

Patient Tobacco Use, Quit Attempts, and Perceptions of Healthcare Provider Practices in a Safety-Net Healthcare System

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ABSTRACT

Background: Although smoking rates in the United States (US) are high, healthcare systems and clinicians can increase cessation rates through application of the US Public Health Service tobacco treatment guideline (2000, 2008). In primary care settings, however, guideline implementation remains low. This report presents the results from an assessment of patient tobacco use, quit attempts, and perceptions of provider treatment before (2004) and after (2010) guideline implementation.

Methods: By use of a systems approach, the Louisiana Tobacco Control Initiative integrated evidence-based treatment of tobacco use into patient care practices in Louisiana's public hospital system. This prospective study, designed to collect data at 2 time points for the purpose of evaluating the effect of the 5A protocol (*ask, advise, assess, assist, and arrange*), included 571 and 889 adult patients selected from primary care clinics in 2004 and 2010, respectively. Chi-square analyses determined differences between survey administrations, along with direct standardization of weighted rates to control for confounding factors.

Results: Patient reports indicated that provider adherence to the 5A clinical protocol increased from 2004 to 2010. Significant ($P<0.001$) improvements were observed for the *assess* (39% vs 72%), *assist* (24% vs 76%), and *arrange* (8% vs 31%) treatment variables. Patient-reported quit attempts increased, along with awareness of cessation services (from 19% to 70%, $P<0.001$), while use of cessation medications decreased (from 23% to 5%, $P<0.002$).

Conclusion: Following implementation of the guideline, significant improvements were noted in patient reports of provider treatment and awareness of cessation services.

INTRODUCTION

Tobacco use continues to lead the nation as a preventable cause of morbidity and mortality.¹ Despite reductions over the past 3 decades in smoking among the nation's general population,² rates of tobacco use remain high among low-income, less-educated, minority, and under- and uninsured groups.³ Louisiana's smoking prevalence (22%) is higher than the national average (17%).⁴ Nationwide, smoking rates vary by insurance coverage: 16% of those covered by private insurance smoke, compared to 30% of public insurance enrollees (Medicaid and Medicare) and 32% of uninsured residents.⁵ In Louisiana, a large proportion (25%) of residents is uninsured; 34% of these smoke.⁶

Healthcare providers and delivery systems can impact population-level cessation rates through implementation of the US Public Health Service (USPHS) clinical practice guideline (CPG) *Treating Tobacco Use and Dependence: 2008 Update* that includes the 5A protocol: (1) *ask* about tobacco use, (2) *advise* all identified smokers to quit, (3) *assess* smokers' willingness to quit, (4) *assist* smokers in their quit attempt, and (5) *arrange* for follow-up contact. Furthermore, the CPG delineates standards

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for quality care, endorses the effectiveness of evidence-based treatments for tobacco use, and provides strategies for integrating screening and treatment into routine patterns of care. Nearly 70% of smokers visit a physician at least once a year, providing an opportunity for intervention.⁷ However, CPG implementation in primary care settings is less than optimal.⁸

Patients' perceptions of their care have become increasingly important to health systems as many seek to improve the quality and satisfaction with treatments and to provide patient-centered care.^{9,10} When tobacco users receive treatment according to the CPG, they report higher satisfaction with overall healthcare received relative to untreated tobacco users.⁷ Provider treatment of tobacco use can be measured by patient surveys (eg, Consumer Assessment of Healthcare Providers and Systems, National Health Interview Survey), provider surveys, medical record reviews, and direct observation. However, limitations exist for each of these and results vary. While direct observation is the standard for assessing provider treatment, healthcare systems can benefit from precise, cost-effective, and practical approaches to obtaining patient perceptions of provider intervention.^{11,12} Patient surveys are more accurate than chart audits for assessing chronic disease advice, information dissemination, and, in some instances, general health promotion.¹³

In 2002, to accompany an increase in the excise tax on cigarettes, the Louisiana State University School of Public Health (LSUSPH), in partnership with Louisiana's safety-net healthcare system, created the Tobacco Control Initiative (TCI). The TCI, described in detail elsewhere,¹⁴ employed a systems approach to facilitate implementation of the CPG in the LSU network of public hospitals. This report presents results from an assessment of patient tobacco use, quit attempts, and perceptions of provider treatment before (2004) and after (2010) the CPG implementation in Louisiana's safety-net healthcare system.

