptions of health should be taken into account by the rural Nurse Practitioner when developing interventions that will promote movement through the Stages of Change continuum. Nurse Practitioners should tailor their communications to match intervention messages to the particular needs of their patients (Evers, Prochaska & Redding, 2002).

Barriers to Health Care

The U.S. Congress, Office of Technology Assessment (OTA), report, Health Care in Rural America (OTA, 1990) (a landmark publication on rural populations in the United States), identifies several characteristics of rural populations that directly relate to the health care status and barriers facing rural residents. This report remains to date, the most current federal government report describing people's access in rural America to basic health care services. This report focuses on the availability of health care and factors affecting those trends. The report discusses the relatively high rates of chronic disease, barriers to obtaining health care, including economic factors, weather, fewer rural hospitals and insufficient numbers of health care providers and a lack of resources for
providers and residents. Rural residents have lower than average incomes and higher poverty rates than their urban counterparts. The report describes poverty and its direct link to substandard housing and limited resources to buy healthy food, health insurance and medicine. The report also acknowledges the higher proportion of elderly living in rural America. According to Johnson (1996), 33% of adults over 65 years old live in rural areas in the United States, with social isolation remaining a factor for many elderly in rural communities. The use of preventative screening services by rural residents is often less than that of urban residents.

In the late 1990’s, the OTA commissioned the Federal Office of Rural Health Policy (ORHP) to produce a follow up report to the landmark 1990 OTA publication. Their findings cited many of the same problems confronting rural communities in the 1980’s continued in the 1990’s, along with a continued shortage of health professionals of all disciplines (Ricketts, 1999). The ORHP report acknowledged Rural America representing 20% of the nation’s population, yet it had only 9% of the nation’s physicians. Rural patients continue to see providers less often and when they do see a provider it is usually later in the course of their illness than do their urban counterparts and that they use specialty services significantly less often (Stamm, 2003).

The ORHP (1999) report identifies rural populations as very vulnerable with regards to access to health care (Stamm, 2003). Their health infrastructures can be poorly developed and fragile. The report also states the continued high prevalence of chronic illness and disability, the hardships faced by rural residents
due to their socio-economic system, and the barriers of distance and transportation availability continue to create fundamental problems of access to care. Although there has not been an in depth study since the ‘Health Care in Rural America’s’ publication in 1990, the Centers for Disease Control and Prevention’s publication, ‘Health, United States, urban and rural health, chartbook’ (2001), does provide statistical data that was presented earlier in this manuscript that substantiates the initial landmark OTA 1990 report and the ORHP’s (1999) follow-up report revealing the continued adverse health issues facing rural areas in the United States.

The ORHP (1999) report also points out that besides location; there are many differences between rural and urban populations. Important differences include regional patterns of concentration and dispersion, age and income structures and considerable differences in access to health care services (Ricketts, 1999). According to the ORHP 1999 report, rural residents are also more likely to have no health insurance coverage when compared to their urban counterparts. Two thirds of those who said they were unable to obtain needed health care stated it was because they had no health insurance or could not afford the health care. Other factors differentiating rural from urban and metropolitan counterparts is their lower education attainment levels and having a more difficult time recruiting and retaining qualified medical personnel.

Among the barriers to access discussed by the ORHP (1999) report is lack of public transportation systems (Stamm, 2003). Many rural communities have no bus or taxi services. Of the communities that maintain minimal transportation
services, these services usually are accessible only within the main population centers. As the ORHP report (1999) points out, only 12% of communities with populations less than 2,500 have public transportation systems. Private ownership of vehicles is also a problem for many living in rural communities due to the low incomes of many residents. Much of Rural America does not reside within the city limits, but lives significant distances, many on unpaved access roads where the nearest clinic or town can be an hour or more away in good weather.

Distance and access play a significant role in services accessed by rural residents as described by Newell-Withrow (2000). This study found the majority of participants reported receiving their health care from private physicians, private clinics and also using the health departments and emergency rooms for basic health care services. Their use of the emergency room and health department was influenced by having to travel over mountains and their lack of health care insurance.

Economic barriers prevent many rural residents from receiving adequate health care. Rural economics weigh heavily on rural communities whose economic base usually includes declining agriculture roles whose outcomes are heavily based on weather and insect variables, mining and forestry industries that fluctuate by independent government and environmental regulations and market controls, and increases in service industries that pay low wages and provide no insurance benefits (Stamm, 1999). Although there are manufacturing jobs, many are low-wage industries with little or no worker benefit, including healthcare. Many rural residents are self-employed, many are considered the working poor
and those who do have health insurance coverage have health policies that are far leaner in coverage with higher deductibles than their urban counterparts. Poverty and low paying jobs are very common denominators in Rural America and reflect the limited opportunities and earning potential. Other barriers found in rural America include dispersed populations, lack of economic development, and availability of employment and training services. Support services and local resources are limited. The county seat may contain limited support services, but most of the services do not reach farther than the town limits (ORHP, 1999).

When looking at factors that affect higher rates of smoking in rural counties, the Health, United States, Urban and Rural Chartbook (2001) identified two factors for the higher smoking rates. The factors include delays in access to medical and media resources that could change unhealthy behaviors and the lower educational attainment that is strongly associated with smoking. Casteldo (2001) emphasizes research by Pomerleau (1997), which demonstrates that smoking is becoming a habit of the disadvantaged, and the less affluent and the less educated. Adults with 9 to 11 years of education have a higher smoking prevalence than adults with 16 years or more education. Both of these factors help emphasize the scope of the smoking problem in Rural America.

As recently as January 30, 2004, the CDC’s Morbidity & Mortality Weekly Report (MMWR) highlighted the rates of smoking as highest among people living in poverty and that the negative health effects of tobacco use are of major concern for state Medicaid programs. Medicaid recipients have a 50% greater smoking rate, than the overall U.S. population. Rural areas also have a substantially higher
Medicaid population due to lack of job opportunities, low income jobs, lower education levels and lack of private health insurance coverage.

Instrumental Role of Rural Practitioner

Health Care in Rural America, OTA report (1990) recognizes primary care practitioners as the cornerstone of the health care system in rural counties. Primary care practitioners make up the majority of rural healthcare providers. In the 1999 ORPH follow-up report, the commission stated that the relative shortage of health care professionals in rural areas throughout the United States is one of the few constants as one describes the U.S. medical system (Ricketts, 1999). Subspecialty providers are usually concentrated in urban areas due to the sparse or dispersed population in rural counties, making it impossible to financially support these practitioners. This report also emphasizes that the subspecialty providers expand their urban practices and increase their patient base by targeting individuals living in rural area with private health insurance.

The ORPH (1999) report identifies family physicians as the largest source of physicians in rural areas. It also identifies non-physician professionals, including Nurse Practitioners practicing in rural areas, as having grown substantially and this trend is likely to continue. The ORPH (1999) report acknowledges non physician professionals are especially suited for working in smaller rural practices because they require a lower level of capital support than physicians and they often prefer the greater autonomy that they receive in rural practice.
The ORPH (1999) report also identifies the multiple health care roles held by the primary care provider, including providing the bulk of mental health in rural counties, with relatively little training. Despite the difficulties, the U.S. Department of Health and Human Services Clinical Practice Guideline for smoking cessation (Fiore et al., 1996) identifies all primary care providers in rural areas as being in a unique position because of their extraordinary access to the smoking populations. Primary care providers have a high level of influence over the health of their patients. In clinical studies researched by the private-sector panel, they found clinicians not capitalizing on the opportunity to access the smoking population about half of the time (Fiore et al., 1996). Some reasons for providers not consistently confronting tobacco use among their patients are time restraints, a lack of effective clinical skills relating to psychological, physical and support issues, frustration over low success rates and for some, believing it is not an important professional responsibility. Statistics show that 70% of all smokers desire to quit. Even though 70% of smokers see a practitioner each year, only 37% report receiving advice about smoking cessation from their health care provider (Cole, 2001).

