

# Tobacco Use Among Adolescents Enrolled in Wisconsin Medicaid Program

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## ABSTRACT

*Problem:* There has been very little study done on tobacco use and cessation among the adolescent Medicaid population. Study objectives included determining the prevalence of tobacco use among adolescents enrolled in Medicaid, and identifying subgroups within this population.

*Methods:* To determine tobacco use among adolescents enrolled in the Wisconsin Medicaid program, we analyzed data from a medical chart-audit of health care visits by 11-21 year olds from January 1997 to January 1999.

*Results:* Tobacco use status was noted in 55% of adolescent charts. Of these, 24% were current smokers, while 38% of adolescents in the general Wisconsin population were current smokers. Females had higher rates of tobacco use than males (28% versus 11%), and those from rural areas had higher rates than those from urban areas (41% versus 17%). Of pregnant adolescents with tobacco use status documented, 31.6% were current tobacco users.

*Conclusions:* Based on the data reported, adolescents in the Wisconsin Medicaid program who were pregnant, female, or rural residents may benefit from targeted smoking prevention and cessation interventions by health care professionals, community coalitions, and state programs.

## INTRODUCTION

Tobacco use, the most preventable cause of morbidity and mortality in the United States, has been described as a pediatric disease because approximately 80%-90% of adult tobacco users initiated use while they were younger than 18 years.<sup>1</sup> In 1999, 34.8% of US high school students reported that they had used tobacco within the past 30 days and were described as current tobacco users.<sup>2</sup> A number of studies have sought to characterize those children at greater risk for initiation of tobacco use so that specific interventions may be tailored to particular populations. Several studies have examined comparative rates of tobacco use among various racial/ethnic adolescent groups, as well as of students at various grade levels.<sup>1-3</sup> Though socioeconomic status (SES) has been examined as a variable in determining adult risk for tobacco use, few studies have examined the prevalence of tobacco use in adolescents from poorer socioeconomic backgrounds other than by using parental educational level as a proxy for SES. Though parental educational level may be a good proxy for adolescents' SES, parental educational level does not consistently predict adolescent tobacco use. In a recent study, parental education was inversely correlated with smoking prevalence among 8th grade students, but these differences were not present for 12th graders.<sup>3</sup>

The objectives of the study were to determine the overall prevalence of tobacco use among adolescents enrolled in the Wisconsin Medicaid program, as well as among subgroups within this population. We examined subgroups based on age, gender, pregnancy status, and region of residence. We examined tobacco use among Medicaid enrolled adolescents including those ranging in age from early (11 years old) to late (21 years old) adolescence. We hypothesized that smoking rates of Wisconsin adolescent Medicaid recipients would be higher than national rates and the Wisconsin general population. Studies have shown that adults who have less education, and are poor,

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unmarried, and unemployed are more likely to start smoking and less likely to quit.<sup>4</sup> Also, youths from single-family homes as well as those from lower socioeconomic backgrounds are at increased risk of initiating smoking.<sup>1</sup>

We also hypothesized that among teens in the Medicaid program, those from urban areas would have higher rates of tobacco use than those from rural areas, that gender differences would exist, and, finally, that pregnant adolescents would probably have high tobacco use rates. For this study, urban refers to Wisconsin Department of Health and Family Services' (DHFS) Southern and Southeastern geographic regions while rural refers to Northern, Northeastern, and Western geographic regions.

Finally, we addressed whether health care systems-level changes would help reduce tobacco use among this "high-risk" population. In particular, we speculated that the extent to which health care professionals address and document tobacco use in this population may be used as a report card measure by Medicaid programs to determine which health maintenance organizations (HMO) and/or health care professionals adequately meet the health care needs of Medicaid enrollees in terms of tobacco use prevention services.

