Impact of a Smoke-Free Hospital Campus Policy on Employee and Consumer Behavior

J. GARY WHEELER, MD^a
LEAVONNE PULLEY, PhD^b
HOLLY C. FELIX, PhD^c
ZORAN BURSAC, PhD^d
NADIA J. SIDDIQUI, MPH^e
M. KATHRYN STEWART, MD,
MPH^e
GLEN P. MAYS, PhD^c
C. HEATH GAUSS, MS^d

SYNOPSIS

Objective. Although smoke-free hospital campuses can provide a strong health message and protect patients, they are few in number due to employee retention and public relations concerns. We evaluated the effects of implementing a clean air policy on employee attitudes, recruitment, and retention; hospital utilization; and consumer satisfaction in 2003 through 2005.

Methods. We conducted research at a university hospital campus with supplemental data from an affiliated hospital campus. Our evaluation included (1) measurement of employee attitudes during the year before and year after policy implementation using a cross-sectional, anonymous survey; (2) focus group discussions held with supervisors and security personnel; and (3) key informant interviews conducted with administrators. Secondary analysis included review of employment records and exit interviews, and monitoring of hospital utilization and patient satisfaction data.

Results. Employee attitudes toward the policy were supportive (83.3%) at both institutions and increased significantly (89.8%) at post-test at the university hospital campus. Qualitatively, administrator and supervisor attitudes were similarly favorable. There was no evidence on either campus of an increase in employee separations or a decrease in new hiring after the policy was implemented. On neither campus was there a change in bed occupancy or mean daily census. Standard measures of consumer satisfaction were also unchanged at both sites.

Conclusion. A campus-wide smoke-free policy had no detrimental effect on measures of employee or consumer attitudes or behaviors.

^aDepartment of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences and Arkansas Children's Hospital, Little Rock, AR

^bDepartment of Health Behavior and Health Education, Fay W. Boozman College of Public Health, University of Arkansas for Medical Sciences, Little Rock, AR

^cDepartment of Health Policy and Management, Fay W. Boozman College of Public Health, University of Arkansas for Medical Sciences, Little Rock, AR

^dDepartment of Biostatistics, Fay W. Boozman College of Public Health, University of Arkansas for Medical Sciences, Little Rock, AR

^eCenter for Health Equality, Drexel University, Philadelphia, PA

Address correspondence to: J. Gary Wheeler, MD, Department of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences and Arkansas Children's Hospital, 800 Marshall St., Little Rock, AR 72202; tel. 501-364-1416; fax 501-364-3551; e-mail <WheelerGary@uams.edu>.

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Despite evidence of the deleterious effects of tobacco on health, which have been accumulating for five decades,¹ the U.S. health-care system has been slow to incorporate tobacco-control efforts on its campuses. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) began utilizing tobacco restriction inside facilities as a quality indicator in 1993. One year later, 96% of hospitals were in compliance.²

An unintended consequence of these policies has been high amounts of outdoor tobacco smoke exposure on entry to hospital campuses. This exposure has resulted in an unpleasant public image of hospitals full of patients with tobacco-related diseases surrounded by smokers—both consumers and employees. In addition, there is the unintended image that the health system condones smoking. In the past, little has been done by hospitals in Arkansas and health campuses elsewhere to contradict this message.

The U.S. Public Health Service (USPHS) guidelines published in 2000³ have been incompletely implemented with many hospitals unfamiliar with them. For example, in Arkansas in 2002 through 2003, 72% of hospitals said they had no cessation plans as a benefit for employees⁴ despite the known impact of smoking on health-care costs and the need for institutions to reduce those costs.⁵ As employers, hospitals face the added incentive of promoting no-smoking policies and cessation programs to reduce absenteeism and improve productivity among employees.

Recently, efforts to make hospital campuses smoke-free have been initiated to provide a strong health message, to protect patients with respiratory disease, and reduce employer costs in a few locations in the U.S. (including Cleveland, Savannah, GA, University of Texas campuses, University of Michigan medical campuses, and hospital campuses in Maine). From our personal communications, we have learned that efforts to implement these prohibitions at these and other sites have been impeded due to concerns that such policies would lead employees and patients to migrate to other institutions, create difficult enforcement roles for hospitals, and cause hospitals to be viewed as uncaring and judgmental toward patients and families.