Healthcare in the United States continues to expand its scope of practice to non-physician health care providers Cooper, Laud, & Dietrich, 1998). Non-physician professionals have become an important component of health care resources in rural areas, providing a substantial proportion of the primary health care needs of the general population in rural areas. Because of physician shortages, Nurse Practitioners representation in rural areas has risen to such an
extent that nurse practitioners and physician’s assistants are expected to equal the number of family physicians in practice by 2005 (Cooper, Laud, & Dietrich, 1998).

In summary, tobacco use is the single most preventable cause of death in the United States today. The health costs associated with tobacco have totaled over 50 billion dollars for the American taxpayer. Even though preventing initiation of smoking would be a primary goal, studies indicate that there are numerous health benefits to the smoker and reduction in costs to the taxpayer when smokers give up their smoking behavior. Although the national smoking prevalence is 25% for men and 21% for women, in rural areas adult and adolescent rates continue to exceed these percentages.

The factors that influence the increase in use of tobacco products in Rural America include; economic barriers, lower average incomes and high poverty rates, lower educational attainment, minimal or no health insurance, higher rates of Medicaid participants, access to providers, distance, transportation, lack of resources for provider and residents, availability of health care, society norms, and lower use of preventative screening services when available.

Research identifies primary care providers to be in a unique position when it comes to their access to the smoking populations. Nurse practitioners are an important component of health care resources in Rural America. By providing a substantial portion of the primary health care needs of the general population in rural areas, it places Nurse Practitioners in a good position to address this important health issue. It seems evident from the preceding discussion of rural
demographics, that the impact of interventions by Nurse Practitioners would have more of an impact than those same interventions in urban areas, with the Nurse Practitioner making a tremendous contribution.

TRANSTHEORETICAL MODEL

The Transtheoretical model (TTM) was developed in 1993 by DiClemente, Prochaska, Rossi and Velicer. The Transtheoretical Model (TTM) and Stages of Change is identified by the literature as an influential theoretical model within the discipline of health psychology, emerging from a comparative analysis of leading theories of psychotherapy and behavior change (Evers, Prochaska & Redding, 2002). During the developmental phase of the Transtheoretical Model, ten processes of change were identified with consciousness raising from the Freudian tradition, helping relationships from Rogerian tradition and contingency management from Skinnerian tradition, all characterizing various stages of change in people. The Transtheoretical models initial studies were with smoking, but have since expanded to a broad range of health and mental health behaviors including; substance abuse and alcohol, eating disorder, obesity, high-fat diets, HIV/AIDS prevention and many others. Appendix A briefly describes the Transthoeretical Model core constructs (Glanz, Lewis & Rimer, 2002). The TTM addresses a motivational readiness continuum of changes in unhealthy behaviors explaining how individuals make and internalize behavior change (Cassidy, 1999). The TTM is divided into three dimensions, the temporal dimension and
central organizing construct, the dependent variable dimension, and the independent variables.

**Temporal Dimension - Stages of Change**

First, is the temporal dimension, the central organizing construct identified as the Stages of Change (Evers, Prochaska & Redding, 2002). Stages of Change imply phenomena occurring over time. The TTM addresses change as a process-involving progress through a series of six stages: precontemplation, contemplation, preparation, action, maintenance and termination. (Appendix A.) Precontemplation is where patients do not intend to take action in the foreseeable future, measured as in the next six months. Presence in this stage can be from misinformation, uninformed or under informed about the consequences of their behavior. Individuals may also find themselves in this stage because of repeated attempts to change, failing, and have become demoralized by their inability to change. This person does not consider cigarette smoking to be a problem and refuses to quit (Mallin, 2002).

Contemplation is where there is intention to change in the next six months. There is a heightened awareness of not only the pros, but also the cons of changing. This awareness results in a difficult balance between the costs and benefits of changing and can keep the patient circling in this stage because of their profound ambivalence. At this stage the smoker evaluates the pros and cons and finds the cons slightly outweigh the pros at this point. Traditional programs that would expect patients to take action would not be appropriate for this patient.
When an individual has been thinking they need to change and plans on doing so in the next month they have moved to the preparation stage (Mallin, 2002).

The preparation stage is seen as a stage where patients intend to take action in the immediate future, typically measured as the next month and have typically taken some significant action in the past year. The smoker has a quit date set and determines how cessation will be accomplished (Mallin, 2002). In this stage recruitment for action-oriented programs would be appropriate.

The action stage is where the individual has made observable behavioral changes with actions. The individual now implements the cessation plan developed during the preparation stage. The action stage encompasses the first six months post-cessation (O’Donnel, Johnston & Neff-Smith, 2001).

Maintenance is accomplished when the patient has actively stopped smoking for more than six months (Mallin, 2002). This is the stage where patients strive to prevent relapse, and are not applying change processes as frequently as patients in the action stage. There is less temptation and increasing confidence that they can continue their changes. Maintenance of abstinence from smoking lasts from six months to about five years. Data shows that after twelve months of continued abstinence, 43% of the individuals return to regular smoking and it isn’t until five years of continuous abstinence that the risk of relapse decreases to 7% (Evers, Prochaska & Redding, 2002). These statistics reinforce the necessity for continued positive reinforcement and counseling by the health care professional even after cessation occurs.
The last stage in the Stages of Change continuum is termination. This is where individuals do not succumb to temptation, having total self-efficacy. This is where no matter what the circumstances, they will not return to their unhealthy habit of smoking as a way of coping. Less emphasis has been given to this TTM construct, because it may not be a practical reality for the majority (Evers, Prochaska & Redding, 2002).

**Dependent Variable Dimension**

The second dimension is called the dependent variable dimension. The dependent variable dimension includes decisional balance, self-efficacy and temptation. This is where the smoker self-identifies their ability to provide a means of understanding how changes in attitudes, intentions and behaviors occur (Prochaska & DiClemente, 1983). Here one weighs the pros and cons of changing, reflecting the decisional balance construct. Self-efficacy is the confidence individuals have in specific situations that they can cope with a high-risk situation and not relapse to unhealthy or high-risk behaviors. The self-efficacy construct was integrated from Bandura’s (1982) self-efficacy theory (Evers, Prochaska & Redding, 2002). Temptation reflects the degree of individual urges to engage in certain habits, when they are in the middle of a difficult situation. The three most common types of tempting situations are cravings, negative affect or emotional distress and positive social situations.

**Independent Variables**

The third dimension of the TTM is the independent variables that include the processes of change construct (Johnston, O’Donnell & Neff-Smith, 2001).
Appendix D denotes the processes of change, mediating progression between the Stages of Change (Glanz, Lewis & Rimer, 2002). When individuals progress through the stages, they use processes of change, implementing activities that are covert and overt in nature. The independent variables make up the processes of change, which are both experimental and behavioral. The variables that experimental processes include are consciousness raising, dramatic relief, self-revaluation, environmental reevaluation, and self-liberation. The experimental processes importance is directed more towards assisting with the processes of precontemplation and contemplation in the Stages of Change construct. Here, there is an increased awareness that a problem exists and that in order to deal with the problem some action needs to be taken (Cassidy, 1999). The behavioral processes include helping relationships, counterconditioning, reinforcement management, stimulus control and social liberation (Glanz, Lewis and Rimer, 2002). As the behavioral processes focus directly on behavioral changes, they are more effective in the transition from preparation to action and maintenance. See Appendix A for a description of the independent variables, processes of change.

The following ten processes have received the most empirical support (Evers, Prochaska & Redding, 2002). The processes of change include:

- **Consciousness raising** is an increased awareness regarding the cause, consequences and cure for a certain problem behavior. Dramatic relief begins by producing an increase in emotional experiences and is followed by reduced affect, if the appropriate action is taken. Self-revaluation is a combination of affective and cognitive assessments of the individuals self image with and without a
particular unhealthy habit. Environmental reevaluation combines cognitive and affective assessments regarding how the presence or absence of a personal habit effects one’s social environment. An example would be the effect of smoking on others. Self-liberation is the processes of believing one can change and commit and is recommitment to act on that belief. Helping relationships is a process of change that incorporates trust, caring, openness and acceptance, as well as support for healthy behaviors. Counterconditioning requires substituting problem behaviors for healthier behaviors. Contingency management formulates into consequences for moving in a particular direction. Emphasis is on reinforcements. Stimulus control uses such things as avoidance and self-help groups to remove cues for unhealthy habits and adding prompts for healthier alternatives. Social liberation requires individuals to increase social opportunities or alternatives, especially for those who are deprived or oppressed.

