

CORONARY ARTERY DISEASE AND SMOKING CESSATION INTERVENTION BY PRIMARY CARE PROVIDERS IN A RURAL CLINIC

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ABSTRACT

Among numerous risk factors for coronary artery disease (CAD), including family history, hypertension, diabetes mellitus and dyslipidemia, the single most modifiable risk factor is smoking. Smoking cessation for known CAD patients has recognized immediate and long term benefits, namely reduction in the chance of symptom recurrence and death. This article is a description of an evaluation of smoking cessation intervention by primary care providers for patients who smoke with a known history of CAD within 1 year of diagnosis. Nola J. Pender's revised Health Promotion Model was the framework for this non-experimental, quality assurance study using descriptive retrospective chart review in a rural family practice clinic in the southern United States. Data were collected using a researcher-developed quality assurance tool with a final sample of 150 patient medical records. Results indicated that over two thirds (68.7%) of the patient sample received smoking cessation therapy prior to or within 1 year after diagnosis of CAD; however, 31.3% of the patient sample received no smoking cessation intervention. Although a large percentage of this sample received smoking cessation therapy, the American Heart Association and American College of Cardiology recommend smoking cessation therapy for all smokers with known history of CAD at each visit. It is recommended that this guideline be followed in all patients regardless of compliance with smoking cessation therapy, and that this therapy be consistently evaluated in its culturally relevant application to rural populations.

INTRODUCTION

Globally, cardiovascular disease is, and is projected to remain, the number one cause of death. In 2005, this disease accounted for approximately 30% of all deaths or nearly 17.5 million people worldwide (World Health Organization, 2007). Although these figures are astounding, even more staggering is that one major cause of cardiovascular disease is a modifiable risk factor—smoking. Smoking has long been linked to heart disease, so much so that the United States Congress passed a bill more than 20 years ago, the Comprehensive Smoking Education Act of 1984, requiring tobacco companies to carry a warning label noting this relationship. The Heart Disease and Stroke Statistics Update (American Heart Association, 2007b) indicated that except for 1918, cardiovascular disease accounted for more deaths than any other single cause or group of causes in the United States from 1900 to 2007 (American Heart Association, 2007b).

Smoking prevalence is highest among those with only nine to 11 years of education (34%) and living at or below the poverty level (29.1%) (American Heart Association, 2007b). In rural areas, educational levels are lower with almost one third of rural residents 25 years or older having less than a 9th grade education and unemployment rates are higher contributing to greater poverty (Alabama Rural Health Association, 2009). There is also a high rate of deaths from cardiovascular disease for the state that was the setting for this study (United Health Foundation, 2008). Thus, rural populations are more likely to smoke, more likely to have cardiovascular disease and therefore promoting smoking cessation should be an even greater priority of PCPs in those areas. Limited resources and access to care make promotion of healthy behaviors and preventive measure even more relevant for rural populations (Klugman, 2008).

Smokers have a greater than two-to-four-fold chance of developing cardiovascular disease than nonsmokers partly because of smoking's contribution to increased atherosclerosis (American Heart Association, 2007a). Development of atherosclerosis, progressive artery hardening, which forms from the deposition of fatty plaques in association with scarring and thickening of the artery walls, is tied to toxins in the blood that come directly from cigarette smoking. These arterial wall changes lead to inflammation and formation of blood clots which can progress to coronary artery disease (CAD). Cigarette smoking is also linked to sudden cardiac death (SCD) in both genders (United States Department of Health and Human Services, 2004, pp. 364-365, 387).

According to the AHA and American College of Cardiology (ACC) guidelines for care, patients with known CAD should be asked about smoking with every visit, advised to quit, and offered options regarding smoking cessation therapy (Smith et al., 2006). To adhere to these standards of care, smoking cessation interventions need to be a priority of primary care providers (PCPs), especially with CAD patients who smoke. Furthermore, the overwhelming connection between smoking and CAD warrants smoking cessation interventions at every visit with these patients.