Despite these concerns, the leadership of Arkansas's only university hospital and academic medical center decided to adopt a smoke-free campus policy at the urging of the university's chancellor. Soon thereafter, a similar policy was adopted by a smaller, private children's hospital that uses the university's faculty and residents for its medical staff. In addition to a careful implementation process over several months, an evaluation was performed to measure the impact

of the new policies on employees and consumers at the two institutions.

METHODS

Implementation

University of Arkansas for Medical Sciences (UAMS) University Hospital. On October 29, 2003, the university chancellor announced that on July 4, 2004, the university's hospital and academic medical center campus would become smoke-free. This policy applied to all property, owned or leased, including grounds and vehicles. Compliance would be the responsibility of administrators, with security personnel as backup. A task force was established to develop and oversee the implementation plan. A variety of free cessation programs with and without drug therapy were offered to all employees for a six-month period (April 1 to September 30, 2004), and a wellness director was hired to coordinate employee health initiatives.

Pharmacotherapy was provided for sale on campus to nonemployees. Smokers were offered smoke-free kits (gum, peppermints), and portable pagers were offered to emergency department patrons and visitors who needed to leave campus to smoke. Scripts were developed for employees to use with patrons who were smoking and unfamiliar with the policy. Policy violations by employees were handled through standard human resource procedures. The policy was included in all new employee orientations. Signage was put in place and maps posted to clarify campus vs. noncampus areas. Neighboring businesses were made aware of the policy.

Policy publicity included a number of print methods including posters, tent cards, and notices in official mailings, such as paychecks. Open meetings were held to address questions and were attended by administration. Promotion of the policy was prominent in local media. Patients were notified prior to arrival, or upon arrival for unplanned visits.

Arkansas Children's Hospital (ACH). In the spring of 2004, the ACH board approved a plan for this campus to go smoke-free. There was active communication between the UAMS task force and ACH. The plan was announced a year in advance following informal surveys done on the ACH campus suggesting that the medical staff supported the policy. A task force was formed as at UAMS. A tobacco-control specialist with expertise in cessation was hired to work with staff and patients in addition to drug therapy offered on an open-ended basis. Pharmacotherapy was provided for

sale on campus to nonemployees. Six months after the policy was announced, all employees were required not to use tobacco on the campus. Twelve months after the policy was announced, the policy went into effect for all employees, visitors, and patients.

DATA SOURCES AND ANALYSIS

Survey methodology

UAMS. Cross-sectional surveys of campus employees (including university and hospital faculty and staff) were conducted in April 2004 and May 2005 using a simple random sample of employees at each point in time. The instruments used at the two time points were identical except for changes from future to past tense when referring to policy implementation. The personnel roster from human resources was used to randomly sample 1,400 from approximately 9,000 employees without replacement. Data were weighted based on the 1995 UAMS employee population by gender and age groups: 18–24, 25–64 by intervals of 10 years, and older than 64, to create representative estimates of the employee population.

The survey focus was on knowledge, attitudes, and behaviors regarding smoking, secondhand smoke, and the reactions to policy change. Most of the behavioral and demographic items were from the Behavioral Risk Factor Surveillance System survey. Knowledge items were from the Arkansas Adult Tobacco Survey. Attitude items specific to the policy change were developed by an evaluation workgroup specifically for this study and underwent expert review for face and content validity.

ACH. A similar survey was used during the two months following the employee implementation of the hospital policy. The survey was minimally modified for the children's hospital campus.

Data analysis

All of the data analysis was performed using survey procedures available in SAS.⁶ Descriptive statistical methods of analyses included proportions and their standard errors. Rao-Scott Chi-square tests for independence were applied to compare the equality in proportions before and after policy implementation. The Rao-Scott Chi-square test is a design-adjusted version of the Pearson Chi-square test. Fisher's exact test was applied in instances where Chi-square cell expectancy assumptions were not met.

Employee separations and new hires

Retrospective data on separations (resignations and terminations) and new hires were obtained on a monthly basis through the human resource departments at both UAMS and ACH. At UAMS, sufficient data were available for trend analysis.

Focus groups and key informant interviews

Eight hospital administrators were identified by the evaluation workgroup as being knowledgeable about the effects of the policy on employees and consumers and were individually interviewed after the UAMS smoking ban was implemented. Seven supervisors identified by the human resources office and four members of the security force identified by the Chief of Police participated in two separate focus groups. Key informant and focus group interview guides were developed by the evaluation workgroup to capture what these groups had anticipated prior to policy implementation; how they felt now; whether and how their jobs had been affected by the policy change; the impact on employees, consumers, and the environment at UAMS; and any suggestions for improvement. Tape recordings were transcribed and analyzed by coding for themes.

