



# **Impact of UNC Health Care's Tobacco-Free Hospital Campus Policy on Hospital Employees**

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# Impact of UNC Health Care's Tobacco-Free Hospital Campus Policy on Hospital Employees

## I. Introduction

Research shows that tobacco free indoor policies significantly reduce exposure to tobacco smoke and lead to small declines in tobacco use among affected populations.<sup>1-4</sup> Tobacco free policies are intended not only to reduce exposure to secondhand smoke but also to model non-smoking behavior, decrease smoking prevalence, promote cessation, and establish non-smoking as the perceived norm. In 1992, the Joint Commission on Accreditation of Healthcare Organizations issued standards requiring all accredited U.S. hospitals to adopt policies prohibiting smoking within their facilities.<sup>5</sup> With all U.S. hospitals having now eliminated indoor smoking, an increasing number have shown interest in adopting tobacco-free hospital campus (TFHC) policies.<sup>6</sup> TFHC policies offer greater protection from secondhand smoke exposure to patients, employees, volunteers, and visitors by eliminating all tobacco use on hospital campuses. Such policies may also motivate and support employees and patients who use tobacco products to quit and lead to increased availability of and access to cessation services.<sup>7</sup>

The University of North Carolina (UNC) Health Care system implemented a TFHC policy on July 4, 2007. As little research exists documenting the successes, challenges, or effectiveness of TFHC policies, the UNC Nicotine Dependence Program (NDP) decided to examine the impact of UNC Health Care's new TFHC policy on employee smoking behaviors before and after policy adoption.

## II. Methods

In June 2007, an email was sent to 5534 UNC hospital employees inviting them to participate in an initial on-line survey to assess current employee smoking status and attitudes about the upcoming TFHC policy. Non-respondents were sent two additional email invitations.

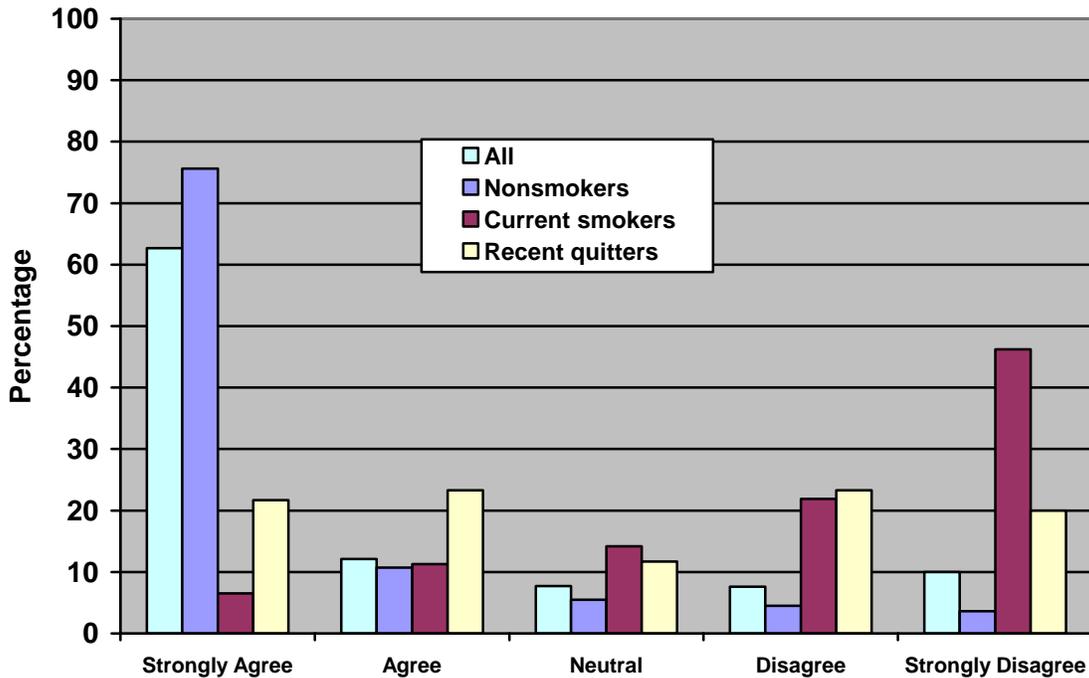
Employees who indicated that they currently smoked or had quit smoking within the previous 6 months received an immediate subsequent email asking for volunteers to participate in a longitudinal study (cohort) about how the TFHC policy might influence their smoking habits. Volunteers completed a baseline web-based questionnaire to assess basic demographics and smoking habits. This cohort was invited to complete a follow-up questionnaire 6 months later (December 2007) to assess quit rates, methods used in quit attempts, and smoking habits since the policy's implementation. We also sent a second 6-month survey to all employees who had responded to the initial survey, asking about any change in attitudes toward the TFHC policy since adoption, including communication and compliance with the policy.