## METHODS

The sample included early to late adolescents, 11-21 years old, enrolled in the Wisconsin Medicaid program. This research was conducted by using data from a chart audit performed in 1999 as part of a project sponsored by The Robert Wood Johnson Foundation Addressing Tobacco in Managed Care initiative. During the chart audit, researchers carried out random chart reviews to document the smoking cessation efforts of Wisconsin's HMOs and to note the level of smoker identification and treatment by health care professionals. Charts were reviewed using a chart audit data abstraction tool that was developed and approved by members of a committee addressing tobacco use among Medicaid managed care participants. This committee included representatives from the involved HMOs, the Wisconsin DHFS, researchers interested in tobacco control, the Medicaid program's fiscal agent, Electronic Data Systems (EDS), and EDS's subcontractor, Meridian Resource Corporation.

Stratified random samples of 384 individual primary care patient charts were requested from each of the 5 DHFS geographic health regions. Sample size calculations were based on the need to generalize from sample

findings to the population of each of the 5 regions of the state, and to provide 95% confidence that the measured proportion falls within +/- 10% of the population proportion for regional estimates. Patients must have been age 11 years or older in 1998 for inclusion in the study. A total of 1920 charts were requested, 83% (1597) of which were received and reviewed. Because of the specific interest in children, only data from the 734 charts of patients aged 11-21 years old (46% of charts reviewed) were included in the analyses for this study.

The charts included progress notes, history and physical forms, and other records. Health care professionals were asked to submit all progress notes from January 1, 1997 through January 1, 1999, including assessment, plan of care, medications, nurses and other health care professional notes, patient teaching and education documentation, and referrals and consultation reports. Forms requested, regardless of date, included registration information, initial history and physical reports, any flow sheet of health care or health status across time (including American College of Obstetrics and Gynecology [ACOG] flow sheets), and any health questionnaires or history forms completed by the patient.

The data collected included the following variables: region of state, patient gender, patient age, type of health care professional, number of visits, documentation of smoker status, location of documentation in the medical record, smoking history, type of advice and assistance offered to smokers, whether changes in smoking status were noted, whether follow-up was arranged, and whether the chart included care during pregnancy. Race/ethnicity of patients was not collected during the chart audit and therefore not included in the analyses. Two reviewers were trained to complete the chart audits, and the reliability of data retrieval was assessed for the reviewers. The chart audit tool and instructions were refined until reviewers had total agreement on a sample of 5 test charts. The data were weighted by geographic region to provide state estimates. Statistical Package for the Social Sciences (SPSS) was used for all data analyses. This study was reviewed and met the criteria for exemption by the Human Subjects Committee.

## RESULTS

Tobacco use status was noted in 55% (400/724) of adolescent patient charts. Of the adolescents with tobacco use status documented in the medical record, 24% were

current smokers, 5% were ex-users, and 71% were never users of tobacco products.

### Gender

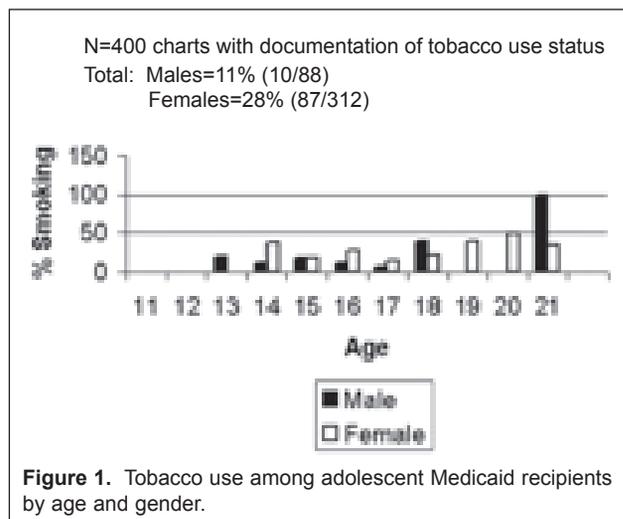
The majority of patients in this sample of adolescents were females (68%, 495/724). Also, proportionately more female patients (63%) had tobacco use status documented than male patients (38%) ( $\chi^2=39.01$ ,  $df=1$ ,  $P<0.0001$ ). Finally, more female patients were documented as smokers (28%, 87/312) than were male patients (11%, 10/88) ( $\chi^2=11.54$ ,  $df=1$ ,  $P<0.001$ ). (See Figure 1.)