Hospital utilization

Licensed beds, staffed beds, and patient bed day counts by month from June 2003 to August 2005 for the UAMS university hospital and from April 2004 to December 2005 for ACH were obtained from respective hospital administrators. Monthly occupancy rates for both facilities were calculated using both licensed bed and staffed bed counts. Mean daily censuses (MDCs) and three-month moving MDCs were also calculated. Trend analysis and pre-/post-implementation occupancy rate, patient bed day mean, MDC, and moving MDC comparisons were performed to determine the impact of the policy's implementation on consumers' use of both hospitals.

Cessation support utilization

Data on utilization of tobacco-cessation options offered by UAMS were obtained through the office of human resources.

Patient satisfaction: UAMS and ACH

Both UAMS and ACH utilize the Press Ganey Patient Satisfaction Survey (South Bend, Indiana) on an ongoing basis. Inpatient surveys are sent to all ACH and UAMS patients following inpatient stays. Although these surveys often have low response rates ranging from 25% to 30% both nationally and statewide in

Arkansas, these response rates are typical for single-wave patient satisfaction surveys mailed with a cover letter⁷ but higher than other direct-mail surveys sent without previous contact with the intended respondent.⁸⁻⁹

Press Ganey surveys are considered an industry standard and very important by hospital administrators in identifying consumer concerns about hospital services. No questions on the survey were specific to tobacco usage; therefore, we utilized the total consumer satisfaction scores as well as subscores relevant to the new tobacco policies, such as questions related to staff sensitivity to inconveniences, attitudes toward visitors, and accommodations for the comfort of patients/visitors.

Ethical approval

This study was reviewed and approved by the Institutional Review Board of the University of Arkansas for Medical Sciences.

RESULTS

Survey response: UAMS and ACH

At UAMS, 60.1% ($n=842$) of the pre-implementation surveys and 65.1% ($n=912$) of the post-implementation surveys were returned. Gender distribution did not significantly change ($p=0.8964$), but job classification did change primarily due to a drop in nurse respondents from 19% to 11% ($p<0.0001$), as did education due to slight decreases in high school or less and college graduate and increases in professional or post-college education ($p=0.015$). Age and race distributions did not change. The ACH survey response rate was 45.8% ($n=183$).

Employee knowledge, attitudes, and beliefs. At UAMS, a high percentage of employees believed that secondhand smoke was harmful (96.4% before and 97.1% after the ban, respectively). Support for the policy, which was high before the ban (83.3%), significantly increased after the ban (89.8%; $p<0.001$). Before the ban, employees felt the policy would make UAMS healthier and safer (87.8%), and following the ban, this attitude became significantly more prevalent (92.3%; $p<0.0001$). Before the ban, employees believed the policy would set a good example for patients (87.2%), and this belief significantly intensified afterward (91.6%; $p<0.001$).

At ACH, a high percentage of employees believed that secondhand smoke was harmful (96.7%). Support for the policy was high (87.8%). Employees felt the policy would make ACH healthier and safer (89.4%). Employees believed the policy would set a good example for patients (85.1%).

Employee exposure. Significantly more UAMS employees reported that they had to walk through cigarette smoke on campus before the ban (43.1%) than after the ban (18.0%; $p<0.0001$).

Employee smoking rates. At UAMS, surveyed employees were asked, "Are you currently a cigarette smoker?" Self-reported rates of smoking based on this survey question declined significantly from 9.6% before the smoking ban to 2.6% after the smoking ban ($p<0.0001$).

Employee separations and new hires:

UAMS and ACH

There were no discernable changes in employee separations after implementation of the campus smoking ban at UAMS and ACH. At UAMS, the separation rate for the six-month period after policy implementation (6.05% of all active employees) was slightly lower than the rate observed for the same six-month period one year earlier (6.14%). Similarly, there were no discernable changes in the rate of new employee hires at either facility after policy implementation.

