



Healthy Generations

From Maternal & Child Health, Division of Epidemiology, School of Public Health at the University of Minnesota

Volume 1 • Issue 1 • May 2000

Inside this Issue

Tobacco Use Among College Age Students

Edward P. Ehlinger MD, MSPH, Director and Chief Health Officer of Boynton Health Service of the University of Minnesota

Risk Factors Associated with Cigarette Use Among Adolescents

Kelli Komro, Ph.D. Division of Epidemiology, University of Minnesota

PAGE 4

School-Based Adolescent Tobacco Use Prevention*

Cheryl Perry, PhD Division of Epidemiology, University of Minnesota

PAGE 6

Policy Approaches to Reducing Adolescent Tobacco Use

Jean Forster, Ph.D. Division of Epidemiology, University of Minnesota

PAGE 9

News from the Minnesota Department of Health "Target Market Ads Feature Real Teens Targeting Tobacco"

PAGE 10

"Partners in Health" Center for 4-H Youth Development

Nikki Sigler Andrews, M.Ed. Center for 4H Youth Development University of Minnesota

PAGE 12

Tobacco Use Among College Students

Edward P. Ehlinger, MD MSPH, Director and Chief Health Officer of Boynton Health Service of the University of Minnesota.

The Centers for Disease Control and Prevention's [CDC] report, Achievements in Public Health, 1900-1999¹, highlighted tobacco use in the United States². Specifically smoking prevalence of individuals age 18 years and over was reduced from 42.4% in 1965 to 24.7% in 1997. Similarly, annual per capita cigarette consumption dropped from 4,345 cigarettes in 1963 to 2,261 cigarettes in 1998. Despite this dramatic reduction, the decreasing prevalence of cigarette smoking among adults that began in the mid-1960s has not continued to the present. Since 1990, smoking prevalence among men and women has remained stable at 28% and 22.5% respectively.

Among high school seniors, the decline in current cigarette use (smoking in the last 30 days) seen in the 1970s and early 1980s has actually reversed. From a low of approximately 30% in the mid 1980s, smoking prevalence among high school seniors had increased to 36.5% by 1997. Data from the

Minnesota Student Survey³ corroborate these national findings. Among Minnesota 12th graders current cigarette use in 1992 was 30.9%, increasing to 38.5% in 1995 and to 43% in 1998.

Sandwiched between all adults and high school seniors is the 18-24 year old age group – a group that may hold the key to the success of tobacco control efforts. In 1997 the smoking prevalence in this age group rose to 28.7%. This made the 18-24 year old age group the highest cigarette user group among all adults for the first time in recent history^{2, 4, 5}.

Given the 1998 Minnesota and Master Tobacco Settlement Agreements that limit the advertising of tobacco products to people under the age of 18, the 18-24 year old cohort will likely play a pivotal role in efforts to reduce overall tobacco use in the U.S. Given the steady increase in 18-24 year olds attending college, tobacco use among 18-24 year college students will be of increasing importance⁶ in the years ahead.

Wechsler and colleagues (1998) reported an increase in the prevalence of current use of tobacco by college students from 22.3% in 1993

continued on page 2

Welcome to the premiere issue of Healthy Generations

Maternal and Child Health [MCH] in the Division of Epidemiology, School of Public Health at the University of Minnesota is pleased to bring you our first issue of Healthy Generations. This publication is just a portion of a larger dissemination event. In addition to this issue, you can also find resources including PowerPoint presentations and fact sheets at our website: <http://www.epi.umn.edu/mch/pages/hgrsorc.html>. If you are in Minnesota you also will have the opportunity to attend our videoconference on June 29 from 1-3 p.m. Here you will have the chance to speak with the authors featured in this issue. Check page 2 for sites and registration information.

This issue features the work of four MCH faculty. Ed Ehlinger alerts you to the increasing threat of tobacco use for late adolescents – specifically, college students. Kelli Komro applies the theory of triadic influence [TTI] to examine factors associated with adolescent tobacco use. Cheryl Perry considers the strengths of school-based adolescent tobacco use prevention programs. Finally, Jean Forster provides timely information on the variety and effectiveness of policy addressing adolescent tobacco use. In addition, our Partners in Health section highlights organizations who collaborate with MCH in addressing the health of children and their families. This month the Center for 4-H Youth Development at the University of Minnesota is featured.

We welcome any feedback or comments regarding this issue and related activities. Please contact me at meschke@epi.umn.edu or call 612.625.4891. To join our list of subscribers please contact Jan Pearson at pearson@epi.umn.edu or call 612.626.8644.

Laurie L. Meschke, Ph.D.
Director of Community Outreach, MCH
Issue Editor

Healthy Generations Videoconference

**June 29, 2000
1-3 p.m.**

The following Minnesota sites
will be hosting this event:

Beltrami County

616 America Avenue,
Suite 250, Bemidji

Blue Earth County

410 S. 5th Street, Mankato

Clay County Family Services Center

715 11th Street N,
1st Floor, Moorhead

Crow Wing Courthouse Multimedia Room

326 Laurel Street,
Brainerd

St. Louis County Courthouse,

1st Floor, Room 3
100 N. 5th Street, Duluth

Itasca County

123 NE 4th Street,
Grand Rapids

Kandiyohi County Room

2055 1900 Hwy 294 NE,
Willmar

Lyon County Courthouse,

Lower Level
607 W. Main Street, Marshall

Nobles County

315 10th Street, Worthington

Olmsted County

Government Center,
4th Floor Admin. and
Veterans Services
Area 151
4th Street, Rochester

Stearns County

Room 21
705 Courthouse Square,
St. Cloud

MDH Metro Square Annex

Building 130 E. 7th Street,
3rd Floor, St. Paul

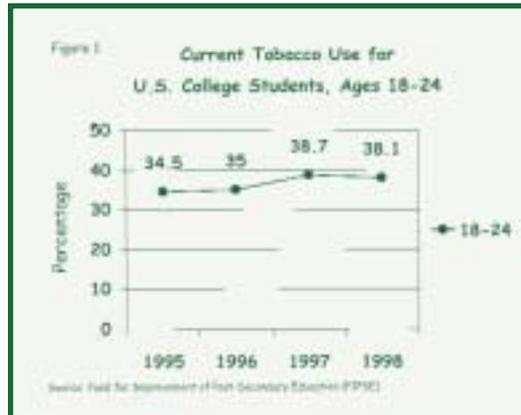
Registration is limited by site,
so register early. To register
for one of these sites contact