### III. Results

#### A. Smoking status and attitudes of employees at baseline

A total of 2024 employees responded to the initial email survey (37% response rate). Figure 1 shows that, among the entire sample of employees who responded, most viewed the proposed TFHC policy highly favorably. Current smokers tended to view the policy less favorably than nonsmokers or recent quitters.

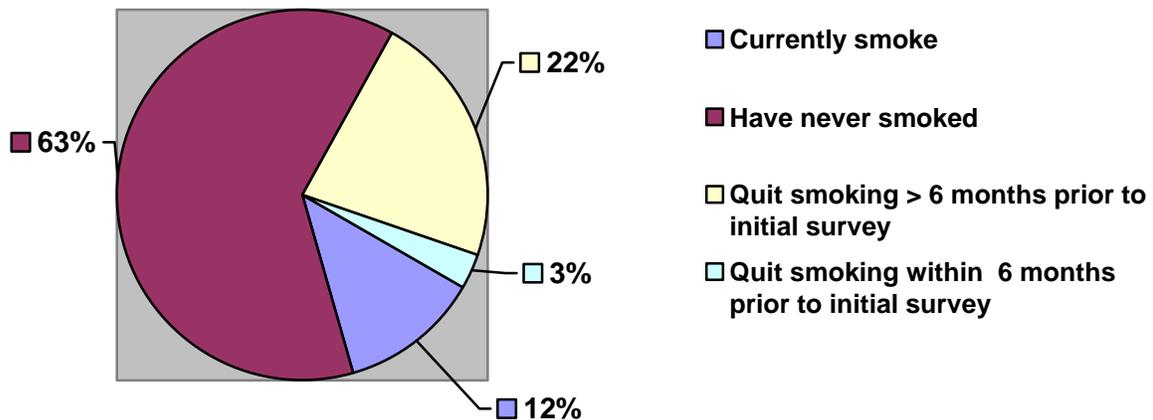
**Figure 1. Attitudes of UNC Hospital Employees to a Tobacco-Free Campus Just Prior to Implementation (N=2024)**



**Level of Agreement with Statement, "I am pleased that the UNC Health Care system has adopted a policy prohibiting smoking anywhere on hospital property."**

Figure 2 illustrates employees' reported smoking status as of June 2007, before policy adoption. Of all responding employees at baseline, 247 (12%) reported that they were current smokers; 451 (22%) reported that they quit smoking more than 6 months before the survey, and 60 (3%) reported that they quit smoking within the 6 months prior to the survey. Thus, nearly 20% (60/307) of smokers responding to the survey reported quitting within the 6 months prior to the survey.

