

# INSIGHTS: SMOKING IN WISCONSIN

A series of papers on Wisconsin tobacco use with recommendations for action, based on the 2003 Wisconsin Tobacco Survey of 8000 Wisconsin adults.

## How Wisconsin Smokers Quit

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Series 2, Paper Number 1

**UW-CTRI**

Center for Tobacco Research and Intervention  
University of Wisconsin Medical School



University of Wisconsin  
Comprehensive Cancer Center



The Wisconsin Department  
of Health and Family  
Services



# HOW WISCONSIN SMOKERS QUIT

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# EXECUTIVE SUMMARY

Nearly one out of every two current smokers in Wisconsin will die prematurely of a disease caused by cigarette smoking. This grim fate can be markedly reduced if more Wisconsin smokers successfully quit tobacco use. While many smokers try to quit each year, most are unsuccessful in their efforts. Importantly, there are scientifically validated (“evidence-based”) treatment options now available that substantially increase the likelihood smokers will successfully quit smoking and overcome the chronic disease of tobacco dependence. Data from the 2003 Wisconsin Tobacco Survey (WTS) indicate that considerable progress has been achieved in our state; but over 800,000 Wisconsin adults continue to smoke, putting their health and lives at risk. Key 2003 findings include:

- Approximately 75% of current smokers in Wisconsin say that they want to quit smoking and about 46% have tried to quit at least once in the last year. While this represents progress, about 20% of Wisconsin smokers have still never made even a single quit attempt.
- Some smokers, unsuccessful at quitting, appear discouraged by the difficulty of quitting. Among those who have tried to quit at least once, 11% have not tried again in over seven years.
- The current survey found that about 20% of Wisconsin adults smoke. Although the decline indicates progress, this still leaves our state well behind the federal government’s goal of reducing adult tobacco use to under 12% by 2010.
- More than 26% of Wisconsin adults are former smokers, having broken their addiction to cigarettes.

- Most smokers in our state try to quit “cold turkey” (quit all at once with no cutting down and no help from medicines or counseling). Nearly 80% of survey respondents indicated that they used this method in their last quit attempt. The use of this method persists despite the availability of evidence-based treatments that can significantly improve their chances of success. Quitting “cold turkey” often results in relapse — 90% of current smokers who tried to quit in the last year without evidence-based counseling and/or medicine returned to smoking within three months.
- African-Americans had a higher rate of quit attempts in the last year than did Whites but they were also more likely to try to quit “cold turkey.”
- Older smokers (age 65+) were less likely than younger smokers to have tried to quit in the last year.

In Wisconsin, there is tremendous interest in quitting among the nearly 20% of adults who still smoke. Overall, 82% of Wisconsin smokers have seriously tried to quit at least once in their lifetime, including the 46% who tried to quit within the last 12 months. For most smokers, it takes a number of attempts before they successfully quit. On average, former smokers required about four serious quit attempts before they achieved sustained abstinence from smoking. Current smokers also reported making about four quit attempts on average but, unlike former smokers, they have yet to achieve sustained success.

The way a smoker tries to quit can be critical to his or her success. Several evidence-based treatments are now available to assist smokers. However, the vast majority of both former and current smokers still try to quit by going “cold turkey.” It has been seven years since the U.S. Public Health Service published the *Smoking Cessation Clinical Practice Guideline* recommending FDA-approved treatments for tobacco cessation. Yet, in that time, only 16% of current smokers making a quit attempt reported using these treatments. Present day optimal smoking cessation treatments include medications such as bupropion or nicotine replacement therapy (e.g., patch, gum, lozenge) in conjunction with evidence-based behavioral counseling programs. Unfortunately, few Wisconsin smokers use these optimal treatments.

Several demographic disparities among the quitting patterns of Wisconsin smokers were identified. For example, a greater proportion of African-American than White smokers in Wisconsin tried to quit in the last year. But, African-Americans were more likely than Whites to have last tried to quit by going “cold turkey.” Age is a factor in the likelihood of how recently a smoker has made a quit attempt. Older smokers (65+) report having made their most recent quit attempt much longer ago than younger smokers.

This paper includes several recommendations based on the results of the 2003 WTS. Key among them is to make evidence-based treatments (both counseling and medications) readily available to smokers who want to quit so they no longer rely on the “cold turkey” method of quitting cigarettes. Both smokers and healthcare providers need to be aware that the use of evidence-based treatments significantly increases the chances for sustained abstinence from smoking. One treatment method that is already widely available and proven effective is the Wisconsin Tobacco Quit Line. This free service for Wisconsin residents should be targeted for increased utilization as a way of connecting smokers interested in quitting with a treatment that will increase their likelihood of success. Additional attention should be paid to African American and older smokers. Research should identify the causes for their higher failure and lower quitting rates and programs should be implemented to address these causes. Implementation of these recommendations is essential if we are to ensure that Wisconsin smokers have the knowledge and tools needed to become tobacco free.