Jan Pearson by phone
(612.626.8644) or email
(pearson@epi.umn.edu)

continued from page 1

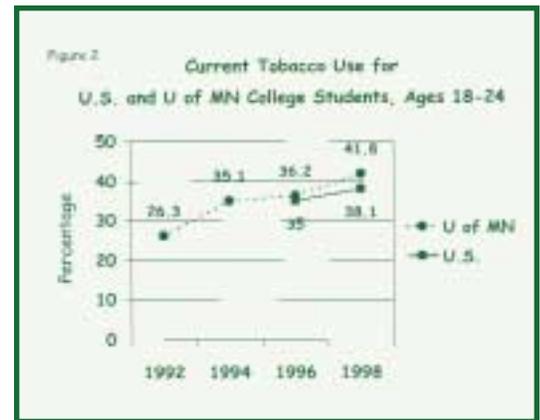
to 28.5% in 1997⁷. Highest rates were among freshmen (31.2%) and lowest among seniors (25.3%). More females (29.2%) than males (27.5%) were current smokers. Although 11% of "ever smokers" had their first cigarette after age 18, 28% of current smokers began to smoke regularly after the age of 18.

The 1995 National College Health Risk Behavior Survey had similar results⁸. In this survey, 28.8% of college students reported being current smokers and, among students who had ever smoked, 10.8% first smoked after the age of 18. Of current smokers, 19.4% reported being frequent smokers (smoked 20 or more days during the last month). Nation-wide data from the Core Alcohol and Drug Survey showed an increasing rate of current tobacco use (any tobacco use in last 30 days) among college students (Figure 1)⁹. Here the rates for college students rose from 34.5% in 1995 to 38.1% in 1998.



A recent report by Boynton Health Service at the University of Minnesota [U of MN]¹⁰ has underscored the magnitude of tobacco use by college students and raised some questions about current tobacco use prevention and cessation efforts for college students. From survey data, the report documented an almost 60% increase in tobacco use (cigarettes, cigars, and smokeless tobacco) among 18-24 year old U of MN students from 1992 to 1998 (Figure 2).

Most recent rates of current tobacco use by males and females differ by only about 4 percentage points (44.8% and 40% respectively) and rates for both groups have increased over 50% from 1992 to 1998 (Figure 3). Although more 18-24 year old males report being current tobacco users than females, the number of female frequent users in this age group has increased at a more rapid rate. Among female tobacco users, 43.5% are frequent tobacco users (used tobacco in 20 or more days in last month)

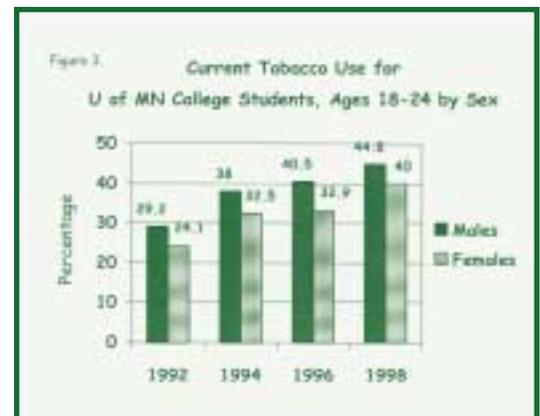


compared with 26% of male tobacco users. Infrequent use (5 or fewer days in last month) is higher for male than female tobacco users (53.4% and 39.1% respectively; Figure 4).

The greatest increase in tobacco use was seen in first-year U of MN students. Between 1992 and 1998 the rate of tobacco use for this group rose from 21.3% to 53.3% - a 150% increase (Figure 5). In contrast Wechsler's study⁷, 54% of 18-24 year old U of MN students who ever used tobacco initiated use after their 18th birthday. In addition, 29.5% of frequent tobacco users began using tobacco at age 18 or older. Cigarettes are the most common tobacco product used by U of MN students (31.7%), followed by cigars (6.3%) and smokeless tobacco (3.2%).

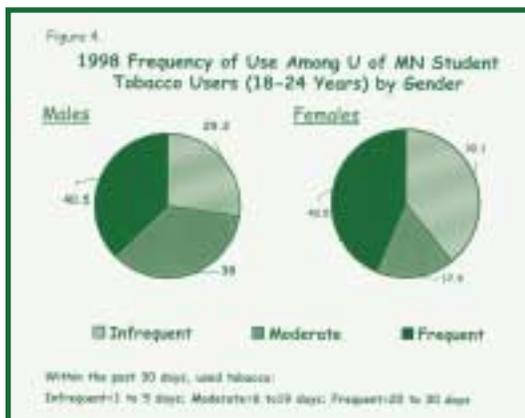
Until now, conventional wisdom has been that if individuals can be kept from initiating tobacco use during middle school and high school, it is unlikely that they will ever become addicted to tobacco and subject to the health risks it entails. This belief has been the rationale for focusing tobacco use prevention efforts almost entirely on children and adolescents. Tobacco control efforts among adults of all ages have concentrated almost totally on cessation efforts.

The recently published data on tobacco use among young adults, especially college students, raise important questions about this



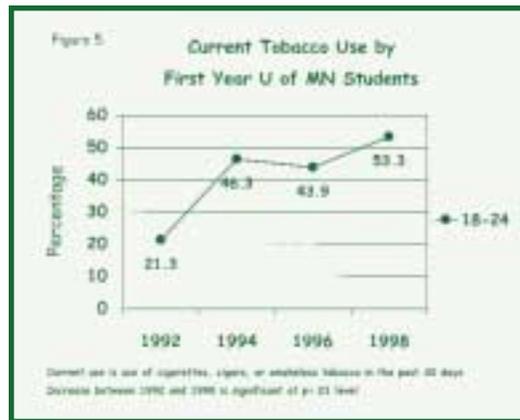
strategy. The studies demonstrate that the prevalence of tobacco use among 18-24 year-olds is at a disturbingly high and rapidly increasing level. The studies also demonstrate that this increasing prevalence is more than just a failure of prevention efforts at an earlier age. Data on college students show that although many students enter college already using tobacco, contrary to popular belief, many students also begin to use tobacco after college enrollment. The data argue that tobacco use prevention priorities should be expanded to include not only children and adolescents but young adults as well.