METHODS

Sampling

In May 2004, patients ≥ 18 years old and using LSU as their principal source of primary care were evaluated. Eligible participants met the condition of 1 or more visits to an LSU primary care clinic in the prior year. A follow-up survey was conducted in January 2010. Participants were eligible in 2010 if they had had 1 or more visits to an LSU primary care clinic during survey administration.

A stratified, 2-stage, cluster sampling plan was used in 2004 and 2010. In 2004, the first stage included 10 public hospitals in the system and 44

nonpediatric primary care clinics. For each clinic, the survey was conducted during approximately 70 operating days during the quarter; for each stratum, 2 of these operating days (a total of $44 \times 2 = 88$) were selected as the first-stage cluster sample. The second stage in 2004 involved choosing specific participants within each clinic-day combination. After further stratifying by age and gender, subjects were selected randomly from appointments scheduled for the clinic on the selected days.

In 2010, the first-stage cluster sampling plan included 7 public hospitals in the system and 29 nonpediatric clinics. For each clinic, a survey time was assigned over a 2-week period. Each day, the surveyors were required to visit 1 clinic for about 2 hours, either in the morning or the afternoon, thus designating a total of 10 slots for the 2-week period (10 weekdays). The second stage in 2010 included participants within each clinic-day combination. In this survey, all subjects presenting to the clinic during the assigned time slot were included. Because clinic patient loads varied, the samples collected for each stratum were determined in proportion to the relative patient volume of each clinic.

Survey Instrument

Both surveys contained items found in other national surveys (eg, National Health Interview Survey, Adult Tobacco Survey, Behavioral Risk Factor Surveillance System). The 2004 survey consisted of 8 sections: Health Status, Health Care Access, Demographics, Tobacco Use, Quit Attempts and Methods to Quit, Stages of Change for Quitting, Physician and Health Professional Behavior, and Other Tobacco Use. The 2010 survey consisted of 3 sections: Tobacco Use, Quit Attempts and Methods to Quit, and Physician and Health Professional Behavior.

Survey Administration

In 2004, surveys were administered by interviewers and conducted in a private area in the clinic prior to the patients' interaction with the healthcare provider. After agreeing to take the survey, patients completed consent procedures and were informed they would be compensated \$10 for their time. The response rate was 95%. Participants' responses were recorded on a hard copy of the survey instrument. Payment was mailed after the interview.

In 2010, considerations of cost and sustainability resulted in changes to the survey methodology. Self-administered surveys were distributed to all patients presenting for a clinic visit with the request to complete them prior to their clinic visit. A TCI tobacco cessation coordinator provided clinic intake clerks with surveys, clipboards, and pencils that were given

to all patients at appointment check-in. This approach yielded a 99% response rate. Because survey participation was both voluntary and anonymous, and the survey was made available to all patients, it was not necessary for patients to complete an informed consent or patient privacy form. Participants did not receive compensation. The study was approved by the Institutional Review Board of the LSU Health Sciences Center and by the Research Review Committee of each facility.

Analysis

Descriptive statistics of the demographic characteristics of respondents were derived. For the purpose of comparing 2004 and 2010 patients, the results were standardized by the gender and age population distribution in 2010. All analyses were weighted to account for the complex sampling design. Chi-square analyses were conducted to explore 2004 and 2010 differences among patients who were smokers. Weighting of analytical procedures was accomplished with SAS 9.1 (SAS Institute, Cary, NC). To allow valid comparison of groups, direct standardization (or adjustment) of rates was used to minimize the influence of confounding factors.

RESULTS

Changes in Demographic Status

Included in the results were 571 patients in 2004 and 889 patients in 2010, representing the 7 hospitals in the Louisiana public hospital system that participated in both administrations of the survey. Table 1 shows the demographics for the samples. About two-thirds of the patients were ≥ 45 years old. The sample was predominantly female (82% in 2004 vs 71% in 2010). In 2004, most of the patients were African-American (60%). In 2010, however, more than half the patients were white (54%). Most patients were lower income, with 58% of the participants reporting free care (indigent) status in 2004 and 52% in 2010.

