Promoting Smoking Cessation Among Cancer Patients: A Behavioral Model

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The smoking cessation clinical practice guideline recently published by the Agency for Health Care Policy and Research (AHCPR) summarizes current knowledge on smoking cessation treatments. Among its

Introduction

Cigarette smoking is a dominant, preventable cause of morbidity and mortality in the United States,[1] accounting for more than 419,000 deaths each year. More than 150,000 of these deaths occur as a result of neoplasms.[2] In 1993, an estimated 25% of adults in the United States were current smokers,[3] and smoking-attributable costs for medical care were estimated to be $50 billion.[4]

Effective and timely administration of smoking cessation interventions can significantly reduce the risk of smoking-related disease.[5] Physicians in general and oncologists in particular can play an important role in providing this type of intervention. Since 70% of smokers see a physician annually,[6,7] there is considerable opportunity for smoking cessation counseling by health-care providers. Even a very brief intervention provided by a health care professional appears to increase smoking cessation, and a physician’s strong advice to quit increases positive outcomes in a remarkably cost-effective way.[8]

The National Cancer Institute (NCI) projects that if 100,000 physicians were to help 10% of their patients who smoke to stop each year, the number of smokers in the United States would decrease by an additional 2 million people annually.[9] Unfortunately, many physicians still underutilize or neglect smoking cessation treatment. The modifiable barriers to delivery of smoking cessation intervention by many health-care providers include absence of necessary skills, limited knowledge of the effectiveness of their own counseling, lack of organizational support in the office environment, and limited availability of materials to aid them and their patients in smoking cessation efforts.[10-12]

In addition, some physicians may have reservations about the relevance of smoking cessation intervention for patients who have types of neoplasms that have not been firmly attributed to smoking (eg, breast cancer). However, the potential benefits of smoking cessation for the majority of cancer patients can be assumed on the basis of compelling evidence obtained from disease-free populations. First, tobacco use may lead to a second primary malignancy, such as lung cancer, for which cancer survivors may be at high risk. Second, smoking can increase the incidence of comorbidity (eg, cardiovascular and/or pulmonary disease) by worsening the course of the disease[13,14] and by reducing the effectiveness of commonly prescribed medications (eg, beta-blockers, bronchodilators, analgesics, benzodiazepines, and phenothiazines).[15] Third, cigarette use may reduce or negatively impact on the patient’s overall quality of life by reducing physical fitness and affecting financial well-being.

Smoking cessation has been shown to improve self-control, self-esteem, and other characteristics of well-being.[5,16] Hence, effective smoking cessation counseling should be incorporated into the cancer treatment plan.

The smoking cessation clinical practice guideline recently published by the Agency for Health Care Policy and Research (AHCPR)[17,18] summarizes current progress in smoking cessation treatment and recommends specific methods to be utilized by health-care providers when counseling and treating patients who smoke. The AHCPR guideline delineates recommendations for: (1) primary-care physicians; (2) tobacco cessation specialists and programs; and (3) health-care administrators, insurers, and purchasers. In the clinician’s section of the guideline, the five steps involved in promoting cessation are outlined: step I entails systematically identifying all smokers; step II,
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strongly advising all smokers to quit; step III, determining patients willingness to make a quit attempt; step IV, motivating patients who are not willing to quit in the immediate future and assisting those who are willing to quit smoking by setting a quit date, offering nicotine replacement therapy, and providing self-help materials and skill training; and step V, scheduling a follow-up contact.

The behavioral aspects of smoking cessation treatment are not as relevant to the typical physician’s training as are the pharmacologic aspects (eg, nicotine replacement therapy). Therefore, while fully recognizing the value of the guideline in enhancing outcomes from smoking cessation treatments delivered by health-care providers, this paper focuses on a specific method of behavioral counseling based on the transtheoretical model of change (TTM),[19-21] a promising theoretical approach to helping patients quit smoking. We believe that this approach represents a feasible, effective method that can easily be applied by physicians in a clinical setting.