### Age

The average as well as median age of adolescents in the sample was 16 years; the average and median age of males was 14 years, compared to an average and median age for females of 17 years. Documentation of tobacco use status tended to increase with age. Approximately 29% of adolescents in the 11-13 year age range, 60% of those in the 14-17 year age range, and 73% of those in the 18-21 year age range had their tobacco use status documented. None of the adolescents enrolled in Medicaid who were younger than 13 years old were reported to be using tobacco products. However, the youngest age at which smoking was noted was 13 years for males and 14 years for females. (See Figure 1.)

### Region

Patients seen in urban areas were more likely to have their tobacco use status documented than patients seen in rural areas (57% and 50% respectively). Of the patients seen in urban areas, 17% of those with tobacco use status documented were current smokers. Of the patients seen in rural areas, 41% of those with tobacco use status documented were current smokers. This represents a significant difference in smoking status between those living in urban and rural regions ( $\chi^2=27.4$ ,  $df=1$ ,  $P<0.0001$ ). Females from rural regions have the highest tobacco use (43% of those with tobacco use status documented were current smokers), followed by males from rural regions (32%). The difference in tobacco use between males and females in rural regions was not statistically significant ( $\chi^2=0.746$ ,  $df=1$ ,  $P=0.39$ ). On the other hand, there was a significant difference in tobacco use between males and females in urban regions ( $\chi^2=11.86$ ,  $df=1$ ,  $P<0.001$ ). Twenty-one percent of females from urban regions with documented tobacco use status were current smokers, while males from urban regions had the lowest rates of tobacco use (3%). (See Table 1.)



**Figure 1.** Tobacco use among adolescent Medicaid recipients by age and gender.

**Table 1.** Percent of Current Smokers Among Adolescents in Medicaid by Region and Gender

| Region | Males % (N) | Females % (N) | Total % (N) |
|--------|-------------|---------------|-------------|
| Rural  | 32 (7/22)   | 43 (41/95)    | 41 (48/117) |
| Urban  | 3 (2/66)    | 21 (46/217)   | 17 (48/283) |

**Table 2.** Tobacco Use Among Pregnant Adolescents in Medicaid with Status Documented in the Medical Record

| Age Group* | Current User % (N) | Ex-User % (N) | Never User % (N) | Total % (N) |
|------------|--------------------|---------------|------------------|-------------|
| 15-17      | 12.5 (2)           | 25 (4)        | 62.5 (10)        | 100 (16)    |
| 18-19      | 35 (14)            | 7.5 (3)       | 57.5 (23)        | 100 (40)    |
| 20-21      | 33.8 (26)          | 14.3 (11)     | 51.9 (40)        | 100 (77)    |
| All ages†  | 31.6 (42)          | 13.5 (18)     | 54.9 (73)        | 100 (133)   |

\* Age in years

† 15-21 years

### Pregnancy Status

The majority of adolescents seen in the context of pregnancy (95%) had their tobacco use status documented. Of those pregnant adolescents with tobacco use status documented, 31.6% were current tobacco users, 13.5% were former users, and 55% were never users of tobacco products. (See Table 2.)

### Comparison of Wisconsin Medicaid, Wisconsin, and National Adolescent Populations

Overall, adolescents enrolled in the Wisconsin Medicaid program had lower rates of current tobacco use (24%) than adolescents in Wisconsin's general population (38%) and the national average for adolescents (35%).<sup>5</sup> However, pregnant adolescents enrolled in Medicaid had higher rates of tobacco use than other pregnant adolescents in Wisconsin and

**Table 3.** Percent of Current Tobacco Users in Various Adolescent Populations (1999)

|           | Wis Medicaid Pop. (%) | Wis General Pop. (%) | National Pop. (%) |
|-----------|-----------------------|----------------------|-------------------|
| Overall   | 24.1                  | 38.0*                | 34.8†             |
| Gender    |                       |                      |                   |
| Male      | 11.2                  | 38.2*                | 34.7†             |
| Female    | 28.0                  | 37.8*                | 34.9†             |
| Age       |                       |                      |                   |
| 11-13 yrs | 1.6                   | 16.0‡                | 12.8§             |
| 14-17 yrs | 18.4                  | 38.0*                | 34.8†             |
| 18-21 yrs | 37.1                  | 32.0¶                | 27.9#             |
| Pregnancy | 31.6                  | 27.9**               | 15.0-18.9††       |

Note: Used 2000 data because this is the first year with data available for youth in the middle school age ranges.