The TTM theory, research and practices are driven by the several critical assumptions about the nature of behavior change and those interventions that can best facilitate the change (Evers, Prochaska & Redding, 2002).

- No single theory can account for all of the complexities of behavior change, therefore it is theorized that a more comprehensive model will be more successful.
- The process of behavior change unfolds overtime.
- Chronic behavioral risk factors and stages are both stable and open to change.
- The Traditional action-oriented prevention programs do not serve the
majority of at-risk populations.

- For progress through the stages to occur, specific processes and principles of change need to be applied at specific stages.

Several key points characterize the usefulness of the Transtheoretical Model. Identifying where the individual is in the stage of change processes is conducive to what information and interventions a Nurse Practitioner will initiate and how a patient will react to the counseling. Being supportive and allowing the patient to move back and forth through the stages of change is conducive to growth and prepares the patient to deal with the results and temptations, remembering that the process of behavioral change unfolds over time. When a Nurse Practitioner provides the patient with interventions to match their stage of change, research supports increased success with helping individuals change behavior (Cassidy, 1999).

Clinical Practice Guidelines

In the early 1990’s, an expert panel was formed by the Agency for Health Care Research and Policy (now the Agency for Healthcare Research and Quality, AHRQ) to develop the Smoking Cessation Clinical Practice Guideline No. 18 (Fiore et al., 1996). The need for these practice guidelines was determined by several factors which include the related morbidity and mortality, prevalence, economic burden, ability of available data to base recommendations for care and variations in clinical practice. The guidelines address barriers to effective smoking cessation interventions and produced specific evidence-based recommendation to guide clinicians and smoking specialists. Since the
publication of this original guideline, there has been a significant amount of new research on tobacco use and treatment. Because of this new research, the panel was reconvened in 1998 to produce an update to the initial 1996 guideline (Fiore, et al., 2000).

The new guideline is titled, ‘Treating Tobacco Use and Dependence, a Public Health Service-Sponsored Clinical Practice Guideline;' updating the recommendations based on evidence published through January 1, 1999 (Fiore, et al., 2000). The title is representative of three facts about tobacco use. The first acknowledges that all tobacco products produce devastating costs for the health and welfare of the nation. Second, for most people using tobacco products, the result is true drug dependence, which is comparable to the dependence of opiates, amphetamines, and cocaine. Third, the chronic use of tobacco warrants clinical intervention, just as other addictive disorders. The 2000 panel felt that clinicians failed to appreciate the chronic nature of tobacco dependence, which resulted in lower motivation by clinicians to treat it consistently. By identifying tobacco use as a chronic condition, the panel believes it will increase the clinician’s understanding of the patient’s vulnerability to relapse, which requires ongoing, rather than just acute, care. Current, AHRQ 2000 recommendations encourage providers to ask all patients if they use tobacco and should document their tobacco use status regularly through a screening tool. They also identify the importance of assessment and documentation of smoking status and the relationship between increasing the frequency the clinician intervenes with the smoking patient. Short, consistent smoking cessation information on a regular
basis by the provider is still considered to be very effective in clinical practice settings.

In the past, behavioral change strategies of fear, confrontation, coercion and paternalism were used to encourage smoking cessation, even though research shows they are not effective motivators for behavioral change (Daugherty, Riegal, Saarmann, 2000). These types of strategies produce poor results in clients. When coercion is used, it adopts a negative perception of the patient promoting a counter productive pattern.

The key recommendations of the updated AHRQ guidelines include: (Fiore, 2000)

- Clinicians should understand tobacco use’s chronic nature and that it may require repeated interventions.
- Patients willing to quit should be provided a treatment that is identified as effective by the panel guidelines and patients unwilling to try to quit should be provided a brief intervention that is designed to increase their motivation to quit.
- Clinicians and health care delivery systems should provide consistent identification, documentation and treatment of all of their tobacco users within their system.
- There is a strong connection between the dose-response relation and the intensity of tobacco dependence counseling and its effectiveness.
- There are three effective types of counseling and behavioral therapies. These should be used on all patients attempting cessation. As part of their
treatment, provisions should be made; problem solving/skills training, social support from within and secure social support outside of treatment.

- Pharmacotherapy’s for smoking cessation should be used with all patients attempting to quit smoking, unless contraindicated.

- Relative to other medical and disease prevention interventions, tobacco dependence treatments are both clinically effective and cost-effective.

In initiating the Transtheoretical Model, the Nurse Practitioner must first identify the patient as a current smoker and determine the patient’s continuum on the Stage of Change construct. See Appendix E for a suggested approach to smoking cessation using the TTM and Stages of Change that has been modified for rural Nurse Practitioners. The nurse practitioner’s assessment of their patient is multifaceted and includes a patient’s smoking history, their readiness to change, nicotine dependence, motivators for cessation and barriers to quitting. The smoking history should include current and past patterns of tobacco use, the number, types and lengths of attempts to quit, reasons for quitting, what worked, what didn’t work and why from the patients viewpoint, any changes in ability to function during abstinence and reasons for relapse (Cataldo, 2001). Since 40% of current smokers are not considering quitting in the near future, Cataldo (2001) emphasizes the importance of assessing the patient’s readiness to change, along with any motivations to quit. Reasons why they may not want to quit include, misinformation, demoralization because of their inability to change or resistance to change.
Another part of the assessment is identifying the patient’s degree of nicotine dependence. There is a direct relationship between heavy smoking consumption, tolerance and withdrawal (Cataldo, 2001). A useful tool to assess nicotine dependence is the Fagerstrom Test for Nicotine Dependence (Appendix B) or the Brief CAGE Questionnaire for Smoking (Appendix C) (Mallin, 2002). In addition to assessing dependence, addressing motivators as improved health and discussing barriers such as weight gain, withdrawal and failure have been found to be beneficial to the patient. Interventions by the Nurse Practitioner should be designed specifically at targeting the patient’s current stage in the continuum. The message should be personalized, along with using the techniques motivational interviewing and behavioral management when counseling your patients. Always take into account their level of understanding, socioeconomic background, educational level, mental health disorders, and amount of alcohol consumption, transportation issues and family support. Fiore et al., (2000) contends that the information and education provided should always be culturally sensitive and educationally age appropriate. Interventions for patients living in rural areas may require the Nurse Practitioner to alter or redefine their interventions from those patients living in urban areas.

The Transtheoretical Model uses the Stages of Change construct to identify a patient’s readiness to change, matching the stage with research-supported processes. Assessing the patient’s readiness to change, the Nurse Practitioner will place the patient in one of the five stages along the continuum. Now the Nurse Practitioner has the potential to move the patient along the health continuum with
the end result, successful incorporation of healthy lifestyle changes. It is important to approach smoking cessation as a process of change over time. Contemplation today does not mean action tomorrow. Assessing the smoker’s readiness for change by identifying their current stage of behavior is crucial in formulating interventions that will move the patient to the next stage. For instance, handing a patient a prescription for nicotine patches, when they are in the precontemplation stage is of no benefit to the patient. Why would the patient use a nicotine patch when they believe the cons out weigh the pros to quitting? Yet, I have observed this happen in clinic and hospital settings over and over again. A prescription is given to the patient, the patient is told to use the prescription if they decide to quit and the practitioner believes he/she has dealt with the issue, at the same time the script never finds it way to the pharmacy. The patient is no further ahead in the stages of change continuum then they were before they entered the office. The provider is asking the patient to move from the precontemplation stage to the action stage without the appropriate counseling and applicable interventions.

The next step in the TTM is to choose an intervention that will be appropriate for the patient’s readiness to change. The Nurse Practitioner should personalize the message, know the patient, identify their level of understanding, educational background, family support and attempt to identify and understand the psychological and physical issues the patient will be confronting during the processes of change. Barriers should be identified that would keep the smoker from moving on to the next stage. Also, it should be remembered that
motivational interviewing and behavioral management are also part of the equation when counseling the patient. See Appendix E for a suggested modified rural approach to smoking cessation, based on the TTM for readiness to change, (Mallin, 2002).