College students, in particular, should be targeted for new prevention and cessation efforts. Given the steadily increasing proportion of the population that is attending college and the role-modeling influence of college students on younger individuals, effective prevention efforts at this age could have large and dramatic effects on overall tobacco use. In addition, college is a time when many long-term lifestyle and behavior choices are being made and solidified. Successful prevention efforts at this age would likely pay dividends for decades into the future.



The reasons for targeting prevention efforts to college students are the same reasons the tobacco industry has shifted its focus to this group. What happens with this pivotal group may dictate the long-term outcome of tobacco use in this country.

The tobacco industry has a head start on influencing the behavior of college students and knows how to connect to students' interests and desires. We currently know little about the intricacies of college student tobacco use. Why do they initiate tobacco use and what influences them to continue? What are the implications of infrequent or "social smoking?" Why do males and females



use tobacco differently? Because of this depth of knowledge, we know very little about effective prevention and cessation strategies for college students.

What we do know is that the epidemiology of tobacco use in this country is changing. The "at risk" groups for initiation of tobacco use have changed and prevention strategies also need to change. While we need to continue our focus on youth, we must expand our prevention and cessation strategies to include the 18-24 year old age group – especially college students who will influence social norms and behaviors for many years to come. This is where the tobacco industry will be placing their energy and this is where tobacco control advocates must place theirs.

References

1. CDC Office of Communication: Ten Great Public Health Achievements in the 20th Century: <http://www.cdc.gov/od/oc/media/tengpha.htm>
2. CDC, Tobacco Use – United States, 1900-1999, MMWR 1999, 48, 986-993
3. Minnesota Department of Children, Families and Learning: Minnesota Student Survey 1992, 1995, and 1998
4. CDC. Cigarette smoking among adults--United States, 1995. MMWR 1997, 46, 1217-1220
5. CDC Tobacco Information and Prevention Service – Cigarette Smoking Among Adults – United States, 1997: <http://www.cdc.gov/tobacco/97adultprevfacts.htm>
6. National Center for Education Statistics: Digest of Education Statistics, 1998: Postsecondary Education: <http://nces.ed.gov/pubs99/digest98/chapter3.html>
7. Wechsler, H., Rigotti, N. A., & Gledhill-Hoyt, L. H.. (1998). Increased levels of cigarette use among college students: A cause for national concern. *Journal of the American Medical Association*, 280:1673-1678.
8. Everett S, Husten C, Kann L, et al. (1999). Smoking initiation and smoking patterns among U.S. college students. *Journal of American College Health*, 48, 55-60.
9. Cheryl Presley, Ph.D., Director Core Institute, Southern Illinois University: Personal communication
10. Boynton Health Service University of Minnesota: Tobacco use among University of Minnesota students: November 1999.

Assistance provided by Kusuma Madamala, MPH, Assessment Specialist, Boynton Health Service, University of Minnesota.

Risk Factors Associated with Cigarette Use Among Adolescents*

Kelli Komro, Ph.D.
Division of Epidemiology, University of Minnesota

Successfully developing effective programs to prevent adolescent tobacco use depends on identifying the causes of use based on both theory and research. Theory indicates where to search for causes of adolescent cigarette use and suggests means of prevention. Research shows whether our search has been successful and if our prevention efforts have been effective¹. The following is a review of both comprehensive theory of health-related behaviors and empirical reviews of the research on predictors of adolescent tobacco use.

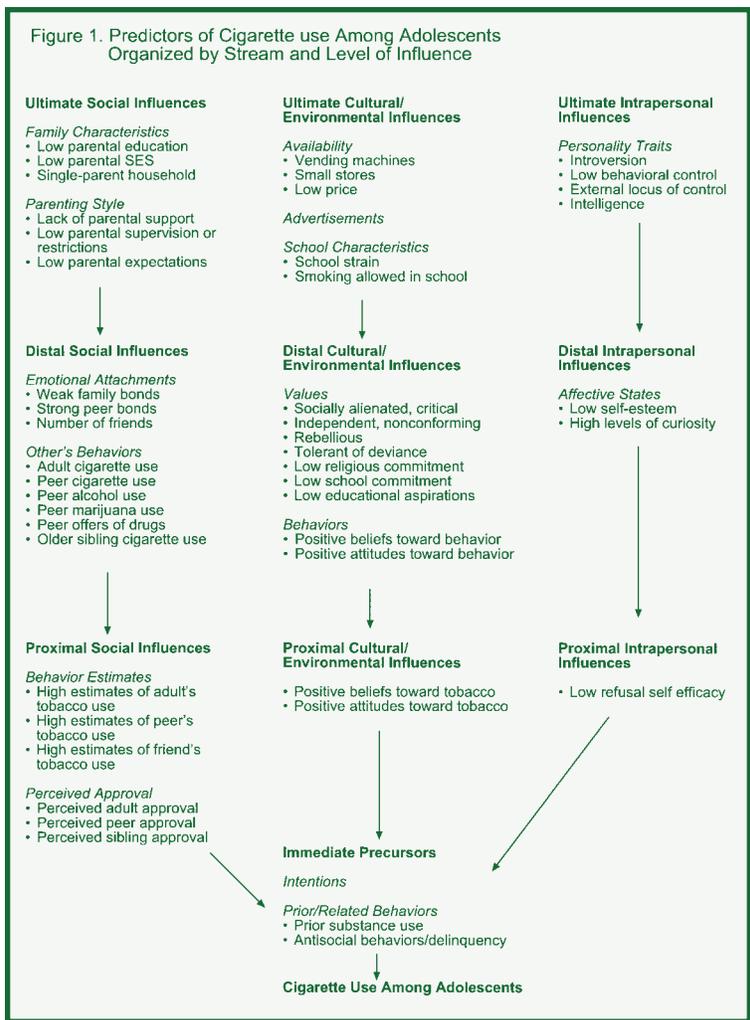
Flay and Petraitis² have proposed a new comprehensive, macro-level theory that integrates constructs from numerous microtheories into one coherent framework, the theory of triadic influence [TTI]. (See article for theories integrated in the TTI³.) According to the TTI, behaviors have roots in a person's current social situation, general cultural environment, and personal characteristics. Health-related behaviors are most immediately controlled by decisions or intentions. These decisions are a function of one's (a) social normative pressures to perform health-related behaviors, (b) attitudes toward performing health-related behaviors, and (c) perceptions of self-efficacy in performing health-related behaviors. Behavioral influences can, therefore, be categorized into three streams of influence.