A Theoretical Approach to Promoting Smoking Cessation Among Cancer Patients

A wide range of social-behavioral theories are available to help explain, predict, and alter human behavior. Typically, health-care providers apply aspects of multiple theories simultaneously when promoting behavioral change.

The TTM, which was developed by combining common theoretical elements identified through the analysis of multiple therapeutic approaches,[19] provides a practical, effective approach to promoting positive health behaviors. Although studied primarily within the context of smoking behavior, the model has demonstrated robustness across various other health behaviors, including weight control, skin cancer prevention, psychological distress, alcohol use, exercise, and psychiatric disorders.[22] In the sections below, we describe the model and how it may be applied by physicians to promote smoking cessation among patients with cancer.

An Overview of the TTM

The TTM classifies smoking behavior as a function of five stages of change: (1) precontemplation, (2) contemplation, (3) preparation, (4) action, and (5) maintenance. Generally speaking, the stages reflect an individual’s current disposition about his or her smoking behavior and intent to quit. Movement through the stages is associated with changes in the use of coping activities and shifts in attitudes about smoking, motivation, decision-making, and confidence in quitting. Assessing the stage of change over time enables health-care providers to determine when changes in smoking behavior occur. The model also provides a practical framework for designing interventions and enables providers to select the most appropriate intervention strategies.

Because patients’ dispositions toward quitting vary, action-oriented or just do it approaches are not appropriate for all patients. Unlike most smoking intervention approaches, TTM-based interventions do not assume that all patients are ready to quit smoking. Instead, the intervention messages and strategies are stage-specific and correspond to the smoker’s readiness to quit. This stage-based approach represents a significant step forward in smoking cessation methods.

Assessing Smoking Status and Stage of Cessation

To effectively reduce smoking among patient populations, smokers first must be identified accurately. Typically, smoking status is assessed using a simple dichotomous-response question, such as Do you smoke? Research has shown, however, that altering the way this question is asked can improve disclosure of smoking status, regardless of whether the question is asked orally or is administered as part of a written survey.[23] Specifically, by expanding the response options to enable patients to report on cutting down, Mullen et al improved smoking disclosure by 40% in a population of pregnant women.[23]

Modifying the item suggested by Mullen et al[23] to make it more amenable to use of the TTM among cancer patients, we suggest that physicians assess smoking status using the question, Which of the following statements best describes your cigarette smoking?[24] As shown in Figure 1, this questions can have multiple answers. The item has a fourth-grade readability level, as measured by the Flesch-Kincaid Readability Test. The question can be included as part of patient registration forms, or the information can be assessed through an interview conducted by the physician or other support staff.

After smoking status is determined, all current and former smokers then should be targeted for a stage-specific smoking intervention, where stage of smoking cessation is assessed as depicted in
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Figure 1

- **Precontemplation Stage**—In the earliest stage, precontemplation, people are likely to be unaware of the harmful effects of smoking or are unwilling or too discouraged to quit. Being in the precontemplation stage, however, does not necessarily mean that the individuals do not want to quit. Rather, they may have tried to quit, failed, and currently feel frustrated and disappointed about the results. Individuals in this stage commonly have experienced few negative consequences associated with smoking; may be defensive about their behavior; and often are not convinced that the negative aspects of smoking outweigh the positive. They are not seriously considering quitting smoking in the next 6 months and, when compared with persons at other stages of change, precontemplators will be the least receptive to cessation interventions. Again, being a precontemplator does not imply that a smoker does not want to quit; rather, it means that the person has no intention of quitting in the foreseeable future.

- **Contemplation Stage**—This stage includes current smokers who are seriously considering quitting in the next 6 months and yet have not made a commitment to quit. This group tends to perceive the pros and cons of smoking as approximately equal. It is common for patients to remain in this stage for extended periods, often for years at a time.

- **Preparation Stage**—Individuals in the preparation stage are defined as current smokers who are ready to quit smoking in the immediate future (next 30 days) and have made at least one 24-hour quit attempt within the past year. They are taking small but significant steps toward another quit attempt and may have thought about methods for quitting and set a quit date. In general, these smokers are more prepared to take action than are contemplators.