Interventions in the precontemplation stage consists of teaching, providing the patients with educational material from handouts and videotapes, to brief one-to-one counseling sessions about the effects of smoking, discussing patient ambivalence and expressing concern. Patients in this group tend to avoid talking, reading and thinking about their high-risk behaviors (Evers, Prochaska & Redding, 2002). Interventions need to be individualized. Patients should encourage the patient to think about their smoking and the possibility that it is a problem. Recommend behavior changes and list options for achieving behavioral changes. Also discuss the patient’s reactions to the Nurse Practitioner’s feedback and recommendations. Finding effective modalities and designing interventions that will be most successful for a given rural population/individual will be far more productive. Nurse Practitioners should always assess the patient’s perception of their need to change. Motivation to change is essential to move forward to the next stage.

In the contemplation stage the provider would continue to provide further education about the effects of smoking. The Nurse Practitioner should encourage the patient to consider the positive aspects of not smoking, addressing a more positive self image, improved health, and economic savings (Mallin, 2002).
In the preparation stage it is appropriate to discuss various nicotine replacement systems along with the need for social and family support. The Nurse Practitioner should assist the patient with developing a plan to quit. Here the patient sets a definite quit date. Have the patient gather support for the cessation. Have them prepare the environment by removing cigarettes, ashtrays and other smoking related paraphernalia. Tobacco users need to formulate a plan to avoid triggers. If the patient is able to afford pharmacotherapy, select a nicotine replacement system, and/or if preferred, initiate bupropion (Welbutrin.) Bupropion decreases the patient’s urge to smoke through its affect on dopamine and norepinephrine neurotransmitter systems. Combined use of a nicotine replacement system and initiation of bupropion is the most effective pharmacotherapy to treat nicotine dependence (Mallin, 2002). If used in smoking cessation, bupropion should be started one to two weeks before the patient’s quit date. Another element crucial for success is a positive attitude for both the patient and the Nurse Practitioner.

The action stage begins on the patient’s quit date. During this stage, frequent office visits and/or telephone calls from support personnel can help enhance the effectiveness of the cessation attempt (Mallin, 2002). It is important for the Nurse Practitioner to discuss benefits, side effects of medications and talk about current or anticipated difficulties in maintaining abstinence at this point. Behavioral supports can be met through self-help or professionally run group meetings or frequent office visits.
In the maintenance stage it is important for the Nurse Practitioner to continue positive reinforcement of tobacco cessation. The purpose of the contacts is to support the patients continued tobacco cessation. The contact should be made weekly in the first month and again when the patient stops nicotine replacement and/or bupropion therapy. Mallin (2002) acknowledges the importance of the patient reporting perceived benefits from having stopped smoking, side effects of pharmacotherapy, along with current or anticipated difficulty in maintaining abstinence. Address the need for healthy substitute behaviors that can be helpful in preventing relapse.

Relapse is typically seen in the first six to twelve months of a smoking cessation attempt. Patients may not return immediately after a relapse. They may also smoke for months before another office visit. When the patient returns, it is important to reevaluate the patient’s readiness to change and repeat the smoking cessation process. The Nurse Practitioner needs to encourage the patient to try again. A thorough review of the treatment plan is needed to determine what was effective and what didn’t work (Mallin, 2002).

LITERATURE REVIEW

The literature review will be grouped into the following; rural, elderly, other smoking cessation programs and non-rural studies using the Transtheoretical Model and studies identifying benefits and risks. The review of the literature found a few studies with application of the Transtheoretical Model in their interventions for rural smokers. However, there are numerous studies
with application of the TTM using vulnerable populations, such as low income, lower educational attainment, elderly and patients with chronic health problems related to tobacco cessation.

**Rural**

Baturka, et al., (1997) studied a coalition of black churches to address health problems of African American residents in two rural Virginia counties. These counties were not contiguous with each other, being separated by over twenty miles, with different health districts. The two counties were selected because of their similar size, similar demographic populations and same number of predominately black churches. Because of the churches’ central role in these communities, they were chosen as the principle sites to develop the smoking cessation intervention. The coalition provided an organizational framework for the development and implementation of the interventions. Discussions regarding the development of programs to address adverse health behaviors, such as cigarette smoking in rural areas, are often difficult because the lack of existing services and the distances involved.

A total of 965 smokers were identified and 896 were selected for interviews. Participants were classified at baseline and at follow-up into a stage of change based on the TTM. The cessation program combined one-on-one counseling and self-help materials, because most of the participants’ surveyed said they would use these techniques, if available. The self-help material was based on a calendar style handout, hung from the refrigerator or wall and each page contained a goal for one day. Twenty-six counselors were chosen by their
churches and received eight hours of training. The counselors were trained to provide initial advice using the program and to provide brief active follow-up counseling. The overall smoking prevalence was 32.6% among men and 20.0% among women. Women were significantly more likely than men to be high school graduates and attend church regularly. Of the participants, 88% belonged to a specific church. Of the sample study, less then half of the participants attended church once a month.

After 18 months, respondents were contacted and success of the program measured. The baseline overall smoking prevalence at program inception was 25.8% which is much lower than the national average reported for African Americans. The smoking cessation rate at follow up in the intervention county was 9.6% and in the control county 5.4%. Besides higher cessation rates in the intervention county, they found that individuals who attended church more regularly were more likely to quit. There was demonstrated to be significantly more progress along the stages of change in the intervention counties than in the control county. The researchers found the interventions were associated with significant progress along the stages of change.

The goal of the study by Flynn, Secker-Walker, Skelly & Soloman (2000) was to reduce the prevalence of smoking among low-income rural women aged 18 to 64 years. The intervention objectives were to increase motivation and intention to quit and build confidence. The researchers used the Social Cognitive Theory, the Transtheoretical Model of behavior change, diffusion of innovation theory and communication theory to guide their content, approach and
interventions. The study was nonrandomized with two pairs of demographically matched counties assigned pre-intervention and post-intervention. Smoking prevalence at the end of the five-year study was significantly lower in the intervention counties than the comparison counties by 2%, which was a relative difference of 7.8%.

A third study using the Stages of Change construct was applied to rural African-American smokers by Schorling (1995). The study analyzed the smoking behavior of a population-based sample of African Americans in two rural southern counties in Virginia using the TTM. To collect the data they used a door-to-door household survey. Five hundred and fifty-six African-American smokers and recent quitters were interviewed concerning their smoking behavior and beliefs about quitting. The survey found that 51% were in the pre-contemplation stage, 28% were found to be in the contemplation stage, 17% in the preparation stage and that 4% were in the actions stage. Eight predictors of tobacco cessation found to have significant association with the stages of change are age, confidence in becoming a non-smoker, number of previous cessation attempts, measuring pros and cons, perceived desires of others; number of provider visits in the last year, and believing that quitting would improve their health. The researchers concluded that the research provided support for applying the Stages of Change model to African Americans who smoke.

Albright, McBride, Sargent & Tilson (2001) conducted a study in rural North Carolina looking at attitudes toward smoking and family-based health promotion among rural mothers and other primary caregivers who smoke.
Children who grew up with adults who smoke are more than twice as likely to smoke than children from a non-smoking household. The county population is approximately 45% African American, and 29% of all children and 20% of all persons reported household incomes below the poverty level. As part of a feasibility pilot evaluation of a school based tobacco prevention program, the study involved fourth or sixth grade children. Surveys were mailed to 501 adults of the fourth and sixth grade students. The surveys were anonymous. They used a standard survey questionnaire adopted for adult health risk behavior surveys. The approximate reading level of the instrument was the fifth grade level. The survey included four domains of measures: demographics, smoking characteristics, readiness and confidence for cessation, and attitudes and confidence related to children’s smoking behavior. There were no differences among nonsmokers and smoker caregivers in their attitudes about children smoking or wanting to prevent their children from smoking. Half of these same caregivers who smoked wanted to quit, but felt they did not have the confidence to do so. The caregivers received written materials, with homework like activities. The caregivers felt this process was the most accommodating to their financial and time restraints, along with providing the broadest reach. The activities encouraged adults who smoke to work with their children on activities that could provide the adults with assistance to quit smoking and at the same time provide the children with a powerful prevention message.