Changes in Tobacco Use

To compare patients in 2004 and 2010, the results were standardized by gender and age distribution using the 2010 population distribution. Chi-square analyses were conducted to explore 2004 and 2010 differences among patients who were smokers. Table 2 shows the tobacco use status in 2004 and 2010. In general, the proportion of ever smokers was similar (54% vs 49%; $P=0.083$). Between 2004 and 2010, no significant differences were found for the period of time since ever smokers had last smoked cigarettes ($P=0.328$). However, the percentage of heavy smokers (those who smoke more than 11 cigarettes per day) was higher in 2004 than in 2010 ($P<0.001$).

Changes in Patient Perceptions of Physician and Health Professional Behaviors

To determine if, in their interactions with smokers, healthcare providers were following the CPG related to smoking cessation, smokers were questioned about interactions with healthcare providers. Specifically, smokers were asked about their tobacco use and whether the healthcare provider gave advice to quit smoking. Table 3 shows the patient-reported healthcare provider behaviors regarding the CPG 5A protocol: *ask*, *advise*, *assess*, *assist*, and *arrange*. In 2004 and 2010, 86%-90% of patients reported that their healthcare provider had asked and advised them to quit smoking in the past 12 months. In 2010, however, healthcare providers did a better job in assessing, assisting, and arranging. Table 3 shows that 72% of patients had been assessed during the past 12 months in 2010, but only 39% of patients were assessed during the previous 12 months in 2004 ($P<0.001$). Similarly, 76% of patients had been assisted in the past 12 months in 2010, but only 24% of patients had been assisted in the previous 12 months in 2004 ($P<0.001$). In addition, 31% of patients had cessation services arranged in 2010, but only 8% of patients had services arranged in 2004 ($P<0.001$).

Changes in Patient-Reported Quit Attempts and Methods

Table 4 shows the quit-smoking behaviors reported by patients who smoked. Although the proportion of smokers who stopped smoking for 1 day or longer was higher in 2010 (60%) vs 2004 (49%), the difference was not statistically significant ($P=0.120$). In 2010, a significantly higher proportion of smokers reported being aware of assistance (70%) such as telephone quit lines or cessation services at local LSU hospitals; however, only 19% of smokers were aware of such assistance in 2004 ($P<0.001$). Nearly the same percentage of those who smoked cigarettes regularly and had stopped smoking for 1 day or longer to quit smoking in the past 12 months (75% in 2004 and 76% in 2010, $P=0.920$) reported that they tried to quit smoking on their own (cold turkey). A significant difference was found in the use of an aid to quit smoking. More smokers in 2004 than in 2010 stated they used a stop-smoking product such as a nicotine patch or bupropion hydrochloride (Zyban) (23% in 2004 vs 5% in 2010, $P=0.002$).

DISCUSSION

The survey findings suggest that integrating the USPHS CPG in a large public hospital system impacts patient tobacco use, quit attempts and methods for

Table 1. Demographic Status

Variable	Frequency (%)		P
	May-Aug 2004 (n=571)	Jan-Feb 2010 (n=889)	
Gender			<0.001
Female	438 (82.0)	598 (70.6)	
Male	96 (18.0)	249 (29.4)	
Age			0.019
18-24	27 (5.1)	55 (6.6)	
25-34	47 (8.8)	115 (13.9)	
35-44	98 (18.4)	140 (16.9)	
45-54	135 (25.3)	221 (26.7)	
55-64	152 (28.5)	188 (22.7)	
≥65	74 (13.9)	109 (13.2)	
Race			<0.001
African-American	322 (60.3)	393 (46.4)	
White	212 (39.7)	454 (53.6)	
Payer			<0.001
Commercial insurance	29 (5.5)	50 (6.4)	
Free care/indigent	307 (57.9)	407 (51.8)	
Medicaid	78 (14.7)	144 (18.3)	
Medicare	97 (18.3)	101 (12.9)	
Self-pay	19 (3.6)	84 (10.7)	

Table 2. Tobacco Use in Patients Who Have Smoked at Least 100 Cigarettes in Their Lifetimes