First, social influences are viewed as originating in one's current social situation or immediate microenvironment and to flow through factors that affect social normative beliefs about health-related behaviors. Second, attitudinal influences are thought to originate in the broad culture or macroenvironment and to flow through factors that affect health-related values, knowledge, expectations, and evaluations about the personal, financial, and social consequences of health-

related behaviors. Third, intrapersonal influences are believed to originate in a person's inherited dispositions and personality characteristics and to flow through sense of self, social competence, and health-related skills and self-efficacy.

In addition to the three categories or streams of influence, the TTI assumes that causes of health-related behaviors exist on varying levels of influence: (a) ultimate, (b) distal, and (c) proximal. Each of these three levels is found in the social, cultural/environmental, and intrapersonal streams of influence. Ultimate causes of behavior, factors in one's background and environment, are believed to be deep-seated, root causes of behavior. They include social situations and contexts in which the behavior takes place, one's sociocultural heritage and the macroenvironment in which one is raised and lives, and inherited traits and personality dispositions. At the distal level, the ultimate causes interact to provide social bonding and role models, general knowledge and values, and sense of self and social competence. On the more proximal level, properties of the distal level are specified to the particular behavior one wishes to predict. Proximal influences include social normative beliefs, attitudes, and self-efficacy. The social cognitions determine the final single predictor of any one behavioral action, specifically the decision to act in a certain way in a given situation.

According to this distinction, proximal variables (e.g., positive attitudes toward smoking) are highly predictive (of smoking) but are only the most immediate precursors of a behavior and explain little about the deeper roots of behaviors. Distal variables help explain less immediate causes of behaviors (e.g., general life values). Finally, ultimate causes are exogenous causes beyond the immediate control of individuals but clearly are major determinants of their behavior (e.g., neighborhood characteristics). Compared to more proximal causes, ultimate causes probably are more deeply rooted but less predictive for any one individual or group. This might be because these causes differ very little between people in a study (i.e., low variance), they change little over time for whole





populations, and/or they are not easily changed or manipulated experimentally.

Although the TTI includes three primary streams of influence on health-related behaviors (social situation/context, sociocultural environment, genetic traits and personality dispositions), it does not assume that all influences flow neatly down one stream or another. Instead TTI recognizes that factors may primarily affect one stream but might, to a lesser extent, contribute to other streams too. Interstream pathways demonstrate the overpowering importance of the most distal or "ultimate" causes of health-related behaviors. Because the effects of more immediate social settings, sociocultural environment, and fundamental personality characteristics flow both within and between streams, they contribute to health-related behaviors in innumerable ways. Consequently, prevention programs that address these ultimate causes should have the greatest long-term impact and therefore, the greatest public health impact. Unfortunately, however, the most distal causes of behavior are often most difficult to influence.

The significance and relevance of factors that influence behavior outlined in the TTI have been supported by several recent research reviews on the causes of adolescent tobacco use. These findings about causes of adolescent tobacco use are summarized and presented in Figure 1^{4, 5, 6}.

Social Predictors

Ultimate social influences include family characteristics and parenting styles. In particular, low socioeconomic status (SES) of parents, low educational attainment of parents, and living in a single-parent household are associated with adolescent cigarette use. Lack of parental support, low parental supervision, and low parental expectations also are associated with adolescent cigarette use.

Distal social influences include emotional attachments and significant others' behaviors. Weak family bonds and strong peer bonds are

associated with cigarette use. Adults', peers', and siblings' use of tobacco is associated with tobacco use.

Proximal social influences include adolescents' estimates of others' behaviors and perceived approval of behaviors by significant others. High estimates of cigarette use by adults, peers, and friends are associated with adolescent cigarette use.

Cultural/Environmental Predictors

Important ultimate-level environmental influences of adolescent tobacco use include the availability of cigarettes from vending machines and small stores, low price of cigarettes, and advertisements portraying attractive images. School characteristics associated with cigarette use are school strain and allowing smoking in the school.

Distal environmental influences include general values and behaviors. Social alienation, rebelliousness, tolerance of deviance, a high value on independence and non-conformance, low religious commitment, low school commitment, and low educational aspirations are also predictive of adolescent cigarette use.

Proximal environmental influences include positive beliefs and attitudes toward tobacco use.

Interested in making a difference?

Consider a graduate degree in Maternal and Child Health [MCH] in the Division of Epidemiology, School of Public Health at the University of Minnesota.

What is MCH? Maternal and child health focuses on promoting and preserving the health of families, including mothers, children, and adolescents.

Who should apply? Students who want to positively influence health outcomes of mothers, children, and families in the United States should apply. Applicants' interests typically include developing and evaluating MCH programs: working collaboratively with multidisciplinary professionals from communities, public and private organizations and agencies, clinicians, policy makers, and researchers to develop innovative initiatives for health promotion; and /or managing programs that serve the needs of MCH populations.

The Masters in Public Health [MPH] in MCH is an appropriate degree for students planning to proceed to a Ph.D. degree in biological or behavioral Epidemiology, which is available at the University of Minnesota for students who wish to pursue advanced study and research careers.

Why Minnesota? The MCH major is nationally recognized as one of 13 federally funded training programs. The multidisciplinary MCH faculty has expertise in epidemiology, medicine, nursing, psychology, nutrition, family studies, and health education. They work collaboratively with faculty throughout the School of Public Health and University, with particular strong linkages with the Adolescent Health Program in the Medical School, the School of Nursing, Department of Family Social Science, and Institute of Child Development.

MCH faculty focus their research, teaching, and community services expertise on reproductive and perinatal health, family planning, child, adolescent, and family health promotion, risk reduction, and resiliency; child and family adaptations to chronic health conditions; and preventative interventions in the areas of adolescent pregnancy, childhood obesity, and fetal substance exposure. The faculty's research and community service activities afford additional opportunities for student training.

For further information - call 612.626.8802 or 1.800.774.8636; email gradstudies@epi.umn.edu; or check out www.epi.umn.edu/mch and www1.umn.edu/twincities/.