BACKGROUND

There have been a number of researchers looking at compliance, CAD, and smoking cessation. For example, Lannon (1997) found Pender's HPM framework was useful in a qualitative case study investigating medication compliance in individuals on antiepileptic drugs. A number of relevant concepts from Pender's HPM for the patient were supported including perceived self-efficacy by its similarity to perceived control of health because persons who feel they can accomplish a goal are more likely to achieve this goal. Modifying factors were also noted with the most impact from interpersonal characteristics, which include one's pattern of health and interactions with PCPs that are heavily affected by environmental and situational factors. The researchers concluded that study results indicated compliance was associated with strong family beliefs regarding health promoting behaviors; good patient to healthcare provider relationship; and a history of successful personal and professional relationships. In noncompliance, the most important factor to be modified was the patient-healthcare professional relationship (Lannon, 1997).

There is literature to support use of smoking cessation therapy tools such as counseling, nicotine replacement therapy (NRT) and pharmacotherapy for smokers with CAD. Reid, Pipe, and Quinlan (2006) conducted a study of hospital smoking cessation promotion for CAD

patients. The 1164 primarily male patient smokers admitted for cardiac related diagnoses, including ACS, were seen and counseled by a trained nurse counselor. Patient's readiness to quit was assessed; if not ready, initial counseling focused on negative outcomes of continued smoking compared to positive outcomes of smoking cessation. For those ready to quit, a quit plan with NRT was carried out. At discharge, patients were given guidelines and responsibility for a ten week NRT program. Recommendations were sent by letter to each participant's PCP. Patient follow up telephone calls were made using an interactive voice response system to assess abstinence rate at three, 14, and 30 days and six months post-discharge. Six months after discharge, 89% of patients responded to contact; 44% reported no smoking in seven days preceding the phone call; and 35% reported total abstinence since discharge. The authors concluded that an approach including education and pharmacotherapy with follow up beginning prior to hospital discharge can have an impact when the motivation to quit is high. They further noted that the quit rate for this sample was lower than in other studies but attributed it to less sample selectivity and decreased smoking prevalence making those who still smoke more dependent and difficult to treat. Recommendations included conducting more studies with newer pharmacotherapy; developing hospital-based smoking cessation programs to easily identify, document, and treat smokers; and exploring use of NRT in a harm reduction approach to assist smokers with CAD who are unable to quit (Reid et al., 2006).

The benefits of smoking cessation in CAD patients who smoke has been documented in the literature and adds additional importance for smoking cessation interventions by PCPs. For example, Goldenberg et al. (2003) conducted a study of current smoking, smoking cessation, and risk of SCD in CAD patients with moderate hypercholesterolemia to determine, initially, the effectiveness of bezafibrate in reducing CAD related mortality and occurrence of nonfatal myocardial infarction (MI). However, data revealed marked results regarding the occurrence of SCD related to smoking status, which became the primary study focus. The randomly selected sample of 3122 males and females with a history of CAD screened in Israeli cardiology departments between February 1, 1990 and October 31, 1992 met certain inclusion criteria such as a history of MI and serum cholesterol, lipoprotein, and triglyceride levels. Exclusion criteria included presence of type I diabetes, severe heart failure, unstable angina, hepatic failure, renal failure, allergy to bezafibrate, or current use of drugs to lower lipid levels. The sample was categorized into three groups: 370 smokers, 1821 past smokers, and 931 never smokers. Data sources included patient self report, observation, and bio-physiologic markers. Follow up visits were scheduled every four months for a mean of 6.2 years (Goldenberg et al., 2003). The researchers concluded that: (1) continuing smoking after a CAD-related diagnosis incurs a significant increase in chance of SCD; (2) the risk of SCD for past smokers is markedly lower and comparable to those who have never smoked; and (3) the risk of SCD with regards to smoking cessation declines immediately with quitting and is not time dependent. Their recommendation was complete abstinence from smoking to avoid the increased risk of SCD (Goldenberg et al., 2003).