Focus groups and key informant interviews: UAMS

Administrators. Before the ban, hospital administrators were concerned that the ban might deter patients from coming to UAMS, increase turnover, hurt employee relations, and create challenges over enforcement. After the ban was implemented, there was unanimous agreement that the ban was "a good thing," gave the campus a better appearance, made people more aware of the harms of secondhand smoke, gave the university campus a very positive image, and resulted in praise for UAMS's "courageous leadership" action. No negative consequences were reported.

Supervisors. Before the ban, supervisors were concerned about patient safety and enforcement. Following the ban, they were pleased with the improvement in the physical environment, such as the reduction in cigarette butts, traffic by patients in and out to smoke, and smoking by employees. They also cited the improved image that UAMS had in the community. Negative reports included more illicit indoor smoking and inconsistent application of the rules by different units.

Security. Before the ban, UAMS officers felt that the ban would not succeed. After the ban, they were surprised that smokers were more cooperative than expected. They were frustrated that they were held responsible for policy compliance and also about the lack of places to send smokers. They reported about 250 contacts regarding smoking per month, most involving visitors, and only five per month involving

employees, although they thought employees were mostly hiding their use.

Hospital utilization: UAMS and ACH

Comparisons of 12-month means before and after the implementation of the campus-wide smoke-free policy at UAMS showed that patient bed days, occupancy rates, and MDC increased slightly after implementation (Table 1). The university hospital had 400 licensed beds and a monthly average of 264 staffed beds from July 2003 to July 2005. During that period, the mean monthly number of patient days at the university hospital was 7,012, with a low of 6,649 occurring before policy implementation (November 2003) and a high of 7,409 occurring after implementation (July 2005). The MDC was 230.1, with the lowest census occurring nearly one year prior to implementation (218.9 in August 2003) and the highest census (244.4) occurring in February 2004. The university hospital mean monthly occupancy rate using staffed beds and licensed beds was 87.4% and 57.5%, respectively. For both measures, the lowest and highest monthly means occurred in the year before policy implementation.

Similarly, most measures of hospital utilization at ACH were stable or increased slightly in the six months after policy implementation (April 2005) compared with the preceding six months. ACH had 280 licensed beds and a monthly mean of 278 staffed beds between May 2004 and October 2005. During that period, the mean monthly patient days at ACH were 6,305, with a low of 5,766 in February 2005 and a high of 6,590 in May 2004. The ACH mean monthly occupancy rate using staffed beds was 74.4%, with the low being 69.4% in May 2005 and the high being 82.8% in June 2004. The MDC was 206.7, with August 2004 having the lowest

MDC (197.1) and June 2005 having the highest MDC (215.3). The ACH mean monthly occupancy rate using licensed beds was 73.8%, with the low being 70.4% in August 2004 and the high being 76.8% in June 2005.

Comparisons of the six-month averages before and after implementation of the campus-wide smoke-free policy at ACH show that the licensed bed occupancy rate, patient bed days, and MDC increased slightly, but the staffed bed occupancy rate declined slightly after implementation. Administrators attributed the reduction in staffed bed occupancy not to the smoking policy but to hospital expansion activities that resulted in an increased number of staffed beds. Overall demand for hospital services increased after implementation as indicated by 2% in mean patient bed days and mean daily censuses (Table 1).

Staff cessation utilization support: UAMS

Prior to the ban, 56.8% of smokers in the random sample survey reported that they were "seriously thinking of quitting smoking cigarettes," and 27.4% of smokers said that they were likely to try to quit because of the new UAMS policy. Cessation services reported that 210 employees utilized one of several cessation options. If the 9.6% prevalence of employees at UAMS who reported smoking is reliable, then 25.8% of smokers sought cessation services. Quit rates were not available.

Patient satisfaction: UAMS and ACH

Roughly 11% to 14% of ACH inpatient surveys were returned, and 19% of UAMS inpatient surveys were returned during the evaluation period. Table 2 shows overall scores and subscores of selected questions for the three quarters preceding announcement of the

Table 1. Occupancy rates and patient beds pre/post policy implementation at UAMS and ACH

	UAMS ^a		ACH ^a	
	Pre-implementation (July 2003–June 2004) monthly mean	Post-implementation (August 2004–July 2005) monthly mean	Pre-implementation (May–October 2004) monthly mean	Post-implementation (May–October 2005) monthly mean
Licensed bed occupancy rate (percent)	57.0	58.1	73.3	74.7
Staffed bed occupancy rate (percent)	87.2	87.8	79.3	71.6
Patient bed days	6,959	7,071	6,298	6,413
Mean daily census	228.2	232.6	205.4	209.2

^aUAMS's smoke-free campus policy went into effect on July 4, 2004. ACH's smoke-free campus policy was phased in between October 2004 and April 2005.