Intrapersonal Predictors

Ultimate intrapersonal influences include individual characteristics and personality traits. Introversion, low behavioral control, external locus of control, and intelligence are associated with adolescent cigarette use.

Distal intrapersonal influences include affective states and behavioral skills. Low self-esteem and high levels of curiosity are associated with adolescent tobacco use.

Proximal intrapersonal influences include self-efficacy to resist influences to smoke cigarettes. Low levels of refusal self-efficacy are associated with cigarette use among adolescents.

Immediate Precursors

Immediate precursors of tobacco use include intentions and prior or related behaviors. Intentions to smoke are predictive of cigarette use. Prior substance use (tobacco, alcohol, or marijuana) and antisocial behaviors or delinquency are also associated with cigarette use.

Summary

Predictors of tobacco use among adolescents can be categorized into social, cultural/environmental, and intrapersonal influences. The level of influence can also be specified (ultimate, distal, and proximal). Both category and level are important to consider for prevention. The TTI, supported by research, provides a fairly comprehensive understanding of what influences the onset of tobacco use among adolescents and offers practical guidance on developing strategies to prevent adolescent tobacco use.

References

1. Flay, B.R., & Petraitis, J.M. (1991). Methodological issues in drug use prevention research: Theoretical foundations. In C.G. Leukefeld & W.J. Bukoski (Eds.), Drug Abuse Prevention Intervention Research: Methodological Issues (Monograph 107, pp. 81-109). Washington, DC: National Institute on Drug Abuse Research.
2. Flay, B.R., & Petraitis, J. (1994). The theory of triadic influence: A new theory of health behavior with implications for preventive interventions. In G.S. Albrecht (Ed.), Advances in Medical Sociology: Vol. 4. Reconsideration of Models of Health Behavior Change. (pp. 19-44.) Greenwich, CT: JAI.
3. Petraitis, J., Flay, B.R., & Miller, T.Z. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. Psychological Bulletin, 117, 67-86.
4. Conrad, K.M., Flay, B.R., & Hill, D. (1992). Why children start smoking cigarettes: Predictors of onset. British Journal of Addiction, 87, 1711-1724.
5. Perry, C.L., (1999). Creating Health Behavior Change: How to Develop Community-Wide Programs for Youth. Developmental Clinical Psychology and Psychiatry, Vol. 43. Thousand Oaks, CA: Sage Publications.
6. U.S. Department of Health and Human Services (USDHHS). (1994). Preventing tobacco use among young people: A report of the Surgeon General. Atlanta, GA: U.S.

Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.

*Adapted from Komro, KA, Hu, FB, and Flay, BR, (1992). A public health perspective on urban adolescents. In HJ Walberg, O.Reyes - RP Weissberg (Ed.). Children and Youth: Interdisciplinary Perspectives, pp. 253-298. Thousand Oaks, CA: Sage.

School-Based Adolescent Tobacco Use Prevention*

Cheryl Perry, PhD

Division of Epidemiology, University of Minnesota

Since the 1964 publication of the first Surgeon General's report on smoking and health¹, smoking prevention has been recognized as a primary strategy for controlling smoking in the general population. The first report identified the difficulty that long-term adult smokers typically experience in their attempts to quit. The report thus advocated programs directed at educating high school and college students about the health hazards of smoking; in theory, school-based programs would interfere with the development of smoking behavior before smoking became firmly established.

A proclamation and direct warning from the U.S. Surgeon General about the life-threatening characteristics of cigarette smoking was expected to convince smokers to quit and nonsmokers to avoid taking up the practice. Had this been the case, the concept of smoking prevention might never have amounted to more than "spreading the word" to those segments of the population who had not yet received it. Unfortunately, nearly three decades later and despite monumental efforts to disseminate warnings, cigarette smoking remains the single most preventable cause of death and disease in our society². Moreover, in the 1990's, after some decline and leveling of cigarette smoking among adolescents, the prevalence of smoking significantly increased.

Programs to prevent adolescent tobacco use vary in their approach and effectiveness. Traditionally, public and private efforts to reduce the initiation of smoking by children have involved the schools². In part, the emphasis on school-based education reflects a belief that education is the most effective way to discourage children from smoking. Of the respondents (N=1007) to the 1984 national survey of adults sponsored by the American

Board of Family Practice³, 81% indicated that they believed smoking-related education to children in grade school was the most effective way to discourage smoking.

In 1987, the National Cancer Institute [NCI] convened a panel of experts to establish consensus regarding the essential structural elements of effective smoking-prevention programs⁴. The panel agreed that eight features could be considered both necessary and sufficient for effective school-based smoking-prevention programs (see Table 1)⁵. In a meta-analysis⁶ of outcomes of research studies conducted from 1974 through 1989 on school-based smoking prevention, the essential elements of the NCI expert panel were examined and mostly supported.

Table 1.

Essential elements of school-based smoking-prevention programs

1. Classroom session should be delivered at least five times per year in each of two years in the sixth through eighth grades
2. The program should emphasize the social factors that influence smoking onset, short-term consequences, and refusal skills
3. The program should be incorporated into the existing school curricula
4. The program should be introduced during the transition from elementary school to junior high or middle school (sixth or seventh grades)
5. Students should be involved in the presentation and delivery of the program
6. Parental involvement should be encouraged
7. Teachers should be adequately trained
8. The program should be socially and culturally acceptable to each community

In the mid-1970's, Evans et al. developed the first prevention program that instilled adolescent skills to resist social influences to smoke. The program, described as "social inoculation," taught students methods for recognizing and coping with pressures to smoke from peers, family, and the media⁷. Although interpretations of the results from this early work were complicated by a variety of methodological flaws⁸, Evans' work provided the foundation for much of the smoking-prevention research that followed over the next decade.

Most of the successful programs that provide skills for resisting social influences share several major curriculum components. One of these is to convey the short-term negative consequences of cigarette smoking, including social undesirability and physiological

impairment. Another component is to have students explore inaccurate normative expectations; students thus learn that cigarette smoking is not a normative behavior for adolescents their age and that the majority of persons in any age group are nonsmokers. Students examine the reasons that adolescents say they smoke, including to be accepted by peers, to appear mature, or to help cope with difficult situations. The factors that affect adolescent smoking can also be explored, including the influence of parents, peers, and mass media; for example, students can learn how role modeling and advertising can falsely establish positive cultural meanings for smoking. A related component is to engage students in training, modeling, rehearsing, and reinforcing methods that counter these influences to coach students to communicate these techniques to others. Some approaches also include generic personal and social skills training to promote overall competence and reduce motivations to smoke⁹.