Colwell, McMillan, Miller, Smith, Stevens & Sweeney (2003) directed their research towards the 3000 young people who begin smoking each day.
Statistics show that tobacco use begins almost exclusively in adolescence and that 90% of the adults that smoke initiated smoking by the age of 19. The Stages of Change model was evaluated because the researchers believed that health programs frequently target smokers who are not ready to take action. Their research concluded that among adolescents, 40% are in the precontemplation stage, 20 to 30% are in the contemplation stage and 20% are in the preparation stage.

Their study looked at adolescents in urban and rural areas in Texas to determine whether adolescents in four stages of change provided significantly different ratings on evaluations of a tobacco awareness and cessation program. There were two samples included in this study. For analysis, the first sample consisted of a 6-month study on adolescents ranging in age from 12 to 18 years who were participating in the State of Texas-certified Adolescent Tobacco Use Awareness and Cessation Program (ATCP). Ninety-eight percent of the participants were in ATCP because they were found in violation of the State of Texas Tobacco law. The adolescents represented rural and urban regions of the state. The second sample consisted of facilitators that were certified in the ATCP curriculum. The facilitators attended a two-day workshop. The ATCP was four, 2-hour sessions over two weeks. In the workshops the participants analyzed their motivations for using tobacco, their behaviors and perceived barriers to changing their behavior. The researchers found clear differences between adolescents in different stages of change and how they rated the program. The adolescents in the
precontemplation stage on all four evaluations had significantly lower ratings of the program than in the other stages.

Adolescents in the preparation and actions stages had significantly higher rating on their four evaluations. This supports the Transtheoretical Model emphasizing the relevance of the message and motivation is higher in these stages. Results of the study showed attempts should be made to engage adolescents in precontemplation and contemplations stages. Providers should continue to capitalize on the processes of change used by individuals in these two stages and to focus on methods by facilitators to engage and motivate adolescents in the first two stages of change. Additionally, the study pointed out that when the facilitators know the stage of change they are better able to tailor messages and interventions to reach their audience. There were no comparisons made between rural and urban adolescent populations in this study.

A research study by Atav & Spencer (2002) explored the differences in health risk behaviors among 2,027 adolescents attending rural, suburban, and urban school districts in upstate New York. Risk behaviors regarding the use of tobacco, alcohol, and illegal substances, carrying weapons, and sexual activity were analyzed. The study used data from the 1996 Teen Assessment Project (TAP) questionnaire. The TAP program is an efficient, comprehensive collaborative research-based response to specific community needs. Juniors and seniors in high school were surveyed on a variety of health and socio-behavioral topics. The reason for the survey was to collect data to assist educators in designing programs directed to meet the needs of the students.
The results showed a relationship between location of school district and use of tobacco, alcohol and other drugs. Twenty-eight percent of students in rural areas reported frequent use of tobacco products, as compared to 17.6% of suburban and 15.4% of urban students. There are a significantly higher percentage of rural adolescents engaging in frequent use of alcohol compared to their suburban and urban counterparts. The odds-ratio indicated that rural adolescents are about twice, as likely as suburban and urban counterparts to use tobacco and drink alcohol frequently. From analysis of the data, the researchers found a consistent pattern emerging with rural students at most risk, followed by suburban and then urban adolescents at the lowest risk. Also for all of the findings, there was a statistical significance between location and risk behavior. The findings of the study reinforced the need to gather data with a specific focus on location and health risk behaviors and that intervention programs need to be developed to target the specific needs of rural adolescents.

Elderly

Although the research found no studies applying the TTM to rural elderly, three studies were reviewed in regards to health behaviors of the rural elderly. The first study by Smith & Stotts (2002) examined the tobacco use status of the elderly living in rural areas because of their reduced accessibility to cessation programs and their isolation. The study used a population based, stratified random sample of all rural areas in Arkansas. Names in each county were randomly selected from the phone exchanges. From a list of telephone subscribers, each ninth name was chosen. When a person answered the telephone
they were asked whether an individual aged 65 or older lived in the home. If they
did, the surveyor asked to speak to that person. Questions that were asked
included their current smoking behaviors, if they had seen a health professional in
the past twelve months and if they had been advised to quit smoking. The final
sample yielded 311, with the median age 72.9, with females outnumbering males.

The researchers found higher than expected smoking rates among the rural
elderly. They found that even at 75+ the smoking rates continued to be high, even
with the associated prevalence of multiple chronic health problems. The study
emphasizes the primary office visit as a prime opportunity for counseling the
elderly smoker, even though the study showed that less than half of those
receiving advice to quit, actually attempted to quit for at least a day. The
researchers concluded the need for more research on increasing the effectiveness
of office-based tobacco counseling among the elderly rural smoker and evaluation
of this high-risk population.

The second study on elderly rural health behaviors was by Arcury, Bell,
McDonald, Quandt & Vitolins (2000). Tobacco use was identified as one of the
adverse health behavior that played an important role in chronic diseases. The
objective of the study was to describe the prevalence and correlation of selected
health behaviors among rural older adults. The researchers found that older adults
in rural areas faced unique challenges in adopting health-promoting behaviors.
Access to care and use of health and community services are more difficult.
There is a limited access to food sources and exercise programs compared to
urban areas. Limitation to access to health education media and cultural norms
for older adults in rural areas plays a role in lack of receptivity to lifestyle modifications. The data for this study is from the Rural Health and Nutrition (RUN) project. Data was collected in two rural counties in eastern North Carolina. These counties were chosen for their characteristic rural environments such as economies based on agriculture and small manufacturing, low population densities, lack of major urbanized areas, and mix of recent migrants and long-term residents. The sample for analysis included 35 African Americans, 45 whites, and 34 Native Americans. The age range of the sample used for analysis was 70 to 94. Data was collected in two separate face-to-face interview sessions.

This research study showed that older adults in rural areas have a very high level of concern for preventive health. The researchers found a disconnection between the perception of performing the preventive behaviors and actually performing the behaviors among older adults. The most consistent factor associated with preventative health behaviors was in marital status. There was no outcome reported on smoking cessation preventative behaviors in this group. The researchers felt further research is needed to examine what ethnic differences may exist in barriers to performing preventive behaviors among older rural adult.

The purpose of the study by Johnson, (1996) was to describe the level of social support and describe the social support networks and perceived physical health of older rural adults. With 33% of adults over 65 living in rural areas, statistics and research reveals that they have more chronic illnesses and greater physical impairment than their urban counterparts. Participants in this descriptive study included eighty-two older adults (32 men and 50 women). Their ages
ranged from 64 to 98 years old. Weinert and Brandt (1987) collected data for the study using the Personal Resource Questionnaire (PRQ85). It is a two-part questionnaire. The first part describes 10 situations where a person may need help with, and asks them to identify their available social support resources and rate how satisfied they were with experiences they may have had with these resources. The second part of the questionnaire contains 25 items measuring perceived level of social support. The participants lived in an isolated western rural community with a population of less than 2500.

The results of the study indicated that older adults living in isolated rural areas perceive their health to be “fair” to “poor” along with decreased social support with only a few people in their social support network, increasing their risk for social isolation. Over one-third of the subjects responded that there was no one they could depend on in times of need. The isolated rural elderly did not have access to any form of public transportation, with many no longer able to drive. Slightly more then half of the subjects reported at least a moderate level of social support, while almost one half of them experienced a low level of support. There are also differences in social support and physical health according to gender, age and marital status for this isolated rural sample. Implications of the study suggest it is important to assess elderly health status, social network and access issues and utilize senior centers, church groups and radios.

Other Cessation Programs

The research objectives by Fuentes-Afflick, Gildengorin, Kaplan & Perez-Stable, (2004) was to investigate pediatricians’ and family physicians’ practice of
perceived barriers to tobacco cessation counseling with patients 18 years and younger. A stratified random sample of 429 individuals was selected from the 1997 American Medical Association Physician Master file of 1000 pediatricians and family physicians practicing in urban California. The main outcome measures are adherence to five components of the National Cancer institute smoking cessation counseling recommendations of anticipate, ask, advise, assist and arrange and what were perceived barriers to smoking cessation counseling. (Appendix F, 5 A’s interventions) (Spoljoric, 2000) (Appendix G, 5 R’s interventions) (Marlow & Stoller, 2003). Physicians in both specialties were found to be more likely to anticipate, ask and advise patients about their smoking than to assist with and arrange cessation activities or interventions. Family practice physicians were more likely than pediatricians to use the assist and arrange portions of the 5 A’s, including providing follow-up visits.