# PURPOSE AND INTRODUCTION

The Wisconsin Tobacco Survey (WTS) is a telephone survey of a representative sample of adult residents of Wisconsin designed to monitor smoking patterns, quitting, attitudes, and tobacco-related health knowledge. In 2003, over 8,000 interviews were conducted with current and former smokers as well as those who have never smoked. The purpose of this report is to summarize the findings of the WTS regarding smokers who have tried to quit smoking and the ways they are going about it. Additional reports focusing on other results of the Wisconsin Tobacco Survey will be released over the next several months.

Over 40 years have passed since the first Surgeon General's Report on Smoking and Health<sup>1</sup> linked smoking to a multitude of negative health effects. Since that time, the evidence has continued to mount and has confirmed tobacco use as the leading cause of preventable death and disease in our country. Fortunately, new evidence-based treatments have been developed and made available to those interested in quitting smoking. Many of these treatment advances have come in the last decade as researchers and clinicians have begun to recognize and treat tobacco dependence as a chronic disease. For example, we now recognize that smokers will often require many quit attempts before achieving sustained abstinence<sup>2</sup>.

This action paper provides insights on a number of issues in our state's battle to reduce the illness and death resulting from tobacco use. Moreover, the report identifies several areas where new actions will improve the health of Wisconsin's smokers. For example, the prevalence of current smoking among Wisconsin adults has fallen dramatically over the last 40 years — the 2003 WTS shows that about 20% of adults in our state now smoke. However, approximately 800,000 Wisconsin adults continue to smoke and the current prevalence rate is far from the national *Healthy People 2010* goal of 12%<sup>3</sup>.

The WTS data show that a clear majority of current smokers are interested in quitting and becoming

tobacco free. Nearly 82% have made at least one serious quit attempt in their lifetime and 46% had tried to quit in the year preceding the WTS. In addition to the 20% of Wisconsin adults who currently smoke, over 26% of Wisconsin residents surveyed reported being former smokers. This report provides important information on who is trying to quit, the timing of their quit attempts, and their use of treatment resources according to gender, race/ethnicity, income and age. This information is intended to identify tobacco-related policy and prevention/intervention strategies for reducing the prevalence and burden of tobacco use in Wisconsin.

This report will follow two general themes:

**Patterns of Quitting.** How long do smokers' quit attempts last? How long do they wait before trying again? How many quit attempts are people making before achieving sustained abstinence?

**Methods of Quitting.** Are smokers using evidence-based medications and/or counseling to help them quit? Which methods are being used most by current smokers? Which methods did former smokers use to quit successfully?

## Survey Methods

A total of 8,111 adult Wisconsin residents were interviewed by telephone for the 2003 Wisconsin Tobacco Survey, however, 63 respondents did not provide information about their smoking status. As a result, these individuals were removed from the analyses in this report. Racial/ethnic comparisons were limited to White and African-American groups due to very limited numbers of other minorities in the WTS sample. Also, because of sample size limitations, income was dichotomized for certain analyses based on the closest categorized responses for income above or below the median household income in Wisconsin. For purposes of this report, a quit attempt is defined as intentionally stopping smoking for one day or longer.

# THE RESULTS

## PATTERNS OF QUITTING:

### PERCENTAGE OF SMOKERS WHO TRY TO QUIT SMOKING

More than four out of five (82%) current Wisconsin smokers have ever made a quit attempt. There are no appreciable differences in quit attempts by gender, age, income or racial/ethnic groups (Figures 1-4, "Ever"). Results of this survey show that achieving successful abstinence, however, often takes repeated efforts. A marker of the strong desire of smokers to quit smoking is how recently they have tried to quit. While about 75% of current smokers in the state reported that they want to quit smoking, only about half of these smokers made a quit attempt in the 12 months prior to the survey. Within the last year, about the same percentage of men and women tried to quit, 48% and 45%, respectively (Figure 1, "Last Year") and the percentage of smokers who tried to quit last year was also similar across household income levels (Figure 2, "Last Year").