Survey Questions	Frequency (%)		P
	May-Aug 2004 (n=529)	Jan-Feb 2010 (n=823)	
Have you smoked at least 100 cigarettes in your entire lifetime?^a			0.083
Yes	268 (54.0)	411 (48.7)	
Do you now smoke cigarettes every day, some days, or not at all?^a			<0.001
Every day	109 (42.0)	225 (53.8)	
Some days	25 (8.8)	52 (13.3)	
Not at all	133 (49.1)	130 (32.9)	
On average, about how many cigarettes a day do you smoke?^a			<0.001
1 – 10 cigarettes	81 (34.9)	160 (57.8)	
11 – 20 cigarettes	82 (37.7)	96 (32.0)	
21 – 35 cigarettes	23 (10.6)	27 (8.4)	
40 or more cigarettes	31 (16.8)	5 (1.8)	
About how long has it been since you last smoked cigarettes regularly?^a			0.328
0 to 1 month ago	74 (42.5)	175 (47.4)	
1 to 3 months ago	4 (4.1)	19 (5.1)	
3 to 6 months ago	8 (5.9)	16 (4.3)	
6 to 12 months ago	3 (1.8)	14 (3.7)	
1 to 5 years ago	18 (10.7)	23 (5.4)	
5 or more years ago	62 (35.0)	122 (34.2)	

^aWeighted percentage.

Table 3. Physician and Health Professional Behaviors

5A Protocol	Frequency (%)		P
	May-Aug 2004	Jan-Feb 2010	
Asked - In the past 12 months, did any health care provider at this LSU Hospital ask if you smoke?			0.11
Yes	179/208 (86.2)	740/820 (90.2)	
Advised - In the past 12 months, did any health care provider advise you to quit smoking? ^a			0.953
Yes	62/75 (86.1)	164/192 (85.8)	
Assessed - During the past 12 months, did any health care provider ask you if you were willing to make a quit attempt? ^a			<0.001
Yes	33/89 (39.3)	136/192 (71.7)	
Assisted - In the past 12 months, when a health care provider advised you to quit smoking, did they do any of the following (prescribe or recommend medication, suggest setting quit date, recommend or refer to counseling, or give self-help material)? ^b			<0.001
Yes	12/62 (23.9)	124/164 (76.3)	
Arranged - In the past 12 months, when a health care provider advised you to quit smoking, did they do any of the following (call and ask you about your quit attempt within one week or one month)? ^b			<0.001
Yes	5/62 (7.7)	48/164 (31.4)	

^aSmoked cigarettes regularly in the past 12 months.

^bSmoked cigarettes regularly in the past 12 months and in the past 12 months healthcare provider advised patient to quit smoking.

Note: Weighted percentages reported for all questions of the 5A protocol.

quitting, and perceptions of provider treatment behavior. In 2010, fewer respondents reported ever smoking and heavy smoking. While the decrease among ever smokers may be attributed to statewide

prevention programs and media campaigns focused on averting smoking initiation, the decrease in those smoking 11 or more cigarettes per day may result from successful quit attempts either on their own or

Table 4. Quit Attempts and Methods

Survey Questions	Frequency (%)		P
	May-Aug 2004	Jan-Feb 2010	
In the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking? ^a			0.120
Yes	37/77 (49.2)	113/189 (60.4)	
Are you aware of assistance that might be available to help you quit smoking at this LSU Hospital such as telephone quit lines or local health clinic services? ^a			<0.001
Yes	18/89 (18.6)	130/188 (70.1)	
The last time you tried to quit smoking did you quit cold turkey (on your own)? ^b			0.920
Yes	27/37 (74.8)	85/111 (75.7)	
The last time you tried to quit smoking, did you use a patch or Zyban to help you quit? ^b			0.002
Yes	8/37 (23.1)	6/113 (5.1)	

^aSmoked cigarettes regularly in the past 12 months.

^bSmoked cigarettes regularly and had stopped smoking for 1 day or longer to quit smoking in the past 12 months.

Note: Weighted percentages reported for all questions.

from utilizing cessation services in the LSU Health System. Since 2004, TCI has made free group behavioral counseling, self-help material, access to low-cost pharmacotherapy, and, more recently, access to free quit-line telephone counseling available to aid patient quit attempts. Compared to 2004, more respondents in 2010 reported smoking ≤ 10 cigarettes per day, daily smoking, and having smoked in the previous month. This trend suggests an emergence of differing levels of smokers and their cessation pathways: smokers who are able to quit and maintain abstinence, smokers who quit and relapse, and recalcitrant smokers.¹⁵ Relapsing and recalcitrant smokers are likely recycled in the health system¹⁶ and may need tailored services to improve quit attempts and abstinence rates.¹⁷ However, the smoking rate of survey participants in both 2004 and 2010 was higher than the rates reported for patients in other primary care settings^{18,19} and for patients who are uninsured.²⁰

Patient respondents reported an increase in all of the provider treatment measures, except advice to quit, which remained unchanged. There was a slight increase in provider screening for tobacco use and significant increases in providers who assessed patient willingness to quit, assisted patients with their quit attempts, and arranged follow-up for patients after the clinic visit.