\* Based on Wisconsin Behavioral Risk Factor Survey, 1999 for current cigarette use among high school students (grades 9-12).<sup>5</sup>

† Based on Youth Risk Behavior Survey, United States 1999 for current cigarette smoking among high school students (grades 9-12).<sup>5</sup>

‡ Based on Wisconsin Youth Tobacco Survey 2000, for youth in middle school (grades 6-8) who were current users of any tobacco product.<sup>8</sup>

§ Based on National Youth Tobacco Survey, 1999 for percentage of middle school and high school students who were current users of any tobacco product.<sup>8,9</sup>

¶ Based on Wisconsin Behavioral Risk Factor Survey, 1999 for current cigarette smoking among adults 18-24 years old.<sup>5</sup>

# Based on National Health Interview Survey, 1999 for current cigarette smokers among adults 18-24 years old.<sup>7</sup>

\*\* Represents percent of WI women 15-19 years old who smoked during pregnancy, 1998 to 1999.<sup>6</sup>

†† Range for a national sample of 15-24 year old pregnant women during 1999.<sup>6</sup>

considerably higher rates than the national average (31%, compared to 27.9% and 15%-19% respectively).<sup>6</sup> Also, 18-21 year olds enrolled in Medicaid had higher rates of tobacco use than did others of comparable age from national and Wisconsin-specific samples.<sup>7</sup> (See Table 3.)

## DISCUSSION

Adolescent Medicaid recipients in Wisconsin had markedly lower rates of smoking than adolescents in the general Wisconsin population and in the national population, a finding different than that observed among economically disadvantaged adults. In this study, females had considerably higher rates of tobacco use than males, and those residing in rural areas had higher rates of tobacco use than those in urban areas. While adolescents enrolled in Medicaid had lower overall rates of tobacco use than adolescents in the general population, there are some important exceptions to this generalization, primarily among pregnant women and 18-21 year olds. For exam-

ple, among pregnant women in the general population, pregnant adolescents tend to have the highest rates of smoking.<sup>6</sup> Interestingly, pregnant adolescents enrolled in Medicaid had even higher rates of smoking than pregnant adolescents in the general population. Also, Medicaid recipients in the 18-21 year age range had higher rates of tobacco use than others of comparable age in the nation and in Wisconsin's general population.<sup>5,7</sup>

In Wisconsin, adolescent Medicaid recipients from rural regions had markedly higher tobacco use rates compared to those from urban regions. One might speculate that the disparity in prevalence of tobacco use between urban and rural youth is related to a number of factors, including fewer school-based tobacco use prevention programs in rural regions, less enforcement of age restrictions on the sale of tobacco products in rural regions, and/or less access to cessation programs in rural regions. Moreover, these data indicate that adolescents enrolled in Medicaid do not tend to start using tobacco at younger ages than adolescents in the general population. However, these findings should be interpreted with caution since adolescent patients 14 years old and younger were less likely, compared to adolescents 15 years and older, to have their tobacco use status queried and documented by health care professionals.

The finding of lower tobacco use rates among this adolescent Medicaid sample was a surprising one, particularly given that past studies have found that adolescents from socioeconomically disadvantaged backgrounds are at increased risk for initiating smoking.<sup>1</sup> These findings were also surprising given the data showing that adult Medicaid recipients smoke at a higher rate than the general adult population.<sup>10</sup> A possible explanation for this finding is that the cost of cigarettes causes adolescent Medicaid recipients to delay the onset of regular smoking, due to having less dispensable income compared to adolescents in the general population. This has policy implications in that it provides more support for the benefits of cigarette tax increases as a mechanism for preventing smoking initiation among children, especially those with less discretionary income. Also, this finding provides extraordinary opportunity and responsibility for prevention. In particular, pediatricians and other health care professionals who regularly care for these adolescents have an opportunity to intervene in a preventive way with these patients and their parents. Another possible explanation for the findings is the difference in methods of identifying smokers. In this study, smoking status was determined by medical chart audit, whereas in the state and national samples smoking status was determined by self-report surveys.