**Figure 2. Self-Reported Smoking Status of UNC Hospital Employees, June 2007 (N=2024)**

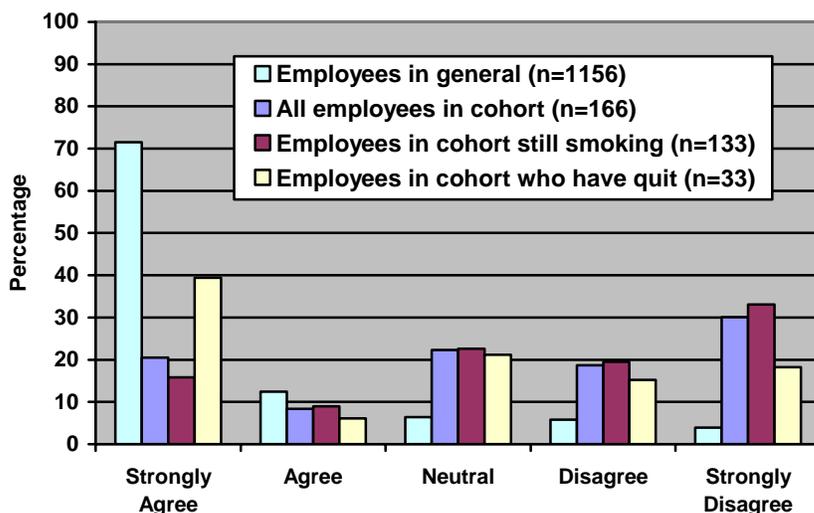


*B. Smoking status and attitudes of employees 6 months after policy adoption*

Attitudes supporting the TFHC policy remained strong among employees in general (most of whom remained nonsmokers) at 6 months, with 71.5% strongly agreeing and 12.4% agreeing with the statement "I am pleased that the UNC Health Care system has adopted a policy prohibiting smoking anywhere on hospital property." Agreement and support for the new policy were strongly related to smoking status. Among the smokers and recent quitters who enrolled in the cohort and responded at 6 months, almost half did not view the policy favorably (Figure 3) compared to 29% that viewed it favorably.

Most employees felt that information pertaining to the TFHC policy was communicated clearly. Of 1,156 employees not part of the cohort, 827 (72%) strongly agreed and 143 (12%) agreed with the statement "Information about the UNC Health Care System's tobacco-free campus policy has been/is communicated adequately." Of the 166 smokers and recent quitters responding from the cohort, 55 (33%) strongly agreed and 61 (37%) agreed with this statement.

**Figure 3. Attitudes of UNC Hospital Employees to a Tobacco-Free Campus Six Months after Implementation**



**Level of Agreement with Statement, "I am pleased that the UNC Health Care system has adopted a policy prohibiting smoking anywhere on hospital property."**

### C. Cohort baseline results

At the time of the initial survey (June 2007), from the group of employees who indicated that they currently smoked (N=247) or had recently quit (N=60), 210 agreed to participate in the cohort study and provided further information about themselves and their smoking habits. Table 1 shows the demographics and selected medical conditions of the 210 current smokers and recent quitters comprising this cohort. A large majority of smokers in the cohort were female, had State Health Plan insurance, and had attained educational levels post-high school.

Of these 210 employees, 31 (15%) reported that they had quit smoking during the 6 months prior to the initial survey. These employees ranked the extent to which their decision to quit was influenced by the UNC Health Care TFHC policy, using a scale of "0" to "10" where "0"= No influence and "10"= Very much influence. Over a quarter of employees selected a "10" and a total of 45% indicated "6" or higher, indicating moderate to high amount of influence. About one-third (35.5%), indicated "0", i.e., the policy had no influence on their decision.

Almost three quarters of the 179 current smokers at the time of the initial survey indicated that they would like to stop smoking, and 61.4% of current smokers (84% of those who would like to quit) reported that they planned on quitting smoking within the next 6 months. Among then current smokers who had seen a health care provider in the past 6 months (N=132), 28% reported being advised by their health care provider to stop smoking. Almost half (45%) of smokers at that time indicated they had attempted to quit smoking (defined as having quit for at least one day) some time in the previous 6 months.

**Table 1. Characteristics of Smokers (N=179) & Recent Quitters (N=31) in Cohort at Baseline**

|                                       | n   | Percent or mean |
|---------------------------------------|-----|-----------------|
| Age (mean, SD)                        | 210 | 42.2 (10.1)     |
| Sex                                   |     |                 |
| Male                                  | 38  | 18.1            |
| Female                                | 172 | 81.9            |
| Race                                  |     |                 |
| Asian                                 | 4   | 1.9             |
| Black                                 | 41  | 19.5            |
| White                                 | 153 | 72.9            |
| Other/refuse to answer                | 12  | 5.7             |
| Hispanic ethnicity                    | 6   | 2.9             |
| Highest Education                     |     |                 |
| High school                           | 21  | 10.0            |
| Some college or technical             | 73  | 34.8            |
| Technical school graduate             | 27  | 12.9            |
| College graduate                      | 75  | 35.7            |
| Professional degree/post-grad         | 14  | 6.7             |
| Insurance status                      |     |                 |
| Medicaid or Medicare                  | 3   | 1.4             |
| State Health Plan                     | 192 | 91.4            |
| Other private                         | 11  | 5.2             |
| No insurance                          | 4   | 1.9             |
| Medical Conditions                    |     |                 |
| Asthma                                | 19  | 9.0             |
| Chronic obstructive pulmonary disease | 4   | 1.9             |
| Coronary artery disease               | 1   | <1              |
| Diabetes                              | 7   | 3.3             |
| Hypertension                          | 31  | 14.8            |
| Peripheral vascular disease           | 1   | <1              |

Employees used many methods to attempt to quit smoking at baseline. Almost one-half (48%) of the current smokers at baseline reported that they had *attempted to quit smoking* in the previous six months indicated that they did not use anything to assist them in their quit attempt (Table 2). The most commonly used pharmacologic aide among the group attempting to quit at the initial survey was nicotine patches, reportedly used by 37% of respondents. A smaller percentage (16%) reported trying nicotine gum. Approximately equal percentages tried bupropion (8.6%) or varenicline (7.7%). Few employees attempting to quit smoking at that time reported using telephone support (2.5%).