These increases may indicate that TCI's effort to galvanize the clinical and patient-level cessation interventions by the LSU Health System were effective, and this systems-based approach may serve as a model for future statewide intervention efforts to decrease patient tobacco use through the systematic implementation and evaluation of the USPHS CPG for treating tobacco use by healthcare providers. Identification and documentation of tobacco users were obtained from nursing assessment forms, followed by TCI referral forms, and finally from electronic medical records with prompts and reminders for intervention. Systemwide adoption of a tobacco treatment policy, training to improve provider intervention skills, and provider feedback on clinical performance via an electronic dashboard occurred throughout the system. These multilevel cessation interventions, including counseling and medication, have been successful in improving adherence to the USPHS CPG for treatment of tobacco use in primary care settings.²¹ Although few studies have reported patient perceptions of provider adherence to the 5A approach (*ask, advise, assess, assist, arrange*) in primary care settings, overall our results were more favorable than those found by others in similar settings^{11,18,22,23} and in studies of the uninsured.⁸

Respondents reported an increase in quit attempts, and significantly more reported awareness of assistance to help them quit. These increases suggest that TCI's efforts to ensure that all providers were trained to identify and discuss best-practice treatment options with their patients were effective. In addition, TCI employed dedicated tobacco specialists to coordinate cessation services and to support clinicians at each facility. The present results regarding quit attempts were less favorable than results reported in primary care settings¹⁹ but higher than in studies among the uninsured.⁸

Between 2004 and 2010, no change was seen in respondents who reported making a quit attempt on their own (cold turkey), and fewer respondents reported making a quit attempt by using a nicotine patch or Zyban. This finding suggests efforts to increase quit attempts using evidence-based strategies were not equally effective. However, the decrease in use of a patch or Zyban may also be explained by increased access to and availability of varenicline (Chantix) starting in 2006,²⁴ an option that was not on the 2004 survey.

Study limitations should be noted. One limitation is that patient responses were based on their previous clinic visit (ie, surveys were conducted before their current clinic visit). This delayed measurement and reliance on recall may overestimate performance.¹² A second limitation is that the results were based on a self-report method. Further, several commonly used methods to assess provider cessation counseling have limitations. Patient surveys may under-²³ or overestimate,^{25,26} provider surveys may overestimate,^{23,27} paper medical charts may underestimate,^{25,26,28,29} and electronic medical records may underestimate all items on the 5A protocol, except for asking about tobacco use.¹¹ Direct observation, the ideal method, is burdensome and costly.²⁹ Healthcare systems can benefit from precise, cost-effective, and practical approaches to assessing treatment for tobacco use, and this type of onsite survey distribution proved to be an effective strategy for data collection in Louisiana's public hospital system.

CONCLUSION

This study—which examined patient tobacco use, quit attempts and methods, and perceptions of physician behavior to treat tobacco use among primary care patients in Louisiana's safety-net health-care system—found positive changes between 2004 and 2010. During this time frame, practice guidelines for the treatment of tobacco use and dependence were implemented. Obviously, these results do not indicate cause and effect because this study was a nonrandomized and noncontrolled observation. Other extraneous factors may have promoted improve-

ments in many of the items measured; however, some differences are quite large and statistically significant. Therefore, these results overall indicate a positive trend in patient behaviors and perceptions of provider care after implementation of the 5A clinical protocol. These observations have implications for eliminating tobacco use at the population level, especially among ethnic/racial minorities, those of low socioeconomic status, and the under- and uninsured. Future studies should examine the effects of implementation experimentally in a randomized-controlled trial and compare patient responses to clinician (electronic) documentation. Furthermore, tailored interventions that target relapsed and recalcitrant smokers and the use of evidence-based strategies during quit attempts are warranted. Decreasing tobacco use is a top objective of Healthy People 2020.³⁰ Improving the quality of treatment through a systems-based approach may impact the disproportionate use of tobacco in especially disparate populations.

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