Between both specialties, the most commonly perceived barrier to counseling by the physicians was their belief that children would provide responses that would be inaccurate because of either the presence of their parents or the children’s fear that their parents would be notified of their answers. Pediatricians reported the lack of counseling skills in providing interventions to be more of a barrier than family practice physicians. The study concluded that there is a need for improved smoking cessation counseling skills and practices among providers treating children and adolescents.
Transtheoretical Models

Evidence based studies using the TTM model in application to smoking cessation are considerable. Adams-McNeill, Calabro & Reeve (2000) concur that Nurse Practitioners play a crucial position as primary care providers in providing support and that research regarding the effectiveness of the NP’s in promoting tobacco cessation is needed. The researcher utilized a randomized, pre and post-test control group design using the TTM to determine whether stepped-care was more effective than usual care for increasing tobacco cessation among their university health service ambulatory care clients managed by nurse practitioners. Their hypothesis tested ‘stepped care improves tobacco cessation.’ The study focused on the Stages of Change to examine if a stepped-care approach increased the effectiveness of Nurse Practitioners in providing advice to patient that would promote movement through the stages of change, resulting behavioral changes that lead to smoking cessation.

Their objectives were threefold:

- Initiate an office based system that would identify tobacco users along with providing consistent advice by NP’s about the topic of smoking cessation.
- Evaluate the change in stage of readiness to quit using tobacco products among university health service patients.
- Increase the rates of tobacco cessation among those receiving stepped care.
Subjects recruited for the study were from the university ambulatory clinic. The research team utilized a multiple choice questionnaire that was designed to increase self-disclosure of tobacco use by the patients and whether a participant had quit or intended to quit and if they intended to quit, when. All clinic personnel were provided study materials and an overview of the protocol. In the stepped-care group the NP’s procedures included:

- Determining where the client was on the stage of change for quitting tobacco.
- Advice about tobacco cessation was presented by the NP.
- Assisting the client with setting a quit date.
- Individualize smoking cessation counseling services that were available.

The data was collected and the clients were assigned to regular care groups that provided counseling on a variety of topics related to smoking. The NP’s found the stage of change model allowed them the opportunity to assess their client’s attitude about tobacco use and cessation, and dependent on the stage, plan individualized interventions. The study illustrated positive stage shift as the result of the NP counseling, with a potential to translate into real behavioral change.

Davies, Fish & Kohler (2004) used the TTM stages of change to measure 211 low income, African American hospitalized smokers. Fifty six percent of the subjects were high school graduates or above with the mean age at 44.6 years, with 66.9 % males. The data collection instrument used included items to assess the stage of change and two of the constructs, hypothesized to be associated with
change; decisional balance and perceived self-efficacy. They used discriminate analysis to examine the differences in self-efficacy and decisional balance across stages of change for tobacco cessation. The data supported an important proposition of the stages of change. People have different beliefs at different points of readiness to change. The study also supported the TTM in that perceptions regarding barriers, benefits and confidence to change for those patients who are less ready to change differ from such perception by those individuals who are more ready to change. Another observation by the researchers concluded that finding the expected associations helped to establish the utility of the TM constructs in treating smoking in a particular population.

Anderson & Keller (2002) studied the TTM variables link with theoretical concepts. A convenience sample of 79 current smokers was studied to determine the relationship among the stages of change and the processes of change. Results showed that participants in the precontemplation stage and preparation stage relied on specific processes, whereas participants in the contemplation stage did not. They also concluded that providers understanding of the processes of change that result in health behavior change will assist in promoting more effective health outcomes and to tailor promotion interventions.

Colwell, McMillan, Miller, Smith, Stevens & Sweeny (2003) evaluated a tobacco awareness and cessation program by adolescent in the four stages of change. The authors identified health programs that often target participants who are not ready to change. Results of this study provided important information for program planning, facilitator training and program delivery. They believe special
attempts should be made to engage adolescents in precontemplation and contemplation stages. Utilizing the processes of change and focusing on methods to engage and motivate were among the results.

An extensive seventy-one-page literature review by Adams, Hallion, Pagell & Spencer (2002) applied the TTM to tobacco cessation and prevention. The review explored the validity of the TTM constructs, the evidence for use of interventions based on the TTM, the identification of areas for further research and the description of populations using TTM constructs. There was a combination of database searches and manual journal search. They reviewed 148 articles, including 54 validation studies, 73 population studies and 37 interventions. The overall evidence supported the TTM's strong application to tobacco use. The staging matched intervention studies, provided positive results, and was of better quality than those studies not supportive of stage-matched interventions. Population studies indicated the TTM constructs were applicable to a wide variety of general and special populations. Their conclusion showed strong and growing evidence for validity of the TTM, as it applies to tobacco use, although not conclusive. The research showed tailored interventions to a smoker's stage was more often successful, than non-tailored interventions in moving the patient forward in the Stages of Change construct.

The purpose of Heupcey & Montagna's (2000) literature review was to identify effective methods that could be used by nurse practitioners to assist them in identification and counseling of smokers. The articles were analyzed and categorized into three different groups: office-wide interventions used to increase
provider identification and counseling, provider smoking cessation training programs and studies using the Stages of Change Theory. Results showed that office-wide reminders and provider smoking cessation programs increased identification and counseling of patients who smoke. The Stages of Change Theory was helpful in explaining the steps the smokers must progress through and interventions appropriate for various stages as they move through the cessation process. The researchers identified the need for future research at identifying the interventions most effective in various stages of change. They also believe that incorporating the stages of change into existing smoking cessation training programs would produce more effective programs.

Benefits and Risks

To document the benefits of smoking cessation, Hasselblad, Henley, Sloan, Tayor & Thun (2001) conducted a study that estimated the relation between smoking and mortality among 877,243 respondents to a Cancer Prevention Study II. Their objective was to determine the life extension obtained from stopping smoking at various ages. The result showed that among smokers who quit at age 35, life expectancy exceeded that of continuing smokers by 6.9 to 8.5 years for men, and 6.1 to 7.7 years for women. For smokers that quit at younger ages, they realized even greater life extensions. Even for those who quit at age 65 years, women gained 2.7 to 3.7 years and men gained 1.4 to 2.0 years of life. It is also important to note that the difference in gained years of life expectancy may be a direct relationship between the number of cigarettes smoked by men and women.
Of the current male smokers, 47% smoked over 21 cigarettes a day as compared to the current women smokers, 26.9% smoked over 21 cigarettes a day.

Garvey et al., (2000) conducted an ongoing longitudinal study of 2280 initially healthy men who were enrolled in a Normative Aging Study who began participation between 1961 and 1970. The mean age was 42, with a range of 22 to 82 years. Participants were interviewed every three to five years from baseline and were mailed supplementary questionnaires in 1973, 1976, 1980, and 1983. The study found that the heavier the smoker, the more likely they were to continue to smoke over a 25 year period. They also found that the younger smokers were more likely to continue to smoke, which was consistent with previous research. The study found that light smokers were more likely to quit and that heavier smokers are at the greatest risk for morbidity and mortality and were also more likely to continue smoking in the long term, suggesting the urgent need for interventions.

SUMMARY

The United States Public Health Service established their 2010 Healthy People Goal for decreasing smoking prevalence to 13% by 2010. According to Mendez and Warner, (2000) the 13% objective is essentially unattainable. In their research study, they examined the changes in smoking initiation and cessation needed to realize this goal. The researchers used data from the National Health Interview Surveys, calculating smoking prevalence over time. The results stated
that given the current size and distribution of America's nonsmoking and smoking populations, the objective is essentially unattainable.