Figure 1

Percentage of current smokers who've tried quitting, by gender

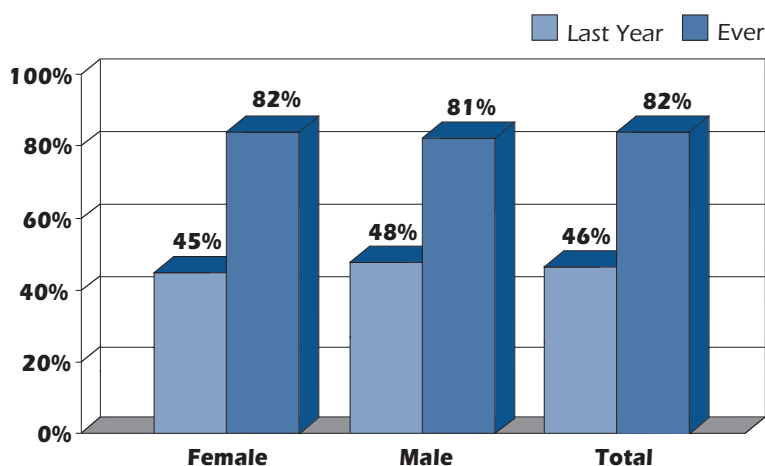
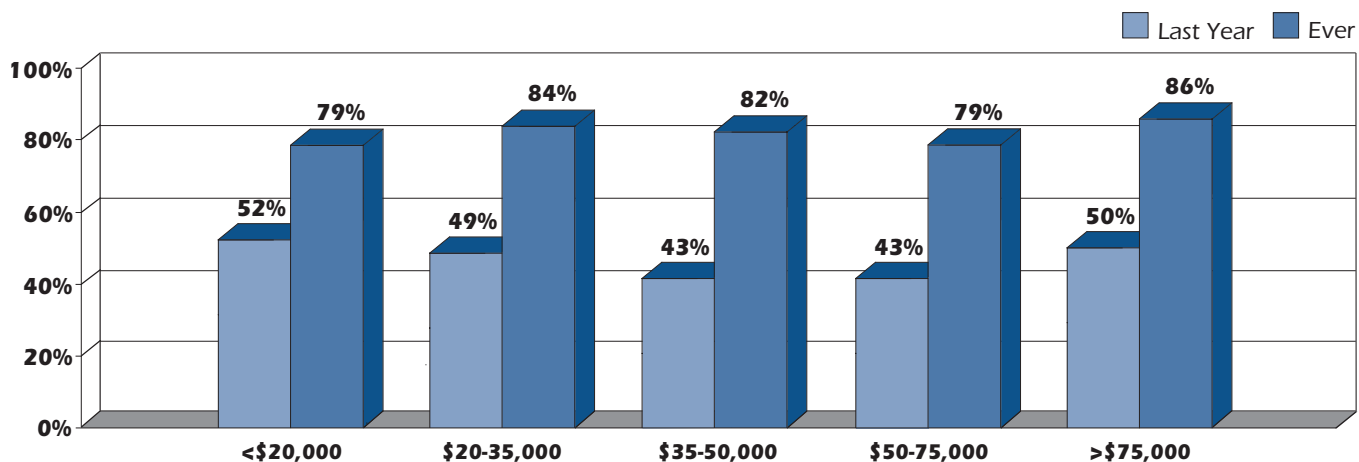


Figure 2

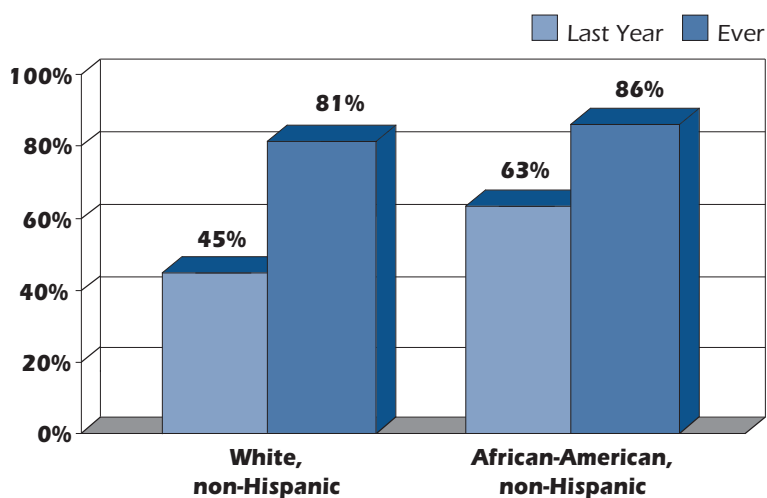
Percentage of current smokers who've tried quitting, by household income