Purpose of Research Project

The majority of CAD patients seen in cardiac intensive care units are smokers (Jones, Griffiths, Skirrow, & Humphris, 2001). A major challenge these patients face is the struggle over lifestyle changes such as smoking cessation. Subsequently, much of hospitalized treatment

and recovery phases are spent educating them about lifestyle modifications to avoid recurrence of problems. Once patients leave the hospital, these lifestyle modifications must become part of their daily routine. Someone needs to continue to stress the importance of and assist them to make these modifications. Promoting more healthy behaviors, particularly smoking cessation, is a critical role for the PCP. Thus, the purpose of this study was to evaluate whether or not smoking cessation was addressed as stipulated in AHA and ACC guidelines for standards of care by PCPs with patients who smoke with a clinical diagnosis of CAD as evidenced by acute coronary syndrome (ACS) (American Heart Association, 2008; Anderson et al., 2007). These standards of care indicated that patients with known CAD be asked about smoking with every visit, advised to quit, and offered options regarding smoking cessation therapy (Smith et al., 2006).

Research Questions

1. Is smoking cessation therapy being implemented with known coronary artery disease patients who smoke with a clinical diagnosis of acute coronary syndrome?
2. Within what time frame, from prior to diagnosis up to one year after diagnosis, is smoking cessation addressed with known coronary artery disease patients who smoke with a clinical diagnosis of acute coronary syndrome?

Definition of Terms

For the purposes of this study, smoking cessation was defined as absence of smoking since the last quit attempt (Kim, Lee, Hwang, & Lee, 2005, p. 54). Smoking cessation therapy was defined as provider education about the need to abstain from smoking to known CAD patients who smoke and have a clinical diagnosis of ACS as charted in the patient's record every visit after CAD diagnosis until abstinence from smoking has been achieved.

Coronary artery disease was theoretically defined as atherosclerosis, or a build-up of plaque along the inner lining of the coronary arteries, which can significantly reduce blood flow to the myocardium and cause a heart attack if the artery becomes blocked (American Heart Association, 2007b). Coronary artery disease was operationally defined as the presence of a clinical diagnosis of ACS. The AHA and ACC use ACS to refer to a host of clinical symptoms compatible with myocardial ischemia secondary to CAD that include ST-segment elevation myocardial infarction, non-ST-elevation myocardial infarction, and unstable angina (Anderson et al., 2007).

Primary care provider was theoretically defined as a physician, physician's assistant, or nurse practitioner who sees patients for common medical problems (Medline Plus, 2007). In this study, PCP was operationally defined as a physician or nurse practitioner who provided education, preventive care, or acute care to patients.

Conceptual Framework

The study's conceptual framework was based on selected constructs of Nola J. Pender's revised Health Promotion Model (HPM) (Pender, Murdaugh, & Parsons, 2006) that has been used in numerous studies to assess influences on health-promoting behaviors. For general

background purposes, these influencing factors are individual characteristics and experiences that include prior related behaviors and personal factors. Personal factors fall into three categories: biological, psychological, and sociocultural. Biological factors include variables such as age and gender. Psychological factors include variables such as self-esteem, self-motivation, and perceived health status. Sociocultural factors include such variables as race, educational level, and socioeconomic status (Pender et al., 2006). Other influences are behavior-specific cognitions and affect, perceived benefits of action, perceived barriers to action, perceived self-efficacy, and activity related affect. Although evaluation of these influences was not the focus of this study, they provide a context for evaluation of another type of influence, interpersonal.

Specifically, the interpersonal influences of the HPM are cognitions regarding the behaviors, beliefs, or attitudes of others. Whether real or not, primary sources of interpersonal influences that affect decisions made regarding health promoting behaviors are family, peers and healthcare providers. In HPM, interpersonal interaction influences health-promoting behavior directly and indirectly through social pressures or encouragement to commit to a plan (Pender et al., 2006, p. 55). For the purposes of this study, that plan is commitment to smoking cessation and the PCP can provide the pressure. Belief on the part of PCPs that they can provide interpersonal influence for compliance with healthy behaviors can serve as a motivator to exert the influence. In this case, the influence is exerted through smoking cessation therapy.