The lack of existing research studies directed at smoking cessation in rural areas is surprising, when looking at the statistical data available identifying rural smokers at having higher rates of smoking over the national average. In order to realize the Healthy People's Goal of 13%, research directed towards populations with higher smoking utilization, such as rural populations, should be conducted and the results implemented into best practices. Not only does the literature review show a lack of existing studies regarding rural smoking cessation practices, but also a lack of studies identifying the social processes and behaviors that influence change in clinical applications in rural practices. Throughout the literature review, it is clear that interventions have not been identified that would provide a foundation for the development of best practices for smoking cessation interventions on rural behaviors.

What is known about this population is there are higher incidences of adolescent and adult smoking in rural counties. There is also a correlation between increased incidences of smoking in relation to low education attainment and low-income populations. Members of lower social classes are increasingly seen to be more likely to smoke and less likely to quit (Ebrahim, Frankel, Lawlor, Shaw, Smith, 2003). Factors such as geographic isolation, weather, transportation, economics, poverty, and low education attainment, rural culture, and isolation, lack of health insurance, community and provider resources are clearly barriers to providing provider or program-based cessation programs.
Research with the TTM model as applied to smoking cessation and rural populations is needed to identify specific and effective interventions for this population. If characteristic behaviors can be identified that are key motivating and inhibitory factors for smoking cessation in rural populations, then interventions can be specialized. Uncovering key components of smoking behaviors would provide the rural Nurse Practitioner with more effective treatment plans for current rural smokers.

The TTM and stages of change has been utilized effectively in vulnerable and at-risk populations. One can see many of these same populations in rural counties. The rural Nurse Practitioner is a very integral part of the health care system in rural areas. Utilizing the TTM and Stages of Change is an effective tool to use in rural areas because of the large number of challenges facing the practitioner in rural area. The use of the stages of change is a highly effective assessment tool for placing the smoker on the continuum and then developing interventions specific to their needs and behaviors. Interventions need to be modified to rural populations and motivational interviewing needs to be incorporated in the counseling and used at every stage (Daugherty, Riegai & Saarmann, 2000).

Nurse practitioners role as motivators and facilitating change is well documented. Pohl, (2000) in a study that randomly selected Nurse Practitioners in one state, found that that even though NP’s assessed and advised the smoker to quit, they felt incompetent to provide interventions, did not feel they had the time to intervene and believed the interventions would not be effective if implemented
Teaching and reinforcing the concepts of the Stages of Change and the use of interventions aimed at helping patients to change should be as important in the education of nurses, as medications and documentation (Pohl, 2000). Incorporating the Transtheoretical Model into Nurse Practitioner healthcare promotion courses work, would provide the student with a highly effective tool of concepts and interventions that could be utilized, not only for tobacco cessation, but expanded to a broad range of health and mental health problems.

Nurse practitioners in rural communities play a prominent role in the health care of the community. Nurse Practitioners need to treat nicotine dependence as a chronic disorder, treating smokers on a regular basis throughout their lives to achieve positive benefits. Brief, but consistently repeated interventions that are adapted to the individual’s stage of readiness can be effective in achieving change (Johnston, Neff-Smith & O’Donnell, 2001).

Adaptation of the TTM and stages of change, along with motivational interviewing can significantly assist the practitioner in providing a treatment plan that is consistent and easily modified to the patient’s needs. Taking the time to learn the model and incorporate interventions into their counseling techniques will provide the Nurse Practitioner with beneficial and evidence based techniques for their practice.

The Transtheoretical Model and Stages of Change will be used in my practice as a Nurse Practitioner. The modified Appendix D; a suggested approach to smoking cessation includes information from assessment and interventions that
were identified in this manuscript and will be used as a tobacco cessation tool in my practice. With a clearer understanding of rural health and the population characteristics, I will work to develop interventions that will be individual and culturally in tune with this population.
REFERENCES


Cataldo, J.K. (2001). The role of advanced Practice Psychiatric nurses


### APPENDIX A

Transtheoretical Model Constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temporal and Cental Organizing Stages of change</strong></td>
<td></td>
</tr>
<tr>
<td>Precontemplation</td>
<td>Has no intention to take action within the next six months</td>
</tr>
<tr>
<td>Contemplation</td>
<td>Intends to take action within the next six months</td>
</tr>
<tr>
<td>Preparation</td>
<td>Intends to take action within the next thirty days and has taken some behavioral steps in this direction</td>
</tr>
<tr>
<td>Action</td>
<td>Has changed overt behavior for less than six months</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Has changed overt behavior for more than six months</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Decisional balance</td>
<td></td>
</tr>
<tr>
<td>Pros</td>
<td>The benefits of changing</td>
</tr>
<tr>
<td>Cons</td>
<td>The costs of changing</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td>Confidence that one can engage in the healthy behavior across different challenging situations</td>
</tr>
<tr>
<td>Temptation</td>
<td>Temptation to engage in the unhealthy behavior across different challenging situations</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td><strong>Process of change</strong></td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Consciousness raising</td>
<td>Finding and learning new facts, ideas, and tips that support the healthy behavior change</td>
</tr>
<tr>
<td>Dramatic relief</td>
<td>Experiencing the negative emotions (fear, anxiety, worry) that go along with unhealthy behavioral risks</td>
</tr>
<tr>
<td>Self-reevaluation</td>
<td>Realizing that the behavior change is an important part of one’s identity as a person</td>
</tr>
<tr>
<td>Environmental-Reevaluation</td>
<td>Realizing the negative impact of the unhealthy behavior or the positive impact of the healthy behavior on one’s proximal and social and physical environment.</td>
</tr>
<tr>
<td>Self-liberation</td>
<td>Making a firm commitment to change</td>
</tr>
<tr>
<td>Helping relationships</td>
<td>Seeking and using social support for the healthy behavior change</td>
</tr>
<tr>
<td>Counterconditioning</td>
<td>Substituting healthier alternative behaviors and cognitions for the unhealthy behavior</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>Increasing the rewards for the positive behavior management change and decreasing the rewards of the unhealthy behavior</td>
</tr>
<tr>
<td>Stimulus control</td>
<td>Removing reminders or cues to engage in the unhealthy behavior and adding cues or reminders to engage in the health behavior</td>
</tr>
<tr>
<td>Social liberation</td>
<td>Realizing that the social norms are changing in the direction of supporting the healthy behavior change</td>
</tr>
</tbody>
</table>
## APPENDIX B

### Fagerstrom Test for Nicotine Dependence (FTND)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answer</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) How soon after you wake up do you smoke your first?</td>
<td>Within 5 Minutes</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>6-30 Minutes</td>
<td>2</td>
</tr>
<tr>
<td>2) Do you find it difficult to refrain from smoking in places where it is forbidden, eg., in church, at the library in a movie theater, etc.?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>3) Which cigarette would you hate to give up?</td>
<td>First one in the morning</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>All others</td>
<td>0</td>
</tr>
<tr>
<td>4) How many cigarettes do you smoke a day?</td>
<td>10 or less</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>11-20</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>21-30</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>31 or more</td>
<td>3</td>
</tr>
<tr>
<td>5) Do you smoke more frequently during the first hours after waking then during the rest of the day?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>6) Do you smoke if you are so sick that you are in bed most of the day?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>

Score 0-2
- Very low dependency
- Low dependency
- Medium dependency
- High dependency
- Very high dependency
APPENDIX C

Brief Fagerstrom Test for Nicotine Dependence

1) How soon after waking do you smoke your first cigarette:
   Less than five minutes (3 points)
   5 to 30 minutes (2 points)
   31 to 60 minutes (1 point)

2) How many cigarettes do you smoke each day?
   More than 30 cigarettes (3 points)
   21 to 30 cigarettes (2 points)
   11 to 20 cigarettes (1 point)

Scoring key:
   5 to 6 points = heavy nicotine dependence,
   3 to 4 points = moderate nicotine dependence,
   0 to 2 = light nicotine dependence.
APPENDIX D

Processes of change, mediating progression between the stages of change

Stages of Change

Precontemplation  Contemplation  Preparation  Action  Maintenance

Processes

Consciousness
raising
Dramatic relief
Environmental
reevaluation

Self-reevaluation

Self-liberation

Counterconditioning
Helping-relationships
Reinforcement
management
Stimulus control
APPENDIX E

A modified suggested approach to smoking cessation for rural NP’s based on the TTM for readiness to change

Include “Do you smoke?” “When was the last time you smoked?” with questions routinely asked of the patient during your assessment.