UAMS = University of Arkansas for Medical Sciences

ACH = Arkansas Children's Hospital

Table 2. Consumer survey results

	UAMS ^a						ACH ^b					
	12/02– 2/03	3/03– 5/03	6/03– 8/03	9/04– 11/04	12/04– 2/05	3/05– 5/05	7/03– 9/03	10/03– 12/03	1/04– 3/04	4/05– 6/05	7/05– 9/05	10/05– 12/05
Overall score (n)	76.1 (481)	79.6 (475)	80.2 (505)	80.0 (547)	78.4 (383)	79.1 (352)	86.0 (395)	85.3 (388)	85.5 (401)	86.6 (340)	87.2 (390)	87.7 (340)
Staff sensitivity to inconveniences (n)	75.7 (425)	80.1 (435)	80.3 (455)	80.2 (499)	77.5 (351)	80.8 (321)	85.7 (364)	84.3 (367)	82.6 (366)	85.0 (321)	85.8 (369)	87.0 (316)
Staff attitude toward family and visitors (n)	79.4 (422)	82.5 (428)	84.2 (462)	83.6 (511)	81.6 (343)	82.9 (322)	91.2 (374)	89.2 (356)	89.0 (380)	90.4 (332)	90.7 (378)	91.1 (325)
Accommodations and comfort for visitors (n)	73.9 (419)	77.2 (422)	77.7 (459)	76.6 (505)	73.5 (343)	76.9 (319)	82.5 (345)	81.5 (337)	80.8 (358)	82.2 (298)	83.2 (341)	84.1 (300)
Staff concern makes stay restful (n)	NA	NA	NA	NA	NA	NA	87.2 (374)	84.7 (378)	84.4 (383)	86.5 (332)	85.6 (382)	88.1 (330)

^aThe UAMS smoke-free policy was announced in October 2003 and was implemented in July 2004. The ACH smoke-free policy was announced in April 2004 and was phased in between October 2004 and April 2005.

UAMS = University of Arkansas for Medical Sciences

ACH = Arkansas Children's Hospital

NA = not applicable

smoke-free policy at each institution and the three quarters following full implementation of the policy at each institution.

At UAMS, the mean overall score was 78.7 for the preceding three quarters and 79.2 for the three quarters post-implementation. Analysis of mean subscores for questions on “staff sensitivity to inconveniences,” “staff attitude toward family and visitors,” and “accommodations and comfort for visitors” showed little difference before and after policy implementation. The mean subscore for each of the three items was within approximately 1% when comparing the three quarters before the policy was announced with the three quarters after policy implementation.

At ACH, the mean overall score was 85.6 for the three quarters preceding announcement that the campus would go smoke-free and 87.2 for the three quarters following policy implementation. Similar positive trends were seen in subscores for questions on “staff sensitivity to inconvenience,” “staff attitude toward family/visitors,” “accommodations/comfort for visitors,” and “staff concern makes stay restful.”

DISCUSSION

The role of tobacco and disease has been established since the Report of the Advisory Committee to the Surgeon General in 1964.¹⁰ In this report, the committee stated: “On the basis of prolonged study and evaluation of many lines of converging evidence, the committee makes the following judgment: cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action.” Despite this and subsequent stronger reports, medicine as a field has been slow to pursue aggressive anti-tobacco measures and behaviors on its own campuses.

Much of the effort to reduce tobacco use in the U.S. has come from nonprofits such as the American Cancer Society, American Lung Association, and American Heart Association and foundations such as the Robert Wood Johnson Foundation. Some physician associations such as the American Academy of Pediatrics and American Medical Association and entities such as the Campaign for Tobacco Free Kids have been supportive of policy initiatives. At the same time, individual physicians have shown less interest in using their position of leadership to promote tobacco-control activities. This disinterest is reflected in the small percentage of doctors who ask about tobacco use and provide advice in quitting even among pediatricians who have a particularly advantageous angle from which to discuss this topic.¹¹

Hospitals have in most cases not led by example. A

typical scene occurs daily as employees in scrubs stand on the front lawns of hospitals smoking, only to return inside shortly to take care of patients suffering from tobacco-related diseases. From our informal discussions with others in tobacco control, we have learned that few hospitals, until recently, have actively promoted cessation or supported employees in cessation activities.