METHODOLOGY

Setting

This study was a chart audit in a small rural family clinic in the west central part of a southern state to establish whether or not patients with known CAD were provided a smoking cessation intervention within 1 year of diagnosis. The clinic is located in an area designated as heavily rural based on four variables: percentage of total employment in the county; dollar value of agricultural production per square mile of land; population per square mile of land; and an assigned score considering populations of the county's largest city, other cities, and cities in more than one county (Alabama Rural Health Association, 2009). Clinic PCPs, two medical doctors and one nurse practitioner, treated approximately 40-50 patients daily.

Sample

The study population consisted of approximately 250 males and females within the clinic patient roster who had a history of smoking and CAD as evidenced by a clinical diagnosis of ACS. The sample consisted of 150 patient's charts which met the parameters of the study.

Procedure

Written approval was obtained from the Human Resources Institutional Review Board (IRB) at the University. Once approved by the IRB, a letter of consent was obtained from the physician who operates the clinic granting permission for the chart audit. After consent was obtained, patient's charts were identified alphabetically by clinic personnel as well as the

primary researcher and checked to see if the patient met inclusion criteria of a history of smoking and CAD as evidenced by a clinical diagnosis of ACS. If the patient met inclusion criteria, the chart was included in the sample and audited. Each chart was audited for patient's age; gender; receipt of any type of smoking cessation therapy; time of therapy (prior to or within one year of CAD diagnosis); type of PCP providing therapy (physician or nurse practitioner); and presence of other CAD risk factors including family history of CAD, patient history of hypertension, diabetes mellitus, or dyslipidemia. This process was systematically continued until a finite number of chart audits (150) were completed.

Data Collection and Analysis

Information was collected and recorded on a researcher-developed smoking cessation chart review form (see table 1). Completed chart audit forms were kept at the primary researcher's home in a locked, fireproof box which only that researcher could access. Descriptive statistics were used for data analysis to establish a patient profile and address research questions. Chi square independence test was used to compare males to females to provide a further delineated patient profile. Data analysis was conducted by a statistician using Statistical Package for the Social Sciences data software.

Limitations of Project

The major limitation of this study was the small scale on which it was carried out. The results are not generalizable because only one location was studied. The researcher only had access to charted information and there was no interaction with the patient or PCP. Also, only 150 charts met the criteria for the study. No assessments were made regarding the quality of smoking cessation therapy and performance of smoking cessation therapy by the PCP was only assessed for a period of up to one year of diagnosis. Additionally, the data collection tool was developed by the researcher and no validity or reliability for its usefulness was established.

RESULTS

Profile of the Study Participant

Additional analysis not specifically related to research questions was conducted to present a profile of the study sample. The patient sample was 69.3% male and 30.7% female with 92.3% of males and 95.7% of females greater than 50 years of age. Data revealed that 89.3% of the sample had smoked for more than 10 years with 30% having smoked for more than 30 years. Regarding the number of packs per day (PPD), 62.6% of the patient sample smoked 1-2 PPD for ten years or more and 16.7% smoked less than one PPD.

Because many CAD patients have comorbidities and health promotion behaviors such as smoking cessation will benefit outcomes for them as well (American Heart Association, 2007), a profile of comorbidities in this sample was assessed and analyzed. Data analysis revealed that 74% had a family history of CAD; 74% had a history of hypertension; only 26% had a history of diabetes mellitus; and 71.3% had a history of dyslipidemia.