- **Action Stage**—This stage encompasses the 6-month period following smoking cessation. During this time, recent quitters are struggling to prevent relapse; thus, they continue to actively modify their habits and environment. This stage requires the most lifestyle changes, and patients may be faced with particularly challenging temptations to smoke in a variety of situations, such as periods of extensive workload or stress, when with others who are smoking, while at social gatherings, and after meals.

- **Maintenance Stage**—This stage encompasses the period from 6 months following cessation through the point of termination, where termination is characterized by zero temptation to smoke across all problem situations and maximum confidence in one’s ability to resist relapse. Importantly, individuals in the maintenance stage remain susceptible to relapse and must be continuously aware of environmental and internal stimuli that can cue a return to smoking.

- **Cyclical Nature of the Model**—It is a well-known fact that quitting smoking is not necessarily a smooth or easy process. More often than not, long-term change is reached only after repeated attempts,[24,25] with the average smoker making three to four quit attempts before actually becoming a former smoker.[26] When patients relapse, they revert to an earlier stage. Although progression through the stages is required to achieve long-term smoking cessation, the inclusion of the concept of relapse requires the model to take on a cyclical property. By combining the notion of linear progression with the prospect of recycling through the stages, one obtains a more accurate picture of the process of change. This concept is demonstrated pictorially in Figure 2.

Applying the TTM to Promote Smoking Cessation Among Cancer Patients

Once a smoker’s stage of readiness to quit smoking has been assessed, a physician can then match behavioral strategies to the patient’s needs. In most cases, the behavioral intervention can be delivered within a few minutes. Physicians’ efforts can be reinforced with messages from support staff members, such as oncology nurse practitioners. The types of strategies that are applicable to the various stages are described below and also
summarized in Table 1. In general, the goal of the stage-specific interventions is to move the patient forward in the stage sequence, not to force patients to quit immediately.

**Precontemplation Stage**

Although most precontemplators are not receptive to cessation interventions, physicians can attempt to advise them about the negative consequences of smoking. It is appropriate to discuss the effects that passive exposure to tobacco smoke may have on the health of significant others. Also, information on how stopping smoking can improve prognosis can be discussed to create a more tailored, persuasive intervention message. For example, a physician may address the issue of second primary cancers related to smoking or smoking-related comorbidities, such as respiratory disease.

Counseling of patients in this stage should be performed carefully, avoiding excessive pressure and demands that might elicit frustration or unwillingness to cooperate. Thus, setting a quit date is not appropriate for precontemplators. The goal for this group of patients is to get them to consider quitting smoking; thus, the task of the physician is to encourage patients to think about their smoking and its effects on themselves and others.

**Contemplation Stage**

Compared with counseling for precontemplators, the tone of counseling for contemplators should be more persuasive. Because this group typically is willing to discuss reasons to quit, physicians can help patients move forward in the stage sequence by discussing the pros and cons of stopping smoking, with emphasis on the benefits of quitting. For example, it is appropriate to explore how smoking can affect the existing disease process and the ways in which nicotine can interact with prescribed medications. By helping patients reassess the values that they attach to smoking, their health, and the health of significant others, physicians can increase the likelihood that patients will see that change is possible and in their best interest.

Also at this stage, it may be particularly helpful to increase patients' awareness of the availability of specific behavioral programs and pharmacologic interventions, such as nicotine gum, nicotine nasal sprays, and nicotine transdermal patches. Discussing the success rates associated with the various pharmacologic interventions may increase patients' confidence in their ability to quit. For example, the AHCPR guideline[17] states that, compared with placebo, use of transdermal nicotine patches approximately doubles the long-term abstinence rates (assessed at 12 months[18] follow-up) and nicotine nasal sprays increase quit rates by 40% to 60%.

Providing support for patients' quit attempts is important, and patients should be commended for considering quitting. It is important to help patients identify significant others who may provide encouragement and support. Above all, physicians should emphasize that the decision to quit ultimately lies in the hands of the patient.