These findings must be viewed in the context of the limitations of the data available. These prevalence data refer only to those adolescents who had their tobacco use status documented, about 55% of the adolescent Medicaid charts screened. It does not include patients whose tobacco use status was not documented, or those who did not visit a health care professional during the study period. Therefore, this study may actually underestimate the number of adolescent Medicaid recipients who are tobacco users. It is not possible to determine how many tobacco users were not identified as a result of failure to ask about and/or document the tobacco use status in the patient's medical record.

Another potential limitation of this study is that the sample included more females than males. However, this is consistent with the Wisconsin Medicaid program because in 1999 well over half (57%) of the total Medicaid-eligible enrollees in Wisconsin were eligible through Aid to Families with Dependent Children (AFDC) or Healthy Start (both programs for low-income women and children). In 1999, 60% of Wisconsin Medicaid HMO enrollees were females, and among male enrollees, only 12% were 15 years and older.<sup>11</sup> Therefore, the results for males must be interpreted in light of the more limited sample size.

The most consistent documentation of tobacco use status was found among adolescents seen in the context of pregnancy. This is likely an indication of the efficacy of the Obstetrics/Gynecology documentation system for identifying tobacco users. The ACOG prenatal form is a standard record-keeping form that includes questions about tobacco use and therefore encourages health care professionals to identify, document, and provide interventions for patients using tobacco. The United States Public Health Service Guidelines, "Treating Tobacco Use and Dependence," recommends that all health care professionals make the identification of tobacco use status an automatic part of medical record documentation for all patients, including adolescents, at every visit.<sup>12</sup> The ACOG prenatal form helps achieve this goal at a very high rate and may be a model for system-level change to ensure consistent documentation.

Previous analyses have demonstrated that system changes such as a tobacco use vital sign in all medical charts serve as prompts to remind health care professionals to address this issue with all of their patients.<sup>12</sup> If properly implemented, a health care systems-level change that promotes querying and documenting tobacco use status could ultimately lead to a reduction in tobacco use and dependence among youth. Better sys-

tems for the identification and documentation of tobacco use status for all patients within health care systems, including adolescents, is the first step towards providing appropriate interventions. The extent to which health care professionals address and document tobacco use in this population may be used as a report card measure by Medicaid programs to determine which health maintenance organizations (HMO) and/or health care professionals adequately meet the health care needs of Medicaid enrollees in terms of tobacco use prevention services.

## CONCLUSIONS

Tobacco use is a major public health concern in the United States, particularly among the poor and underserved. The prevalence of tobacco use among adolescents in Wisconsin is higher than the national average. Moreover, certain subgroups of adolescent Medicaid recipients in Wisconsin had even higher rates of tobacco use than the general adolescent population and deserve targeted cessation interventions. For example, tobacco rates were higher in rural regions than in urban areas, and pregnant adolescents enrolled in Medicaid, who already have an increased risk of pregnancy complications and low birth weight, used tobacco at rates higher than pregnant adolescents in the general population.

Consistent emphasis on tobacco prevention and cessation interventions directed at the adolescent Medicaid population may help reduce the burden of tobacco dependence among those who already suffer disproportionately from preventable morbidity and mortality. Those who work with children in school or health care settings are well positioned to provide tobacco use prevention and intervention services to adolescents.

Further studies should not only address low income status as a factor influencing tobacco use among adolescents, but might focus on racial/ethnic differences in tobacco use among adolescent Medicaid recipients. Also, studies to better characterize and understand racial and socioeconomic disparities in tobacco use cessation would be helpful. More research is needed to understand why rates are lower among adolescents enrolled in Medicaid, and to study the effectiveness of cessation programs designed specifically for pregnant adolescents enrolled in Medicaid.

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