The impact of clean air regulations has been amply proven. When clean air regulations are put in place, they not only provide a safer environment for the employee or citizen, they also create an incentive for employees to stop smoking.¹²⁻¹⁴ This has been studied in hospital settings as well and shown decreased smoking behaviors.¹⁵ Because tobacco has such a large impact on public and individual health, physicians have a special responsibility to address this issue, and hospitals in particular have a great opportunity to send a symbolic message to the public by prohibiting smoking on hospital campuses. It can be argued that tolerating employees smoking in their scrubs establishes smoking as acceptable to hospitals, while not tolerating such behavior sends the very important message to children and adults that smoking in public is not acceptable behavior.

Reasons that hospitals have not volunteered to go smoke-free have not been carefully studied. The reasons identified in our focus groups reflect anecdotal comments we have heard from other hospital administrators who are fearful of damaged public relations and loss of employees. These are critical issues for administrators who now operate hospitals in highly competitive and difficult business environments. We carried out our evaluation to determine whether or not these were legitimate fears. The study was done in a setting where all other hospitals in the immediate region allowed smoking on their campuses.

We found that employee support for a nonsmoking policy was very strong in a state that traditionally supports personal rights and freedoms and increased rather than decreased after the policy was implemented. There was no significant loss of employees, and the number of employees who smoke appears to have decreased as well. In fact, more employees stated that they were likely to stay as a result of the policy (more than 30% in both years) or were unaffected by the policy (60% or greater in both years) than those who said they were likely to leave because of the policy (less than 5% in both years). We did not see any erosion in patient census in either hospital, and administrators were unaware of significant levels of complaints from the public due to the policy. Finally, standard patient satisfaction studies did not show changes in consumers' assessments of the hospitals.

We found that smoking rates dropped significantly from 9.6% to 2.6% in our survey at the primary site based on self-reported information. We were concerned that the rates in the survey were biased by smokers who did not report their behaviors. To validate the survey-based measures, we used self-reported rates of employee smoking that were measured in 2004 by the university's occupational health office with new employees and those reporting for annual tuberculosis screening. In addition, we collected prevalence data available from the 2005 annual health risk appraisals completed by UAMS employees who elected to participate in a larger workplace wellness initiative. Similar data were not available at ACH.

Of the 8,484 current UAMS employees on July 1, 2004, 2,706 had been included in this convenience data obtained from the occupational health office. Among the included employees, the rate of smoking was 16.4%. This figure may provide the best estimate of tobacco use rates on campus at the time the new policy was implemented. The 2005 UAMS Get Healthy Health Risk Appraisal showed that 8% of participants ($n=979$) were smokers post-implementation, but this group was likely self-selected for healthy behaviors. By combining these data and our survey data, we suggest that there may have been a drop in smoking rates as has been found in other situations when clean indoor air policies were implemented.¹⁶

We were also concerned that underrepresentation of smokers, who may have chosen not to return the survey, might have influenced our results. To test whether differential nonresponse by smokers made a difference, we reweighted the data. We assigned more weight to smokers to bring the prevalence in both years up to 15%. At the same time, we reduced the weights for nonsmokers so that all the weights added up to the population size. We reanalyzed some of the variables; for instance, support for the policy and likelihood to leave as a result of the new policy. Percentages dropped or increased proportionally in both years, but only by 2 to 3 percentage points without any effect on significance testing and/or conclusions.

Limitations

The main limitation of this study was that it was restricted to two hospital campuses. For situational reasons, not all outcomes were measured on both campuses. Efforts to enroll other regional hospitals were limited by the hesitancy of other institutions to commit to a smoke-free environment due to the reasons listed previously and concerns about sharing proprietary information about employment statistics. Nonetheless, we feel our situation can be generalized.

If anything, the culture of our region is antiregulatory. Yet employees seem to clearly view regulating smoking not as a rights issue but rather as a health issue, and they are supportive of the policy.

The consumer public seems to share this view as well based on the limited number of complaints. Arkansas may be in the forefront of tobacco control compared with other states. Its governor and legislature have used all master settlement dollars for health endeavors, including near-full funding of the CDC best practices for tobacco-control program guidelines,¹⁷ and have supported increased tobacco excise taxes. A statewide workplace law to protect employees went into effect in the summer of 2006.