# RESULTS CONTINUED

**Figure 3**

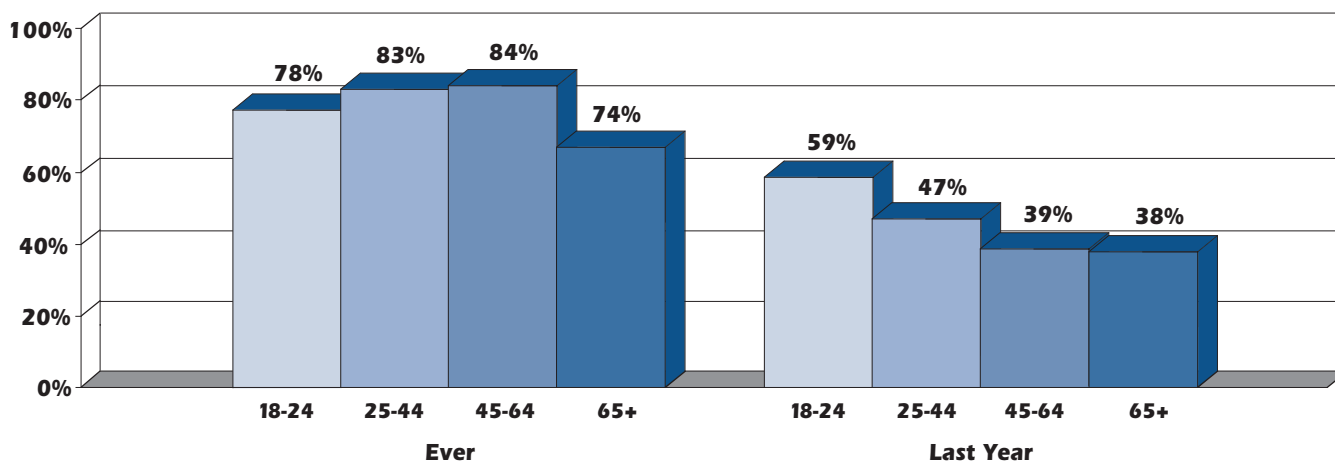
**Percentage of current smokers who've tried quitting, by race/ethnicity**



Analysis of the data by race/ethnicity indicates that the percentage of African-Americans who tried to quit last year was 63% compared to only 45% for Whites (Figure 3, "Last Year"). The WTS data also show that at each ascending age category, the percentage of smokers who tried to quit last year decreased (Figure 4, "Last Year") suggesting that older smokers are less likely to make a quit attempt.

**Figure 4**

**Percentage of current smokers who've tried quitting, by age group**



## LONGEST QUIT ATTEMPT IN LAST YEAR

The longer a smoker can remain smoke-free, the better the chance of achieving sustained, long-term abstinence. Withdrawal symptoms and cravings generally are the strongest during the first week but can linger for several weeks to many months after the start of a quit attempt. When withdrawal symptoms reach or remain at high levels, smokers are at greatly increased risk for a slip that can lead to full relapse

back to smoking. WTS data show that 46% of smokers who had an unsuccessful quit attempt in the last year relapsed within the first seven days after their quit date (Table 1). In fact, 91% of all current smokers who tried to quit in the last 12 months were unable to stay quit for more than three consecutive months. This pattern was consistent across all demographic characteristics previously mentioned.

**Table 1**

### **Length of longest quit attempt in past year for current smokers (n=578)**

<b>Length of Quit Attempt</b>	<b>Percentage of Current Smokers</b>	<b>Cumulative Percentage of Current Smokers</b>
1 Day	9%	9%
2 Days	9%	18%
3 Days	11%	29%
4-7 Days	17%	46%
8-14 Days	15%	61%
15-30 Days	13%	74%
1-3 Months	17%	91%
4-12 Months	9%	100%

## RESULTS CONTINUED

### NUMBER OF QUIT ATTEMPTS

The majority of smokers are unsuccessful on their first attempt to quit smoking (Table 2). In fact, former smokers made an average of four quit attempts in order to achieve abstinence. The number of quit attempts did not differ by gender, age, income or race/ethnicity.

Among current smokers, nearly 20% reported that they had never made a quit attempt. The average number

of quit attempts among current smokers was four. Close to 30% of Wisconsin current smokers report having made at least five attempts to quit smoking without success. No demographic differences were found except for age, which showed that the oldest smokers (65+) reported fewer lifetime quit attempts (about two to three attempts on average) compared to younger smokers who averaged about four.

**Table 2**

#### Percentage of smokers by number of quit attempts made

	Current Smoker (n=1,432)	Former Smokers (n=1,832)
Never Made A Quit Attempt	20%	
1	12%	39%
2	13%	19%
3	16%	13%
4	9%	5%
5	9%	7%
6-10	14%	11%
>10	7%	6%

Approximately 5% of survey respondents reported making more than 30 quit attempts; in order to reduce the influence of such extreme values on the average value, only the 95% of respondents with 30 or fewer quit attempts were included in analyses of the average number of quit attempts.