**Preparation Stage**

Patients in the preparation stage need to be equipped with specific skills to ensure a successful quit attempt. Physicians can assist patients in this stage by helping them set goals and establish priorities and also suggesting cessation methods. For example, this group should be provided with tips or steps to help modify their smoking habits, such as prolonging the amount of time before lighting the first cigarette of the morning, abstaining from smoking in the car, purchasing cigarettes by the pack instead of by the carton, setting longer intervals between cigarettes, and switching to a lower-nicotine brand.

Clinicians should also advise the smoker to begin modifying his or her environment to make it more conducive to cessation. This may include removing ashtrays from the home and workplace, attempting to avoid stressful situations, and avoiding environments where other smokers may be encountered, such as bars. Again, physicians should suggest that the patient consider pharmacologic methods, if necessary and appropriate. Have patients set a date on which they will begin the process of cessation.

**Action Stage**

The action stage starts with a commitment to quit smoking and the implementation of a cessation plan. When the patient moves to this stage, the physician's role shifts from informant to consultant. Persons in this stage usually are highly tempted to smoke, and therefore, potentially problematic triggers of smoking should be reviewed.

Sources of social support need to be engaged in the process at this stage, and smokers should select substitutes for smoking, such as chewing gum, exercise, and relaxation techniques. Provide patients with telephone numbers for quitters' counseling hot-lines. If more intensive behavioral or psychological counseling is required, refer the patient to a psychologist or other specialized cessation counselor.
Continue to provide support, and remember to reinforce even small successes. For patients who are using pharmacologic methods of cessation, it is important to attribute successes to the patient, not to the drug. This will increase patients' confidence in their ability to achieve long-term cessation.

**Maintenance Stage**
A patient who has been smoke-free for at least 6 months is in the maintenance stage. Patients in this stage remain susceptible to relapse; thus, it is important that they be reminded to continue to assess situations for the presence of cues to smoking. In this stage, physicians continue their supportive role by providing guidance and reinforcement. Encourage the development of extensive support networks that discourage smoking.

When patients relapse, they should be helped to view it as part of the learning process. Knowledge of the triggers for relapse provides useful information for future change attempts. Relapses should be considered as "slips" as opposed to "failures," emphasizing the positive knowledge and experience gained about cessation and high-risk "triggers." In general, a patient should have abstained from smoking for at least a year before being considered as a "former smoker."

**Summary**

The TTM is the result of more than a decade of investigations aimed at understanding the ways in which people alter behavior. This model not only rethinks beliefs about the process of change but also causes one to reconsider generally accepted outcome measures for smoking. Specifically, persons typically are categorized dichotomously as either "smokers" or "nonsmokers." This classification does not acknowledge the intermediate stages of change. In most cases, change does not occur automatically. Instead, it involves the movement from one relatively stable behavior through a transition phase to a different, more stable behavior pattern.[25]

Using a stage-based approach, it is possible to focus on more attainable, realistic, and achievable outcomes. By assessing stage status over time, both patients and providers can observe changes in readiness to quit smoking, which represent a precursor to cessation. Existing data have demonstrated that helping tobacco quitters progress one stage in 1 month doubles the chances that they will not be smoking 6 months later.[24] Furthermore, both health-care providers and patients appear to be more satisfied with and rewarded from the treatment process if they can see identifiable progress through the stages of change.

The TTM addresses the fact that individuals at different stages of change need different types of interventions to help them achieve their behavioral goals. Many health-care professionals erroneously assume that a patient's desire to change is indicative of a readiness to change. Experience has shown that this is generally not true, and we cannot overemphasize the importance of delivering stage-specific interventions.

The literature clearly demonstrates that, of all health-care professionals, physicians have the greatest potential for promoting successful quit attempts among patients. The TTM provides physicians with a straightforward diagnostic tool to categorize patients according to their stage of change. Once stage status has been determined, physicians can devise and deliver tailored, stage-specific interventions to meet the needs of their patients.

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