**Table 2. Methods Used by Employees Who Attempted to Quit Smoking within 6 Months Prior to Implementation of THFC Policy (N=81)**

| <i>Method</i>                 | <i>Percent</i> | <i>Method</i>             | <i>Percent</i> |
|-------------------------------|----------------|---------------------------|----------------|
| Nicotine patches              | 37.0           | Group program             | 9.9            |
| Nicotine gum                  | 16.0           | Telephone support         | 2.5            |
| Nicotine inhaler              | 1.2            | Other counseling          | 1.2            |
| Bupropion (Wellbutrin, Zyban) | 8.6            | Other self-help materials | 17.3           |
| Varenicline (Chantix)         | 7.7            | Did not use anything      | 48.1           |

*Note: A person may have tried more than one method*

Of those employees reporting that they *successfully quit* smoking within the 6 months prior to the initial survey, fourteen (42%) indicated that they did not use any pharmacologic aide, counseling, self-help materials or other support (Table 3). The two pharmacologic aides most commonly used by those who reported successfully quitting were nicotine patches (25.8%) and varenicline (19.4%).

**Table 3. Methods Used by Employees Who Successfully Quit Smoking within the 6 Months Prior to Implementation of THFC Policy (N=31)**

| <i>Method</i>                 | <i>Percent</i> | <i>Method</i>             | <i>Percent</i> |
|-------------------------------|----------------|---------------------------|----------------|
| Nicotine patches              | 25.8           | Group program             | 0              |
| Nicotine gum                  | 9.7            | Telephone support         | 3.2            |
| Nicotine inhaler              | 0              | Other counseling          | 9.7            |
| Bupropion (Wellbutrin, Zyban) | 9.7            | Other self-help materials | 6.5            |
| Varenicline (Chantix)         | 19.4           | Did not use anything      | 41.9           |

*Note: A person may have used more than one method*

#### *D. Cohort Six-Month Follow-up Results*

Of the 210 employees who agreed to be in the cohort at baseline, 166 (79%) responded to the six-month follow-up questionnaire. Among this group, 13 reported that they had quit smoking within the six months prior to implementation of the UNC Health Care TFHC policy. Of the remaining 153 smokers, 20 (13%) reported that they had *successfully quit smoking in the six months since the policy was implemented*.

Nine (45%) of the employees who quit smoking after policy implementation reported using varenicline (Chantix) to help them quit. Of these individuals, five stated that they had tried bupropion (Zyban/Wellbutrin) in a prior quit attempt. Seven of the nine reported that did not use any additional support service while taking varenicline (Chantix). One used Chantix telephone support, and one reported relying on a friend's support.

Four (20%) of the employees who quit smoking during this time period reported using nicotine patches to help them quit. Of these individuals, one reported trying the nicotine patch in a prior quit attempt, and one reported using telephone support (Quitline NC) to help him/her quit.

Three (15%) of the employees who quit smoking during this time period reported using bupropion (Zyban/Wellbutrin) to help them quit. Of these individuals, none reported trying an alternative medication in a prior quit attempt, and none used an additional support service while taking bupropion (Zyban/Wellbutrin).

We also asked respondents who quit smoking during this time period to indicate their awareness and utilization of several available resources, including resources provided by the State Health Plan, UNC Occupational Health, and the UNC Nicotine Dependence Program. Table 4 (next page) shows that most of the employees that smoked reported

that they were unaware of many of these resources. Half or fewer of those who quit reported that they were aware of the services provided by the State Health Plan or of the UNC Nicotine Dependence Clinic. Over half of the employees who quit did know about UNC Occupational Health resources and of Quitline NC, but few people reported using those resources.