## LENGTH OF TIME SINCE LAST QUIT ATTEMPT

The data on the length of time since a smoker last tried to quit smoking (Table 3) may be an indicator of the general interest level of a smoker toward quitting. Conversely, the length of time may be a marker of frustration or anxiety toward re-embarking on the quitting process. The WTS found that approximately 46% of current smokers reported making a quit attempt in the past year. However, nearly one-third of all current smokers have not made a quit attempt in the seven years since the release of the first *U.S. Public Health Service Smoking Cessation Clinical Guideline* published in 1996<sup>4</sup>, which recommended specific, evidence-based treatments for helping smokers trying to quit.

The data are similar by gender and income but there are age and racial/ethnic group differences. Current smokers who reported a longer period of time since their last quit attempt tended to be older. Smokers who last tried quitting more than seven years ago had an average age of 49, compared to the most recent quitters who averaged about 34 years of age. Racial/ethnic group comparisons showed that 36% of White respondents made a quit attempt more than one year ago compared to 23% of African-American respondents.

**Table 3**

### **Length of time since last quit attempt, current smokers (n=1,516)**

<b>Length of Time Since Last Quit Attempt</b>	<b>Percentage</b>
Up to 1 Month	9%
1-3 Months	9%
3-6 Months	13%
6-12 Months	16%
1-2 Years	11%
3-7 Years	12%
More than 7 Years	11%
Never Made A Quit Attempt	19%

## RESULTS CONTINUED

### METHODS OF QUITTING:

#### METHODS USED DURING LAST QUIT ATTEMPT

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In 2000, the U.S. Public Health Service published a revised clinical practice guideline that provided updated recommendations for evidence-based treatments for promoting smoking cessation<sup>2</sup>, including medications and behavioral counseling. However, other cessation practices, which lack a sufficient evidence base, such as quitting “cold turkey” or switching to low-tar or low-nicotine cigarettes, are still widely used as the main means to quit smoking. “Cold turkey” is defined as quitting “all at once with no cutting down and no other help from medicines or counseling.”

The WTS gathered data on a broad range of methods used by smokers during their last quit attempt. Overwhelmingly, “cold turkey” was the most common method, with the great majority of current smokers who have ever tried to quit at all (78%) and former smokers (79%) choosing to try to quit this way (Table 4). Respondents to the WTS who did not indicate a “cold turkey” quit attempt were asked about which methods of quitting they may have used solely or in combination during their last attempt.

To gain a more current perspective of successful methods for former and current smokers, we identified only those respondents who had made a quit attempt since the publication of the first clinical practice guideline (1996). Both current and former Wisconsin smokers were asked the same questions about any method(s) they used during their last attempt to quit smoking (Table 4).

There is not much difference between the choice of method(s) used by current or former smokers in the last seven years (Table 4). Gradually cutting back, or tapering, the amount of cigarettes smoked to achieve cessation was the most common non-“cold turkey” method used, especially by current smokers. At least one of the U.S. Food and Drug Administration (FDA) approved medications for smoking cessation was used in 15% of the attempts made by former smokers and 16% of attempts by current smokers. Bupropion and the nicotine patch were the most frequently reported medicinal treatments used. Unfortunately, the low usage of quit methods other than “cold turkey” in the WTS sample precluded analyses of sociodemographic comparisons. African-American current smokers were much more likely to try “cold turkey” their last time (92%) than Whites (78%).

**Table 4****Percentage of respondents who reported using a particular quit method during their last quit attempt (last 7 years only)<sup>1, 2</sup>**

Method	Current Smoker (n=1065)	Former Smokers (n=640)
Cold Turkey	78%	79%
Switch To Low Tar/Nicotine Cigarettes	5%	4%
Gradually Cut Back on Cigarettes	15%	7%
Self-Help Materials	4%	4%
Cessation Counseling	2%	1%
Quitline	1%	<1%
Hypnosis	1%	1%
Quit with Others	5%	3%
Any FDA Approved Medication	16%	15%
Any Nicotine Replacement Product <sup>3</sup>	10%	11%
Bupropion	6%	4%

<sup>1</sup> Because of values <1% of current smokers, several reported methods were omitted from this table.

<sup>2</sup> Column totals may exceed 100% because respondents indicating a method other than "cold turkey" were allowed to report all methods used during their most recent quit attempt.

<sup>3</sup> Nicotine replacement products included patch, gum, nasal spray, inhaler, and lozenge.

## CONCLUSIONS

A number of findings from the 2003 WTS about patterns and methods for quitting smoking stand out. The vast majority (82%) of smokers have tried to quit smoking at least once and nearly 46% have tried to quit in the past year. This suggests that smokers are increasingly aware of the dangers cigarettes pose to their health and want to become tobacco free.