Table 1
Chart Review Form

Chart #: _____	Patient's Gender: (1) Male (2) Female
Patient's Age (years): (1) < 30 (2) 31-49 (3) 50-69 (4) > 70 (5) Not Documented	
Patient's Height (inches): _____	Patient's Weight (pounds): _____
Body Mass Index: (1) < 18.5 (2) 18.5-24.9 (3) 25.0-29.9 (4) > 30 (5) Insufficient Information	
Number of Years Smoking (Circle most appropriate): <5 years (2) 5-10 years (3) 10-20 years (4) 20-30 years (5) >30 years (6) Not Documented	
Number of Packs Per Day (PPD) Smoked (Circle most appropriate): <1 PPD (2) 1-2 PPD (3) 2-3 PPD (4) 3-4 PPD (5) >4 PPD (6) Not Documented	
Smoking Cessation Therapy of Any Kind Charted (Circle most appropriate): <i>Prior to initial diagnosis of ACS</i> <i>Within 1 week of initial diagnosis of ACS</i> <i>Within 2 weeks of initial diagnosis of ACS</i> <i>Within 1 month of initial diagnosis of ACS</i> <i>Within 3 months of initial diagnosis of ACS</i> <i>Within 6 months of initial diagnosis of ACS</i> <i>Within 9 months of initial diagnosis of ACS</i> <i>Within 1 year of initial diagnosis of ACS</i> <i>Not Documented</i>	
Smoking Cessation Therapy Charted By (Circle most appropriate): (1) MD (2) NP (3) Not documented	
Family History of CAD?	(1) Yes (2) No (3) Not Documented
History of Hypertension?	(1) Yes (2) No (3) Not Documented
History of Dyslipidemia?	(1) Yes (2) No (3) Not Documented
History of Diabetes Mellitus?	(1) Yes (2) No (3) Not Documented

Research Questions

Research question one was related to whether or not PCPs were conducting smoking cessation therapy. The therapy was the only intervention evaluated in this study and was defined as provider education to abstain from smoking to known CAD patients who smoked. Therapy was provided at every follow up visit until the patient quit. Results indicated that 68.7% of the sample received some smoking cessation therapy intervention in the form of education. Whether smoking cessation therapy was conducted by a physician or nurse practitioner also was assessed in the chart audit. Half (50%) of the patient sample received smoking cessation therapy from a physician and less than a fifth (18.7%) of the patient sample received smoking cessation therapy from the nurse practitioner. It is important to note that the nurse practitioner only worked part-time in the office averaging two days per week and that there are two physicians compared to one nurse practitioner. One third (31.3%) of patients in the sample had no documentation of smoking cessation therapy by neither a physician nor nurse practitioner prior to or within one year of initial diagnosis of CAD as evidenced by ACS.

Analysis of data for research question two regarding the time frame for smoking cessation therapy indicated that the largest number, 61(40.7%), of the sample received the intervention prior to initial diagnosis of CAD as evidenced by ACS. The least frequent time period for smoking cessation therapy was from one day past 6 months up to nine months, 1(0.7%), and was comparable to results for two other time periods, up to 3 months, 5(3.3%), and 6 months, 3(2.0%). Additional results regarding these time frames can be found in table 2.

Table 2
Smoking Cessation Intervention Time Frames

Time Frame	Number	Total Sample Percentage N=150	Intervention Subsample Percentage N=103
Prior to Diagnosis	61	40.7%	59.2%
From Dday of Diagnosis Up to 1 Month	17	11.3%	16.5%
From 1 Day Past 1 Month Up to 3 Months	5	3.3%	4.9%
From 1 Day Past 3 Months Up to 6 Months	3	2.0%	2.9%
From 1 Day Past 6 Months Up to 9 Months	1	0.7%	1.0%
From 1 Day Past 9 Months Up to 1 Year	16	10.7%	15.5%
Total	103	68.7%	100%

DISCUSSION

Implications regarding the impact of this study are presented in relation to theory, practice, education, and research. With regard to theory, a construct from Nola J. Pender's HPM (Pender, et al., 2006) was supported in study findings. There are numerous factors involved in increasing prevalence of smoking cessation therapy by PCPs. Pender's HPM addresses many of these factors from the patient perspective by accounting for various characteristics that determine why one person may quit smoking while another will not, even with identical smoking cessation intervention. However, the most relevant HPM construct for this study was interpersonal influences. PCPs' recognition of interpersonal influences in promoting healthy behaviors can be evidenced by them implementing smoking cessation therapy with 68.7% of this sample. Patient's failure to be influenced to change, cease smoking, may have a negative impact on PCPs when working with other CAD patients who smoke. If appreciation for the importance of interpersonal influence lessens, the PCP's incentive to continue with or even initiate smoking cessation therapy may cease. There is no way to know if changes in perceptions of interpersonal influence contributed to the 31% of CAD patients not having smoking cessation therapy by a PCP in this sample but the possibility is worth noting.