**Table 4. Awareness and Utilization of Resources by Employees Who Successfully Quit Smoking Six Months after TFHC Policy Implemented (N=20)**

|  | Aware of this resource; have not used it (n/%) | I have used this resource (n/%) | Not aware of this resource (n/%) |
|--|--|---------------------------------|----------------------------------|
| Occupational Health Services Stop Smoking Classes                | 15 (75)  | 1 (5)                           | 4 (20)                           |
| Occupational Health Services self-help materials                 | 13 (65)  | 2 (10)                          | 5 (25)                           |
| Nicotine Dependence Program Clinic at UNC Family Medicine Center | 6 (30)   | 1 (5)                           | 13 (65)                          |
| State Health Plan free nicotine replacement therapy              | 8 (40)   | 2 (10)                          | 10 (50)                          |
| State Health Plan on-line quitting program                       | 9 (45)   | 1 (5)                           | 10 (50)                          |
| State Health Plan free coaching service                          | 8 (40)   | 0                               | 12 (60)                          |
| Quitline NC (1-800-QUIT-NOW)                                     | 13 (65)  | 2 (10)                          | 5 (25)                           |

We again asked people in the cohort to rate the extent to which their decision to quit smoking or to remain smoke-free was influenced by the TFHC policy, using a scale of “0” to “10” where “0”= No influence and “10”= Very much influence. Out of the 33 employees who reported that they had quit smoking six months before or after the policy was implemented, 42% selected responses indicating a moderate or large influence of the policy on cessation (11 selected “10”, one selected “9”, and 2 selected “6”). Eight individuals selected “1” or “2”, and 11 (33%) selected “0”.

Twenty-eight of the 33 employees who reported quitting smoking within the six months prior to or following implementation of the TFHC policy reported visiting a health care provider. Of these individuals, 21 (75%) indicated that a health care provider asked about their smoking status, and 9 (32%) offered advice to help them continue to stay smoke-free.

When people in this group of 133 smokers were asked whether they would like to stop smoking, 94 (71%) said yes. *Of those 94 individuals who wanted to quit, 85 (90%) reported planning to quit smoking in the next six months, and 40 (43%) reported planning to do so in the next 30 days.*

Ninety of the 133 employees still smoking at six-month follow-up reported that they had seen a health care provider in the preceding six months, and 58 (64%) of them reported that a health care provider advised them to stop smoking. Nearly 30% (26 individuals) indicated that a health care provider had prescribed something to help them quit smoking.

Among the 133 employees who reported still smoking at six month follow-up, 70 (53%) reported they had attempted to quit smoking during the past six months. Seventeen (24%) of those who attempted to stop smoking reported using varenicline (Chantix) in their quit attempt; 13 (19%) reported using bupropion (Zyban/Wellbutrin); and 19 (27%) reported using nicotine patches. Out of these three groups, only 3 people reported using any additional formal support during their quit attempt (two people reported using QuitlineNC telephone support, and one person reported attending a group class). In rating the extent to which these 70 employees' decisions to attempt to quit smoking were influenced by the TFHC policy (again using a scale of "0" to "10" where "0"=No influence and "10"=Very much influence), 30% of individuals indicated "7" or higher while 30% indicated "0".

Employees who were still smoking indicated their awareness and utilization of several resources. We also asked whether employees would likely use the resource if they decided to quit smoking. As shown in Table 5, awareness about UNC Occupational Health resources and Quitline NC is relatively high, but awareness of other resources was fairly low. Over 70% of employees indicated that they would likely use the State Health Plan free nicotine replacement therapy if they decided to quit smoking.

**Table 5. Awareness, Utilization, and Potential Utilization of Resources by Employees Who Are Still Smoking as of December 2007 (N=133\*)**

|  | Aware of this resource (n/%) | I have used this resource (n/%) | Would like to know more about this resource (n/%) | Would likely use resource if decided to quit smoking (n/%) |
|--|------------------------------|---------------------------------|---|--|
| Occupational Health Services Stop Smoking Classes                | 119 (89)                     | 13 (10)                         | 35 (26)   | 59 (44)  |
| Nicotine Dependence Program Clinic at UNC Family Medicine Center | 40 (31)                      | 4 (3)                           | 44 (34)   | 45 (34)  |
| State Health Plan free nicotine replacement therapy              | 59 (45)                      | 17 (13)                         | 68 (52)   | 93 (71)  |
| State Health Plan on-line quitting program                       | 55 (41)                      | 8 (6)                           | 34 (26)   | 49 (37)  |
| State Health Plan free coaching service                          | 51 (39)                      | 3 (2)                           | 41 (31)   | 53 (41)  |
| Quitline NC (1-800-QUIT-NOW)                                     | 91 (68)                      | 9 (7)                           | 31 (23)   | 44 (35)  |

\*For some questions, n<133 due to missing values

We also asked separate questions about what employees planning to quit smoking felt would be most helpful in their quit attempt. Most people (77%) who reported planning to

quit felt that pharmaceutical assistance (e.g. nicotine replacement, Chantix, Zyban) would be helpful; 17% felt that individual counseling/coaching from a health care provider would be helpful, and 7% felt that intensive counseling from a trained specialist would be helpful. Approximately 5% felt that telephone support (e.g., Quitline NC) would be a helpful resource.