However, because so many serious quit attempts end in relapse, Wisconsin smokers must endure the unpleasant withdrawal phase of quitting multiple times during their lifetime. For current smokers who tried to quit in the last year, nearly half of them reported relapsing within a week of quitting and 75% went back to smoking within one month. Despite difficulties, smokers continue to try quitting in an effort to end their dependence on tobacco. Although the majority of former smokers were able to quit with only one or two tries, the average number of attempts before a smoker was able to successfully quit was four attempts. Current smokers in Wisconsin have made an average of four attempts as well. Close to 30% of current smokers have made five or more attempts to

quit smoking without achieving success. Many smokers nonetheless remain motivated to succeed and nearly a third reported that they had made a quit attempt in the last six months. African-Americans appear to be more likely to make a quit attempt but are usually doing so without the aid of evidence-based treatment interventions.

The fact that most smokers relapse despite their willingness to try to quit underscores the need for using the right methods for quitting smoking. Clinical research has shown that nicotine replacement therapies and bupropion, along with behavioral counseling, are the most effective treatments for smoking cessation. However, smokers in Wisconsin still overwhelmingly rely on “cold turkey,” quitting with no appreciable treatment support. Nearly 80% of all the quit attempts reported were unsupported by evidence-based treatments. On the other hand, about 15-16% of quit attempts among former and current smokers included some type of proven smoking cessation medication, usually bupropion or an over-the-counter nicotine replacement product.

# RECOMMENDATIONS

This report has examined the patterns and methods of quitting smoking in Wisconsin. The upside is that smokers are motivated and taking action when it comes to trying to end their dependence on tobacco. Their patterns and quit attempt histories suggest that there is strong desire to make cigarettes a relic of their past, and many smokers have succeeded in doing so. The downside is that many smokers relapse very early into their quit attempts. Most are trying to quit without the benefit of evidence-based treatments, which could increase their chance of succeeding. Forty years after the first Surgeon General's report identified cigarette smoking as a serious health hazard, twenty years after FDA approval of nicotine gum, and five years after many states received major cash settlements from tobacco companies as a reimbursement for past health care costs related to tobacco use, smokers are trying to quit in droves. However, they still are not embracing the evidence-based methods for smoking cessation that hold the most promise for success. The data from this report suggest the following recommendations for addressing the problem of helping our state's smokers to quit and stay quit:

- Private and public health insurers should make evidence-based treatments readily available to all and provide these treatments as often as a smoker is willing to try to quit. Tobacco dependence is a chronic disease and smokers often must make many attempts to quit smoking. Making evidence-based

smoking cessation medications and counseling available for multiple quit attempts should be a mandated benefit of all healthcare plans.

- Smokers and healthcare providers should become more educated about the benefits of using evidence-based medications and counseling when trying to quit smoking. This could be achieved through increased health education programs across our state and through outreach programs that inform and train healthcare providers to recommend the best treatments available.
- State and private health organizations should encourage use of the Wisconsin Tobacco Quit Line. Very few smokers reported use of this free, evidence-based counseling service. Promotion and awareness campaigns should be used to increase the utilization of this important treatment option, and clinics and other healthcare institutions should either promote the Quit Line or enroll in the Quit Line "Fax to Quit" program, which partners with healthcare providers to encourage Quit Line usage by smokers.
- More research should be conducted to better understand quitting and relapse patterns in African Americans, other minority groups and older smokers to increase the use of evidence-based approaches to cessation.

## REFERENCES

<sup>1</sup>U.S. Department of Health, Education, and Welfare. *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service*. Washington: US Department of Health, Education, and Welfare, Public Health Service, 1964. PHS Publication No. 1103.

<sup>2</sup>Fiore MC, Bailey WC, Cohen SJ, et al. *Treating Tobacco Use and Dependence*. Clinical Practice Guideline. Rockville, MD: U.S. Dept. of Health and Human Services. Public Health Service. June 2000.

<sup>3</sup>U.S. Department of Health and Human Services. *Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health*. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

<sup>4</sup>Fiore MC, Bailey WC, Cohen SJ, et al. *Smoking Cessation*. Clinical Practice Guideline No 18. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research. AHCPR Publication No. 96-0692. April 1996.

## TECHNICAL NOTES

The 2003 Wisconsin Tobacco Survey (WTS) was conducted by the University of Wisconsin Center for Tobacco Research and Intervention (UW-CTRI) in collaboration with the University of Wisconsin Comprehensive Cancer Center and the Wisconsin Department of Health and Family Services. A total of 8,111 adult Wisconsin residents were interviewed by phone from June 2003, through February 2004. The purpose of the 2003 survey was to provide current information about patterns of tobacco use and cessation, attitudes and beliefs about tobacco-related policy and other issues, and the impact of tobacco control media campaigns. The survey included 114 questions on general health; tobacco use and cessation; smokers' use of healthcare services; smoking during pregnancy; media campaigns; risk perception; and demographics. The Wisconsin Department of Health and Family Services provided funding for the 2003 WTS.