Although no comparisons of findings were made for this sample with urban samples of CAD patients and smoking cessation therapy by PCPs, the question of what, if any, sociocultural factors related to this being a rural clinic serving rural citizens may have impacted PCP's implementation of smoking cessation therapy must be asked. While no qualitative data from PCPs were obtained in this study, their perspective on any aspects of patient noncompliance and rurality influencing PCPs implementation of smoking cessation therapy with all CAD patients could provide some interesting data for refinement of smoking cessation interventions with rural citizens by PCPs.

Practice standards of care set the protocols for treatment and follow up as nationally recognized levels of care that should be received by all individuals with particular conditions. These standards are founded from evidence-based data and support evidence-based practice leading to better patient outcomes. This study's focus addressed primary prevention with smoking cessation therapy. Primary prevention is arguably the most important aspect of an evidenced-based practice, particularly with the nurse practitioner. Study results revealed that more than 30% of the patients did not receive smoking cessation therapy of any kind from a physician or nurse practitioner even up to one year after diagnosis of ACS. Numerous reasons for this lack of preventive teaching come to mind, including lack of documentation, noncompliance, and poor follow through at the level of the PCP. Each of these factors related to education will be discussed.

Primary care providers must be educated regarding related relevant facts for CAD patients and smoking cessation. Although more patients in this sample may have received smoking cessation therapy, no documentation was charted for some if they did. The old adage, "if you did not chart it, you did not do it," may be particularly relevant here and should be reinforced in education of PCPs. Insufficient or lack of documentation is a critical area in healthcare and costs physicians, nurse practitioners, hospitals, and other healthcare agencies millions of dollars each year in lawsuits and lost revenue. For the rural clinic already facing issues related to many patients' low economic status with no insurance or money to pay for services, instituting measures that could positively affect costs is critical. Measures that would

prevent rural patients from having to come more often for more complex, and therefore more expensive, care because of increasing complications and care needs with their CAD must be implemented. Moreover, this practice deficit warrants the need for quality assurance projects to ensure accurate, sufficient charting and other standards of practice regarding smoking cessation and CAD patients as stipulated by American Heart Association (2007b).

With noncompliance the Food and Drug Administration and The National Council on Patient Information (2002) noted, “14-21% of patients never fill their original prescription”; “30-50% of all patients ignore or otherwise compromise instructions”; and “the cost of hospital admission is an estimated \$8.5 billion annually just for patients who do not take their medicines as prescribed”. Noncompliance by patients is frustrating for all PCPs and is costly to the healthcare industry. However, the PCP must maintain self-awareness regarding this frustration and maintain professional awareness that noncompliance results from many factors. First, according to Pender, Murdaugh, and Parsons (2006), the best predictor of future behavior is prior related behavior. If patients have never quit or mastered other health promoting behaviors, then it may be more challenging for them to quit. Therefore, PCPs must first continue to make patients aware of the dangers of smoking and how it correlates to CAD to assist them to make well-informed decisions about smoking. Second, PCPs must remember that patients may need help to identify perceived benefits of action and perceived barriers to action regarding smoking cessation. In doing so, PCPs will help both to avoid common pitfalls that lead to noncompliance with smoking cessation intervention or recurrence of smoking by not addressing specific benefits and barriers for this rural population. The increased compliance will positively enhance the PCP’s perspective and reinforce implementation of smoking cessation therapy. Third, the PCP may only be able to get smokers to verbally commit to a plan of action, but it is imperative to do so because even a verbal commitment creates an accountability relationship for follow up between the patient and PCP.