CONCLUSIONS

Should all hospitals adopt smoke-free campus regulations? Because of the successful implementation of smoke-free policies at UAMS and ACH, the State of Arkansas passed Act 134 in 2005, which required all Arkansas hospitals except psychiatric facilities to have smoke-free campuses by the fall of 2005. Responses to this new law are being monitored to determine its impact.

A great deal of effort was put forth to enhance the success of implementation of the smoke-free policies at the two hospital campuses we evaluated. Hospitals that do not include appropriate education, pre-ban public relations, cessation opportunities, and administrative leadership may not experience trouble-free implementation. For hospitals, it seems wise to make these investments. Costs saved with a healthier workforce (fewer smokers,¹⁵ decreased sick days, decreased health insurance), and less campus maintenance (decreased tobacco debris) is a great incentive. However, what is more important is the message we send to the larger public.

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REFERENCES

1. National Cancer Institute (US). Health effects of exposure to environmental tobacco smoke: the report of the California Environmental Protection Agency. Smoking and tobacco control monograph no. 10. Bethesda (MD): Department of Health and Human Services, National Institutes of Health, National Cancer Institute (US); 1999. NIH Pub. No. 99-4645.
2. Longo DR, Feldman MM, Kruse RL, Brownson RC, Petroski GF, Hewett JE. Implementing smoking bans in American hospitals: results of a national survey. *Tob Control* 1998;7:47-55.
3. The Tobacco Use and Dependence Clinical Practice Guideline Panel, Staff, and Consortium Representatives. A clinical practice

- guideline for treating tobacco use and dependence: a U.S. Public Health Service report. *JAMA* 2000;283:3244-54.
4. Dawson LC, Wheeler G, Malcolm M, Miller B. Initiating change: tobacco-free hospitals of Arkansas. Abstract # Poli-27-14. National Conference on Tobacco or Health; 2003 Dec 10-12; Boston.
 5. Annual smoking-attributable mortality, years of potential life lost, and productivity losses—United States, 1997–2001. *MMWR Morb Mortal Wkly Rep* 2005;54(25):625-8.
 6. SAS Institute, Inc. SAS: Version 9.0 for Windows. Cary (NC): SAS Institute, Inc.; 2004.
 7. Press I. Patient satisfaction: defining, measuring, and improving the experience of care. Chicago: Health Administration Press; 2002.
 8. Alreck PL, Settle RB. The survey research handbook: guidelines and strategies for conducting a survey. 2nd ed. Chicago: Irwin; 1995.
 9. Kelley K, Clark B, Brown V, Sitzia J. Good practice in the conduct and reporting of survey research. *Int J Qual Health Care* 2003;15:261-6.
 10. Department of Health, Education and Welfare, Public Health Service (US). Smoking and health: report of the Advisory Committee of the Surgeon General of the Public Health Service. Washington: U.S. Government Printing Office; 1964. Public Health Service Publication # 1103. Also available from: URL: http://profiles.nlm.nih.gov/NN/B/B/M/Q/_/nnbbmq.pdf [cited 2005 May 12].
 11. Winickoff JP, McMillen RC, Carroll BC, Klein JD, Rigotti NA, Tanski SE, et al. Addressing parental smoking in pediatrics and family practice: a national survey of parents. *Pediatrics* 2003;112:1146-51.
 12. Ong MK, Glantz SA. Free nicotine replacement therapy programs vs. implementing smoke-free workplaces: a cost-effectiveness comparison. *Am J Public Health* 2005;95:969-75.
 13. Moskowitz JM, Lin Z, Hudes ES. The impact of workplace smoking ordinances in California on smoking cessation. *Am J Public Health* 2000;90:757-61.
 14. Biener L, Harris JE, Hamilton W. Impact of the Massachusetts tobacco control programme: population based trend analysis. *BMJ* 2000;321:351-4.
 15. Olive KE, Ballard JA. Changes in employee smoking behavior after implementation of restrictive smoking policies. *South Med J* 1996;89:699-706.
 16. Fichtenberg CM, Glantz SA. Effect of smoke-free workplaces on smoking behavior: systematic review. *BMJ* 2002;325:188.
 17. Thompson JW, Boozman FW, Tyson S, Ryan KW, McCarthy S, Scott R, et al. Improving health with tobacco dollars from the MSA: the Arkansas experience. *Health Aff (Millwood)* 2004;23:177-85.