The survey identified three main groups: current cigarette smokers, former cigarette smokers, and individuals who have never smoked more than a total of 100 cigarettes. A current smoker was defined as someone who smoked 100 cigarettes in a lifetime and who reported smoking every day or some days at the time of the WTS interview. A former smoker was defined as someone who smoked 100 cigarettes in a lifetime and who reported no smoking at the time of the WTS interview. A never smoker was defined as someone who reported never having smoked more than 100 cigarettes in a lifetime. A limited number of questions about non-cigarette tobacco use (e.g., cigar smokers, pipe smokers, or snuff/chewing tobacco users) were also included. A major goal of the project was to contrast trends in behaviors and attitudes across these three different groups defined on the basis of tobacco use status.

UW-CTRI retained the University of Wisconsin Survey Center (UWSC) to conduct the 2003 WTS. For purposes of the 2003 WTS, the UWSC obtained a

sample of randomly-generated Wisconsin phone numbers from GENESYS Sampling Systems. This company also provides the sample for the Wisconsin Behavioral Risk Factor Surveillance Survey (BRFSS). GENESYS provided a sample of phone numbers selected in the same manner as the BRFSS with the only difference being that the BRFSS sample is generated monthly; for the 2003 WTS, GENESYS generated sample files quarterly. In addition, GENESYS removed numbers from the 2003 WTS sample that were duplicated in the BRFSS sample and the Wisconsin Family Health Survey (FHS) sample each quarter.

The total sample size delivered by GENESYS for the WTS was 35,800 Wisconsin phone numbers. This number included all of the cases that were fielded by the UWSC (24,220 phone numbers) plus an additional 11,580 phone numbers that were prescreened by GENESYS and found to be either nonworking or business phone numbers. These prescreened phone numbers were not called by the UWSC, but are used to calculate the selection probability in the weighting procedures.

The respondent selection procedure for the 2003 WTS was the same as the procedure used in the BRFSS. When each telephone number was called, it was first determined whether or not a working residential telephone number had been reached. Each such number was then screened to verify that it was associated with a household. Those working residential households were then further screened to determine whether there was at least one household resident who was at least 18 years old. If there were two or more persons in the household who were not of the same gender, then the gender of the targeted respondent was randomly selected. Finally, the target respondent was randomly selected within gender from among those household members age 18 years or older. Only that selected person could be interviewed; no substitutions were allowed.

The 2003 WTS was designed to be a representative sample of adult Wisconsin residents. As such, the majority of WTS respondents were White (n=6904; 86% of sample). Non-white respondents included 751 African Americans (9% of sample), 63 American Indians/Alaska Natives (1%), 145 Hispanics (2%), and 165 other, non-Hispanics (2%). A group of 83 respondents declined to provide answers to questions about race/ethnicity.

The interview for the 2003 WTS was conducted using a computer-assisted telephone interviewing (CATI) system. The CATI software used by the UWSC was CASES 4.3.7 provided by the Computer-Assisted Survey Methods Program at the University of California-Berkeley. Using the CASES program, the text of the survey appeared question by question on a computer screen for the interviewer to read to the respondent. Routing through the interview was based on skip-logic that was pre-programmed into the computer. Question wording/order was adapted according to answers given previously in the interview. The system allowed for pre-coded questions, open-ended questions, and combinations of the two. In addition, the computer allowed only valid responses to be entered; when an invalid response was entered, the CATI program prompted the interviewer to reenter the response.

For the 2003 WTS, the UWSC followed recommendations of the Centers for Disease Control and Prevention (CDC) for improving response rates and data quality: (1) for each phone number, at least 15 calls were made to reach the household; (2) calls were made at different times of day and on different days of the week; (3) the UWSC attempted to convert all cases that were refused (except when a request was made not to call back); (4) when a person “hung up” on an interviewer, the interviewer called the number back after a brief pause; and (5) the TTY relay system was used to complete interviews with hearing impaired adults.

For the purpose of this study, the Council of American Survey Research Organizations (CASRO) methodology was used to calculate response rate. The application of the CASRO response rate formula to this sample resulted in an adjusted total of 24,220 cases. A total of 8,111 respondents completed the interview, resulting in a CASRO-adjusted response rate of 51%. Data from 63 respondents were deleted from the final dataset due to inconsistencies in their responses to the tobacco use questions. A total of 8,048 valid surveys were included in the final dataset. Among those people, 4,282 were never smokers, 1,544 were current smokers and 2,222 were former cigarette smokers.