Two prevention programs incorporating resistance skills have been shown to be particularly effective. Botvin's Life Skills Training [LST]¹⁰ program includes resistance skills, behavioral rehearsal, role playing, self-control, decision making, problem solving, and self-reward, as well as components devoted to increasing self-esteem, self-confidence, autonomy, and assertiveness. LST consists of 15 to 20 sessions for seventh-grade students; booster sessions are given in the eighth and ninth grades.

Life Skills Training has been evaluated extensively in progressively larger studies over the past decade; the encouraging results have ranged from 40 to 80 percent reductions in smoking prevalence, and long-term effects have lasted up to six years¹¹. In the most comprehensive evaluation of the LST program to date, 56 schools in three different



geographic regions were randomly assigned to three study conditions: LST plus one-day teacher training, LST plus video training for teachers, and a control condition. Significant positive effects were reported for cigarette use and for smoking-related knowledge, attitudes, and normative expectations. In most cases, the two treatment conditions had similar results; students in both groups demonstrated more positive effects than students in the control group¹². The effects of the Life Skills Training program have been demonstrated when project staff, older peers, or regular classroom teachers have delivered the program. These effects have also been demonstrated in inner-city populations of predominantly Hispanic¹³ and black^{14, 15, 11} adolescents.

The Minnesota Smoking-Prevention Program [MSPP] has addressed the prevention of tobacco use by influencing the social and psychological factors known to promote the onset of smoking. Peer (same-age) leaders, trained to communicate the program's social and psychological messages, often lead the MSPP activities. MSPP target issues include short-term, social consequences of smoking, reasons to smoke, media influences, social resistance skills, and a student commitment to remain a nonsmoker.

MSPP was evaluated in eight junior high schools. Murray et al.¹⁶ reported that after four years, the peer-led social influences intervention reduced the incidence of daily and weekly smoking by 35 to 50 percent. In contrast, no reduction was observed in an adult-led group that was taught the health consequences of smoking or in a comparison group enrolled in an existing curriculum covering general health topics. These differences, however, were no longer statistically significant at the five- and six-year follow-ups¹⁶.

As a follow-up, researchers hypothesized that the school-based intervention program would have longer-lasting effects if it was introduced in communities where adults were involved in community wide smoking-cessation programs, where antismoking ordinances in the schools and public community spaces were being considered, and where integrated school and community intervention activities were offered. Throughout junior and senior high school, smoking prevalence was significantly lower among students in the intervention community than among students in the control community¹⁷.

Only the social influence approaches have been scientifically demonstrated

(through replicated research studies) to reduce or delay adolescent smoking in school-based programs. Still, the effects of these programs have mostly not been sustained without additional educational interventions or community components. This experience suggests that programs grounded in school-based skills training are indeed important for preventing smoking, although more sustained and comprehensive efforts, including policy efforts, such as those evaluated in the Tobacco Policies for Prevention program¹⁸ may be needed for long-term success.

References

1. Public Health Service [PHS], (1964). Smoking and health. Report of the advisory committee to the Surgeon General of the Public Health Service. US Department of Health, Education, and Welfare, Public Health Service. PHS Publication No. 1103, 1964.
2. U.S. Department of Health and Human Services [USDHHS] (1989). Reducing the health consequences of smoking: 25 years of progress. A report of the Surgeon General. US Department of Health and Human Services, Public Health Service, Centers for Disease Control, Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. DHHS Publication No. (CDC) 89-8411, 1989.
3. Research and Forecasts, Inc., (1985). Rights and responsibilities: A national survey of healthcare opinions. Lexington, KY: American Board of Family Practice.
4. U.S. Department of Health and Human Services [USDHHS] (1991). Strategies to control tobacco use in the United States: A blueprint for public health action in the 1990's. US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute. NIH Publication No. 92-3316, 1991.
5. Glynn, T. J. (1989). Essential elements of school-based smoking-prevention programs. *American Journal of Public Health*, 76, 207.
6. Rooney, B. (1992). A meta-analysis of smoking-prevention programs after adjustment for study design [dissertation]. Minneapolis, MN: University of Minnesota.
7. McGuire, W. J. (1964). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowitz (Ed.) *Advances in Experimental Social Psychology*, Volume 1. New York: Academic Press.
8. Flay, B. R. (1985). Psychosocial approaches to smoking prevention: A review of findings. *Health Psychology*, 4, 449-488.
9. Botvin, G. J. & Wills, T. A. (1985). Personal and social skills training: Cognitive-behavioral approaches to substance abuse prevention. In: B. S. Bell & R. Battjes (Eds.) *Prevention Research: Deterring Drug Abuse Among Children And Adolescents*. Monograph No. 63. US Department of Health and Human Services, Public Health Service, Alcohol, Drug Abuse, and Mental Health Administration, National Institute of Drug Abuse. Bethesda, MD: DHHS Publication No. (ADM) 85-1334, 1985.
10. Botvin, G. J. (1986). Substance abuse prevention research: Recent developments and future directions. *Journal of School Health*, 56, 369-374.
11. Botvin, G. J., Baker, E., Dusenbury, L., Botvin, E. M., & Diaz, T. (1995). Long-term follow-up results of a randomized drug abuse prevention trial in a white middle-class population. *Journal of the American Medical Association*, 273, 1106-1112.

12. Botvin, G. J., Baker, E., Dusenbury, L., Tortu, S., & Botvin, E. M. (1990). Preventing adolescent drug abuse through a multimodal cognitive-behavioral approach: Results of a three-year study. *Journal of Consulting and Clinical Psychology*, 58, 437-446.

13. Botvin, G. J., Dusenbury, L., Baker, E., James-Ortiz, S., Botvin, E. M., & Kerner, J. (1992). Smoking prevention among urban minority youth: Assessing effects on outcome and mediating variables. *Health Psychology*, 11, 290-299.

14. Botvin, G. J., Batson, H. W., Witts-Vitale, S., Bess, V., Baker, E., & Dusenbury, L. (1989). A psychosocial approach to smoking prevention for urban black youth. *Public Health Reports*, 104, 573-582.