If the patient is not a smoker: reinforce the patient’s healthy lifestyle choice.

If the patient is a smoker:
1) Assess the patient’s degree of nicotine dependence using an appropriate questionnaire. An example; Fagerstrom Test.
2) Use the five-stage TTM to assess the patient’s readiness to change.
3) Assess current and past patterns of tobacco use, the number, types and lengths of quit attempts, reasons for quitting, changes in ability to function during abstinence and reasons for relapse.
4) Assess potential rural barriers; educational level, economic status, social support and social culture, transportation, isolation, insurance, medical and media resources, medical assistance, resources in the community and location to resources.
5) Assess other barriers; weight gain, withdrawal, failure, mental health disorders, stressors, other smokers in the family and substance abuse.
6) Provide motivational interviewing

Precontemplation stage: this is the stages were the smoker doesn’t believe it is a problem and has no plans to quit.
Interventions: express concern, personalize your message to their lifestyle and well-being, provide materials in appropriate format, educate the patient about the effects of smoking, introduce ambivalence, recommend changes in behavior, list options for achieving behavioral change, discuss the patients reactions to the practitioners feedback and recommendations, provide follow up and deliver a consistent and empathetic message.
Practitioner statement expressing concern and encouraging contemplation. “I am very concerned about your health. I would like to see you stop smoking. I am wondering how I can help you?”
Contemplation stage: this is where the smokers seriously believe smoking may be a problem.

Intervention: Analyze their nicotine dependency test which encourages them to analyze their present smoking behavior, address the smoker’s motivation to change their behavior, assess positive and negative thinking about smoking, provide further education about the effects of smoking, encourage the patient to consider the positive aspects of not smoking including improved health, economic savings and a better self image, personalize your message and ask the smoker how you can be of assistance.

Practitioner statement resolving ambivalence. “Your cough will improve when you quit smoking or your risk of pneumonia will decrease when you quit smoking.”

Preparation stage: The patient wants to quit smoking within the next month.

Interventions: Set a quit date, written contracts can be a concrete reminder of the goal, select smoking cessation strategies, develop a clear plan with the smoker identifying triggers along with situations, emotions, locations or times of day associated with smoking, discuss symptoms of nicotine withdrawal, strategies for attenuating the symptoms/triggers, smokers personnel concerns about quitting, gather internal and external social support for quitting and determine a nicotine replacement medication if indicated. Have the smoker buy only one pack of cigarettes at a time, buying a different brand each time a pack is bought, many times causing an aversion effect due the different tastes, or eliminating a few cigarettes the smoker enjoys the most can also be helpful. Encourage the smoker to go places without their cigarettes with them. The smoker should tell everyone that they are going to quit. Discuss nicotine replacement systems and the possible use of bupropion.

Practitioner statement encouraging planning and action: Would you like to set a date for you to quit smoking and make plans for how you will do it?

Action stage: The patient quits smoking.

Interventions: Begin nicotine replacement and continue bupropion if indicated.
Provider and staff maintain frequent contact with the patient providing support and help the patient provide solutions for dealing with specific triggers. Efforts need to be directed at eliminating and avoiding environmental smoking cues. As of the quit date, all cigarettes and smoking paraphernalia should be discarded. They should change their daily routines and engage in activities that make it difficult to smoke with activities that keep
ones hands busy. Encourage the patient to discuss perceived benefits from having stopped smoking and any side effects from medications. The practitioner should call the patient within the first week with a follow up appointment, if an option, within two weeks of cessation as most relapses occur within the time period. Encourage the patient to keep follow up appointments and call the practitioner if relapse appears eminent.

**Maintenance stage:** The patient in the maintenance stage has been abstinent for more than six months, and is attempting to remain abstinent.

**Interventions:** Intermittent follow-up appointments are required to deal strictly with the patients smoking cessation issues. This will improve abstinence rates and reduce relapse. Continue positive reinforcement of the healthy choice. Continue to identify smoking triggers and coping skills when triggers are encountered. Keep cigarettes and exposure to a minimum. Smoking is a chronic problem and patients should be seen on a regular basis.

**Relapse:** The resumption of regular smoking. It can occur anytime during the cessation process. Most relapses occur within the first two weeks of cessation.

**Interventions:** Reassess readiness to change and enter at appropriate stage. Identify the patient’s reasons for relapse. Evaluate alcohol consumption if indicated. The practitioner should encourage the smoker to look at the relapse as a learning experience and gain information from the experience for a future quit plan, not as a failure. Identify the circumstances of relapse and strategies to avoid these situations. Look at alternatives, considering how things might be done differently. Provider and staff support another attempt. When the patient is ready; work with the patient to develop a more effective plan. Acknowledge that relapse is part of the cessation process and the likeliness of success increases with each quit attempt.
APPENDIX F

Smoking cessation intervention: The 5 A’s

**ASK** about tobacco use – identify and report status

**ADVISE** to quit – be clear, strong, and personalized

**ASSESS** willingness to quit – If patient is willing to quit, assess potential intensity of support. If patient is not willing to quit, see Appendix G, Enhancing motivation to quit tobacco: The 5 R’s

**ASSIST** in quit attempt – Help with quit plan by setting a quit date, usually within two weeks. Enlist support and understanding of family and friends. Anticipate challenges, especially first few weeks. Remove tobacco products from the environment. Provide practical counseling (e.g., problem-solving and skills training). Stress abstinence. Review past quit experience. Anticipate triggers and challenges. Review relationship of alcohol to tobacco use. Point out that having other smokers in the house will increase the difficulty. Provide treatment and social support. Provide a supportive clinical environment. Help obtain extra treatment social support. Help obtain patient environment support from family, friends, and coworkers. Recommend pharmacotherapy.

Provide supplementary materials: Sources include organizations that promote smoking cessation, including federal, state, and nonprofit organizations. The types of materials are the materials appropriate for the patient, in relation to culture, race, education, and age. And location; are the materials readily available?

**ARRANGE** follow-up – schedule follow-up. Follow up should be within the first weeks of the quit date, and follow up again within the first month. The actions during the follow up include: congratulate, review, stress abstinence, remind that lapse is a learning experience, identify potential and current problems, assess pharmacotherapy and consider increased intervention when necessary.
APPENDIX G

Enhancing motivation to quit tobacco: The 5 R’s

**RELEVANCE** – Why would quitting be personally relevant? Consider family, children, health concerns, previous experiences and work.

**RISK** – Clinician should ask patient to identify negative consequences of smoking. Highlight those most relevant to the patient. Emphasize that low-tar, low-nicotine, and other forms of tobacco do not eliminate risk. Acute risks include: shortness of breath, exacerbation of asthma, harm in pregnancy, impotence, infertility and increased serum carbon monoxide. The long-term risks include: heart attack, stroke, chronic obstructive pulmonary disease and long-term disability. Cancers including lung, larynx, oral cavity, pharynx, esophagus, pancreas, bladder, cervical.. Environmental risks include increased risk of lung cancer and heart disease in spouse. There are higher rate of smoking among children of tobacco users. Also, increased risk of low birth weight, sudden infant death syndrome, asthma, middle ear disease, and respiratory infections in children of smokers.

**REWARDS** Ask patient to identify potential rewards and highlight those most relevant to the patient which include: improved health, improved taste for food, improved sense of smell, savings each month, feel better about yourself, home, clothing and breath will smell better, can stop worrying about quitting, sets a good example for children, healthier babies and children, not worry about exposing others to smoke, feel better physically, reduced wrinkling and aging of skin.

**ROADBLOCKS** – Ask patient to identify barriers to quitting and address elements of treatment that can assist. Typical barriers include: withdrawal symptoms, fear of failure, weight gain, lack of support, depression and enjoyment of tobacco.

**REPETITION** – Repeat every time unmotivated patient visits the clinic setting. Tobacco users who have failed in previous quit attempts should be told that most people make repeated quit attempts before they are successful.