WTS data were weighted using the same basic procedures of the BRFSS to more accurately represent the population of Wisconsin. When data are used without weights, each record counts the same as any other record. The implicit assumption is that each record has an equal selection probability and that non-coverage and nonresponse are equal among all segments of the population. However, deviations from this assumption can be large enough to affect the results obtained and weighting each record appropriately can help adjust for this. Detailed information on the formula used for weighting can be found at: [www.cdc.gov/BRFSS/technical\\_infodata/weighting.htm](http://www.cdc.gov/BRFSS/technical_infodata/weighting.htm).

Statistical analyses were conducted using SAS statistical software (SAS Institute Inc., Cary, NC, 2001, Version 8.2). Where appropriate, the SAS procedure PROC SURVEYMEANS was used to incorporate sample weights into the calculation of prevalence and other estimates. Differences between estimates were considered statistically significant if 95% confidence intervals were not overlapping.

# ACKNOWLEDGEMENTS

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## Collaborating Organizations and Individuals:

### University of Wisconsin Center for Tobacco Research and Intervention

The Center for Tobacco Research and Intervention (UW-CTRI) was established in 1992 by the University of Wisconsin-Madison as the lead campus agency addressing tobacco use in our society. UW-CTRI's mission is to expand our understanding of tobacco dependence and its treatment and to apply those scientific findings through intervention strategies that reduce tobacco use in Wisconsin, nationally and internationally.

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### University of Wisconsin Comprehensive Cancer Center

UW-Madison's prominence in cancer research, education and treatment arises from more than six decades of diligence and discovery--beginning with the founding of the McArdle Laboratory for Cancer Research in 1940 followed by the formation of the UW Comprehensive Cancer Center (UWCCC) in 1973. The UWCCC holds the unique distinction of being the only comprehensive cancer center in Wisconsin as designated by the National Cancer Institute, the lead federal agency for cancer research. An integral part of the UW Medical School, the UWCCC unites over 200 physicians and scientists who work together in translating discoveries from research laboratories into new treatments that benefit cancer patients.

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Xiaodong Kuang, M.A.

D. Paul Moberg, Ph.D.

Pat Remington, M.D., M.P.H.

Amy Williamson, M.P.P.

### **Wisconsin Public Health and Health Policy Institute**

The mission of the Wisconsin Public Health and Health Policy Institute (WPHHPI) is to *“stimulate, create and communicate useful research and analysis and to translate research into practice.”* With this mission, the Institute is a focal point for University faculty, staff, and students interested in using their skills and experience to answer real world questions. The Institute serves as a bridge between the University of Wisconsin, community-based practitioners, and policy-makers through applied research, outreach, program evaluation, training and technical assistance. The Institute was established in 2001, but has prior roots in the Wisconsin Network for Health Policy Research (established in 1994), the Public Health Initiative (operational from 1998 to 2001) and the Center for Health Policy and Program Evaluation (CHPPE), which was initially chartered in 1984. The WPHHPI also houses the Tobacco Surveillance and Evaluation Program, a joint project of WPHHPI and UW Comprehensive Cancer Center.

Pat Remington, M.D., M.P.H., Institute Director

D. Paul Moberg, Ph.D., Director, Tobacco Surveillance and Evaluation Program

### **Wisconsin Department of Health and Family Services, Tobacco Control Program**

The mission of the Wisconsin Tobacco Prevention and Control Program is to improve health by preventing tobacco abuse, promoting tobacco addiction treatment, protecting all residents and visitors from exposure to secondhand smoke, and identifying and eliminating tobacco-related disparities. This mission will be accomplished by partnering with state and local leaders to implement a research-based, comprehensive tobacco prevention and control plan.

Jennifer Ullsvik, M.S.

### **University of Wisconsin Survey Center**

The mission of the UW Survey Center includes Research, Teaching, and Public Service. The central function of the Center is to advance excellence in survey research on the UW-Madison campus by: providing survey expertise to University of Wisconsin faculty and staff research projects; providing facilities to conduct high quality academic survey research; and, conducting and facilitating methodological research on the survey research process.

John Stevenson, B.A., UWSC Associate Director

Danna Basson, WTS Project Director

Funding for the 2003 Wisconsin Tobacco Survey was provided by the State of Wisconsin and the Robert Wood Johnson Foundation.

For additional information on:

**The Wisconsin Tobacco Quit Line,  
call 1-877-270-STOP (7867)**

**The Fax to Quit Program,  
contact Robin Perry at 608-265-5617 or  
email [rjp@ctri.medicine.wisc.edu](mailto:rjp@ctri.medicine.wisc.edu)**

Additional copies are available from:

Center Office  
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608-262-8673  
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A PDF version is available at:  
**[www.ctri.wisc.edu](http://www.ctri.wisc.edu) and [www.tobwis.org](http://www.tobwis.org)**

Publication date: October 2004