15. Botvin, G. J., & Cardwell, J. (1992). Primary prevention (smoking) of cancer in black populations. Final report. Grant contract no. N01-CN-6508. National Cancer Institute. New York: Cornell University Medical College.

16. Murray, D. M., Davis-Hearn, M., Goldman, A. I., Pierie, P., & Luepker, R. V. (1988). Four- and five-year follow-up results from four seventh-grade smoking prevention strategies. *Journal of Behavioral Medicine*, 11, 395-405.

17. Perry, C. L., Kelder, S. H., Murray, D. M., & Klepp, K. I. (1992). Communitywide smoking prevention: Long-term outcomes of the Minnesota heart health program and the class of 1989 study. *American Journal of Public Health*, 82, 1210-1216.

18. Forster, J. L., Wolfson, M., Murray, D. M., Blaine, T. M., Wagenaar, A. C., & Hennrikus, D. J. (1998). The effects of community policies to reduce youth access to tobacco. *American Journal of Public Health*, 88, 1193-1196.

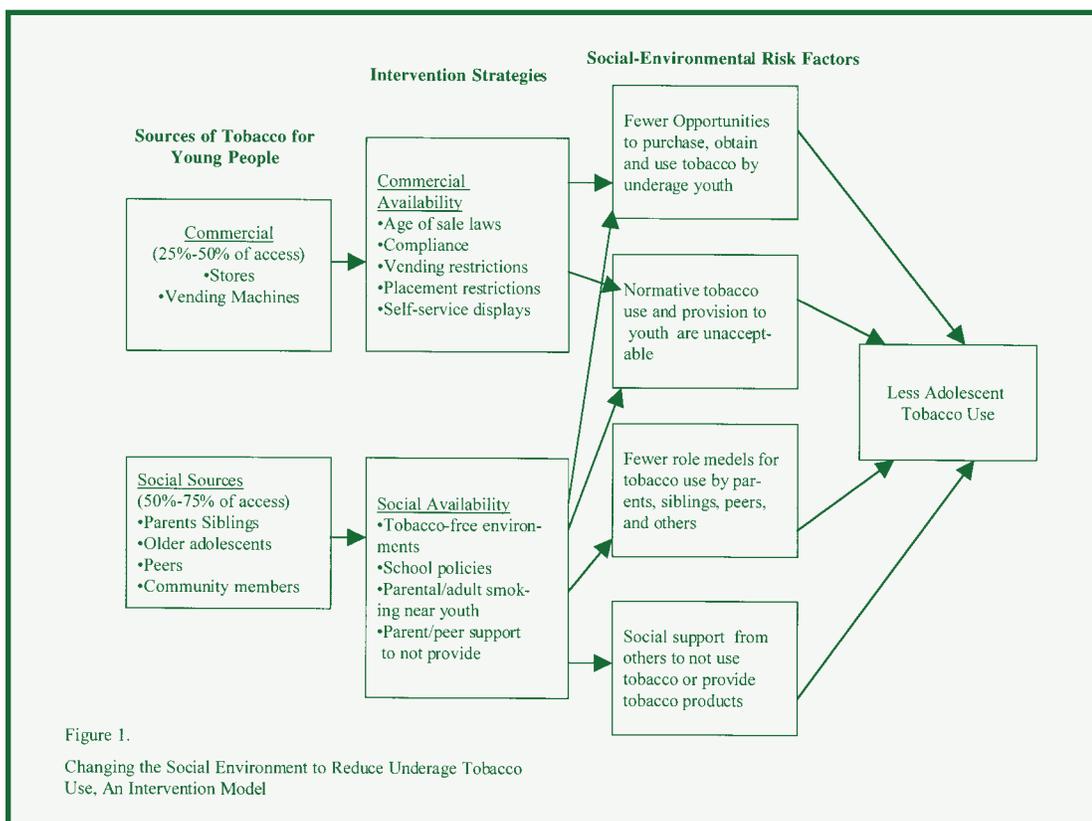
*Adapted from USDHHS. *Preventing tobacco use among young people: A report of the Surgeon General*. Atlanta, GA: USDHHA, PHS, CDC, NCCDPHP, Office on Smoking and Health, 1994.

Policy Approaches to Reducing Adolescent Tobacco Use

Jean Forster, Ph.D.
Division of Epidemiology, University of Minnesota

The rate of tobacco use is unacceptably high among adolescents. National data from the Monitoring the Future Project show that the 30-day smoking rate among high school seniors rose from 28% in 1991 to 36.5% in 1997 followed by a modest decline in 1998 to 35.1%; grades eight and ten showed a similar pattern¹. The national Youth Risk Behavior Survey and the Minnesota student survey verify the high rate of smoking among adolescents^{2,3}. The increase in the 1990s, following a decade of no change in the rate of adolescent tobacco use, is especially discouraging given the high level of resources and attention applied to the reduction of tobacco use among adolescents. The failure of school-based educational efforts alone to prevent the onset of tobacco use has led to a focus on reducing access to tobacco products by youth, and to changes in the social environment that support or encourage tobacco use⁴.

A variety of federal, state, and local initiatives have sought to reduce the sale of cigarettes to minors⁵. At the federal level, the Synar Amendment requires states to enforce tobacco age-of-sale laws using random, unannounced inspections of retail outlets and to report annually on their progress in



News

from the Minnesota Department
of Health

TARGET MARKET ADS FEATURE REAL TEENS TARGETING TOBACCO

Target Market (TM) recently released a series of innovative television and radio ads to amplify the voice of Minnesota teens opposing tobacco industry manipulation. While tobacco ads use professional actors and actresses posing as young people, the TM ads feature genuine Minnesota youth speaking out in their own words against tobacco industry tactics. The web site, www.tmvoice.com will be a virtual headquarters for the statewide Target Market organization.

In one powerful TV ad titled "Thank You," 44 young people from around the state sarcastically "thank" the tobacco industry in various ways for targeting them. The ads were not scripted. For the "Thank You" ad, the comments of hundreds of young people generated 6 hours of raw footage that was used to create the 30- and 60- second ads. Some teens used the opportunity to tell emotional stories of tobacco's impact on their lives. Target Market also released radio ads, an audio version of the "Thank You" ad and three hard-driving hip-hop songs focused on industry targeting of young people.