#### **IV. Discussion**

The findings of this survey demonstrate that most employees viewed the TFHC policy favorably before and after policy implementation. Not unexpectedly, current smokers tended to be more displeased with the policy. Still, even among those who were current smokers, almost 20% initially viewed the policy favorably. Attitudes toward the policy did not change very much at six-month follow-up. Among all the employees in the cohort, nearly 30% viewed the policy favorably. Among employees in the cohort who have successfully quit smoking, almost half viewed the policy favorably.

Among those who responded to the initial survey, 12% indicated that they were current smokers. While this percentage is lower than one might expect given the percentage of smokers in the population, it may reflect the lower prevalence of smoking among employees in a health care institution. An additional possibility is that a non-response bias may exist if a greater proportion of those who tended not to respond to the survey were current smokers. If this exists, then the actual percentage of smokers among employees at UNC Health Care is somewhat larger than that represented.

Among smokers who completed the initial full baseline survey, a large percentage (61%) indicated that they had planned on quitting smoking in the next six months. Only a minority (28%) of these smokers said that a health care provider had advised them to quit smoking. It is possible that the TFHC policy contributed to the motivation behind this group's responses, and the responses to our question about how much the TFHC policy influenced the decision of those who had recently quit smoking support this notion. *Nearly two-thirds of those who quit in the preceding six months indicated that the policy had influenced their decision, with 26% indicating "very much" so.* These responses, occurring just before the policy was implemented, suggested that many additional employees would attempt to stop smoking after policy implementation. This is what apparently occurred, as at the six-month follow-up, more than half reported that they had attempted to quit, and an additional 13% of employees in the cohort reported that they had successfully quit smoking. The THFC policy seemed to have had an important influence on employees' decision to quit smoking or remain smoke-free at follow-up, with two-thirds again indicating some influence from the policy, and 36% indicated that the policy had a very strong influence ("9" or "10" on a "0" to "10" scale).

Among both those who attempted to quit smoking and those who successfully quit smoking at the time of the initial survey, nearly half did not use any support method (pharmacologic, counseling, or other). In contrast, well over half of those who quit in the subsequent six months used some type of support method, most commonly pharmacologic. Varenicline (Chantix) was used more often than bupropion

(Zyban/Wellbutrin). Several of those who used varenicline had tried bupropion previously. While use of pharmacologic agents seems to have increased, use of other support methods such as counseling or telephone support remained low.

A related and important result of the TFHC policy is the increase in available services to assist people in their attempts to quit smoking. The majority of employees agree that information pertaining to the TFHC policy has been communicated effectively. It also seems that communication about some of the resources and services available to help people quit smoking has been effective. For example, over 80% of employees are aware of the smoking cessation classes offered by Occupational Health Services, and nearly two-thirds of employees are aware of Quitline NC. However, awareness of other services such as the Nicotine Dependence Clinic and the State Health Plan's free coaching service is rather low. With increased social marketing of available services, more employees would likely take advantage of resources that can help them quit smoking.

The processes used to successfully communicate information about the TFHC policy may offer opportunities to enhance employees' awareness about resources and motivation to quit smoking. For example, sharing stories of employees who have successfully quit smoking can motivate others as well as continue to raise awareness of available resources.

Among employees still smoking at six-month follow-up, interest in quitting smoking remains strong, with nearly three out of four wishing to stop smoking. Among these individuals, 90% report plans to quit smoking in the next six months, and 43% report plans to quit in the next 30 days. Most of these employees feel that a pharmacologic agent would be helpful. As mentioned above, there are many other resources that might be helpful in these employees' quit attempt, such as classes offered by UNC Occupational Health, the UNC Nicotine Dependence Program, and the State Health Plan's free coaching service.

In summary, the UNC Health Care TFHC policy seems to have had an important impact on UNC hospital employees. By continuing to increase the awareness of available resources along with ready access to pharmacologic aides, more and more hospital employees—and others throughout the health care system—will successfully quit smoking.

## V. References

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