In follow up, PCPs must reinforce behavior change for those CAD patients who quit as Lannon’s (1997) suggests that the most important modifiable factor in noncompliance is the patient to PCP relationship. Therapy does not need to cease when teaching has been provided only once, and encouragement or other forms of positive feedback for those who have quit should be ongoing as well. Therefore, it is the PCP’s professional responsibility to make a consistent effort to form a bond with the patient and increase the patient’s awareness of the dangers of smoking. This bond may be particularly relevant with rural populations. Rural citizens, in general, tend to want to be self-sufficient and depend on themselves for care and direction. If they feel they need care, they may go to family or someone in the community before seeking out the PCP. Therefore, PCPs need to take advantage of opportunities they have when with the patient to increase their bond to the extent that the PCP will be viewed as family or a part of the community (Klugman, 2008). Studies such as the one by Reid, Pipe, and Quinlan (2006) have shown that persistent follow-up along with the use of nicotine replacement therapy increases rates of smoking cessation, and the burden for informing patients regarding health-modifying behaviors with follow up is the responsibility of PCPs. Available research data must be used to increase positive outcomes in this area.

In the area of research, evidence-based practices are being enhanced using new research findings as the standard by which PCPs deliver healthcare. Studies have demonstrated that smoking cessation reduces the risk of heart disease drastically and increases the rate of survival to a level equal to non-smokers (Goldberg et al., 2003, p. 2304). This research provides

evidence that whether patients are compliant or not, lifestyle modifications need to be a number one priority in primary prevention. The evidence should motivate PCPs to provide related, culturally relevant interventions at every visit. Providing these culturally relevant interventions for rural patients means maintaining an awareness by the PCP that people who live in rural areas define health in large part based on their ability to continue work and activities. This view may make it difficult to modify their lifestyles now based on some future disability or improvement and unique strategies by the PCP may be necessary (Klugman, 2008).

RECOMMENDATIONS

Regarding small rural clinics, the guidelines set forth by the AHA and ACC should be followed regardless of the setting and unique values and characteristics of the population served. Patients who smoke with a known history of CAD need to receive smoking cessation therapy with every visit. Doing so and documenting that it was done will provide assurance to PCPs that they are following national guidelines and encourage continuation with positive chart audits. When smoking cessation therapy is provided, it needs to be charted.

With rural patients, the best therapy must be determined and then used. While teaching sheets may be one educational option for some patients, caution regarding their use with rural patients is advised. Lower literacy levels because of generally limited educational preparation in rural populations (Alabama Rural Health Association, 2009) may lessen the effectiveness of this strategy. One other consideration is cost of therapy because financial resources may be limited. When and where the therapy is implemented is important too because limited access to formal transportation structures is prevalent in rural communities (Klugman, 2008) and these factors should be coordinated to meet patient's needs in these areas. Although this study focused on education as a smoking cessation therapy, other appropriate, culturally relevant strategies for PCPs should be explored and used to encourage smoking cessation.

Educators of PCPs must reinforce the need for smoking cessation with every patient visit. They must also increase PCP's awareness of the impact of patient provider relationships, rural cultural and social perspectives, and other noncompliance issues on the success of smoking cessation therapy in CAD patients who smoke.

Further clinical research is needed to expand the evidenced-based literature regarding reasons, conditions, and influences for PCPs providing or not providing smoking cessation therapy for every patient, particularly those PCPs in rural areas given the higher incidence of death from cardiovascular disease in rural areas (United Health Foundation, 2008). Use of Pender's HPM in research to determine reasons for smoking cessation in some and not others with identical teaching is also warranted. Further research tracing smoking cessation therapy in known CAD patients prior to diagnosis up to current or smoking cessation date is needed. This time period will assist in verifying that smoking cessation therapy is continuing despite noncompliance even if that time is greater than one year. It may take some patients longer than others to be motivated to quit, and PCPs should be vigilant in their emphasis on the patient quitting smoking. Research to assess knowledge and influences for quitting or not quitting smoking of patients who received smoking cessation therapy is also an area of importance to provide PCPs with data for structuring or restructuring smoking cessation therapy.

Quality assurance projects related to follow up and standards of care should be performed on an ongoing basis in practice and their outcomes evaluated for practice improvement. Primary

care providers should be at the forefront of primary prevention to inform patients of ways to prevent health risks such as smoking cessation therapy, especially in those with known risk factors for CAD. They should also be at the forefront of providing evidence to support adherence to this standard.

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