The Minnesota campaign is modeled after a program in Florida that started a youth movement and advertising campaign focused on combating tobacco industry manipulation of teens. In just two years, the Florida program has cut smoking rates by 54 percent among junior high students and 24 percent among high school students.

Target Market is the centerpiece of a tobacco prevention initiative being funded with interest generated by the newly created \$490 million Minnesota Youth Tobacco Endowment. The endowment was created with part of the \$6.6 billion Minnesota tobacco lawsuit settlement. The budget for the initial 18-month stage of the marketing campaign is \$7.5 million and \$1 million for the grassroots campaign.

reducing illegal tobacco sales to minors⁶. The Food and Drug Administration [FDA] also issued final rules regulating the sale, distribution and advertising of tobacco to minors⁷. However, the U.S. Supreme Court overturned these rules in March, 2000. Many states including Minnesota passed legislation to address youth access to tobacco, both before the Synar Amendment and in greater numbers in response to it^{8, 9, 10, 11}. This legislation has included vending machine restrictions, licensure requirements for retail outlets, penalties for purchase/possession of tobacco by minors, and enforcement systems to reduce commercial access^{12, 13, 14, 15}. Local policy actions to restrict commercial availability began in 1989 with vending machine ordinances in several Minnesota cities¹⁶. Since then hundreds of cities in the U.S. have adopted new ordinances including: complete or partial ban of vending machines; required local licensure for tobacco sales; administrative penalties for violations of tobacco age-of-sale laws; required compliance checks; restrictions on placement of tobacco within retail outlets; and no tobacco sales by those under age 18^{17, 18, 19, 20, 21}. While the effect of all this activity on youth smoking is unknown, the number of outlets that sell tobacco to minors has declined substantially in Minnesota and elsewhere^{22, 23}.

Sanctions are being imposed by state or local jurisdictions with increasing frequency against minors who purchase, attempt to purchase, or possess tobacco products^{24, 25}. Some law enforcement officials and tobacco retailers favor these laws because of the potential deterrent value of these sanctions²⁶. Tobacco control advocates argue however that these laws are part of an effort to deflect responsibility for illegal tobacco sales from retailers to youth, that as a substitute for laws regulating merchants they are less efficient because of the relative numbers of retailers and youth involved, and that sanctions against minors are more difficult to enforce^{27, 28, 29, 30, 31}. While not taking a stand on the advisability of purchase/possession laws, the AG Report recommended that such laws should be considered only after effective retail regulations are already in place³².

Social availability of tobacco to youth will be a major issue for tobacco control after commercial availability is

substantially addressed. The model on page 9 (Figure 1) describes the interactions among commercial sources, noncommercial sources, and aspects of the normative environment regarding youth and tobacco. Whereas commercial sources primarily address the opportunities to obtain tobacco, social availability also addresses other potent aspects of an adolescent's world, including role models, normative expectations, social support, and social opportunities and barriers^{33, 34}, which have been found to be predictive of adolescent problem behaviors³⁵. For example, in Conrad, Flay & Hill's³⁶ analyses of 27 prospective studies of adolescent smoking, social-environmental factors were more numerous and predictive of smoking than other categories of factors, a finding that is supported by other reviews and recent research^{37, 38}. In a recent study, school and community role models alone accounted for nearly 50% of the variance in 8th grade drinking, a correlate of smoking³⁹.

Establishing tobacco-free environments changes the normative expectations concerning youth and tobacco. Public places where tobacco use is permitted offer adolescents peer and adult role models for smoking, increase the perception that smoking is common among peers and adults, provide an opportunity for teenagers to use tobacco, and facilitate the social exchange of tobacco products among adolescents who congregate in these places. Tobacco-free public places, on the other hand, establish the community norm that tobacco use is not acceptable or supported by the community, convey the message that non-use is normative for adolescents and adults, reduce the social benefits of smoking for adolescents, and make tobacco use less convenient⁴⁰. To the extent that these policies apply to adults as well as youth, they communicate that no tobacco use is a norm for adults as well, and not a restriction that applies only to their age group. Tobacco-free environments should include places where adolescents spend most of their time, including schools, shopping malls, sports facilities, restaurants, recreational centers and workplaces.

While state clean indoor air policies are widespread, and in a few states local policies have become common, little is known about the effects of these policies on youth tobacco use. Evidence

from several studies suggests that changing the normative environment to convey a no-smoking norm may have a greater effect than efforts to influence individual behavior directly⁴¹. Using data from the Monitoring the Future study, Chaloupka and Grossman⁴² found that strong restrictions (state or local) on smoking in public places significantly reduced the probability of adolescent smoking. These results are consistent with an earlier study using a smaller sample of adolescents that found that restrictive smoking regulations have a stronger effect on adolescents than on adults⁴³. However no studies have examined the effects of interventions to strengthen clean indoor air laws on adolescent tobacco-use rates.

References:

1. LD Johnston, PM O'Malley, JG Bachman. (Dec. 1999). Drug trends in 1999 are mixed. University of Michigan News and Information Services: Ann Arbor, MI. [On-line]. Available: www.monitoringthefuture.org; accessed 02/25/00.
2. CDC. Youth Risk Behavior Surveillance -- United States, 1997. Morbidity and Mortality Weekly Report, 47(SS-3):1-89, 1998.
3. MN DCFL. Minnesota Student Survey 1989, 1992, 1995, 1998: Behavioral Trends for Minnesota's Youth. 1999.
4. USDHHS. Preventing Tobacco Use among Young People: A Report of the Surgeon General. CDC: Atlanta, Georgia, 1994.
5. Forster JL, Wolfson M. Youth Access to Tobacco: Policies and Politics. Annual Review of Public Health, 19:203-235, 1998.
6. SAMHSA. Tobacco Regulation for Substance Abuse Prevention and Treatment Block Grants; Final Rule. Federal Register, 61(13):1491-1509, 1996.
7. Federal Drug Administration. Executive Summary: The Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents. August 23, 1996.
8. Downey LA, Gardiner JA, Kreps BC. Reducing Youth Access to Tobacco: A Partial Inventory of State Initiatives. University of Illinois at Chicago, Chicago, IL, 1996.
9. Tobacco Products Liability Project of the Tobacco Control Resource Center, Inc. Stop Cigarette Sales to Kids: A 50-State Legal Manual 1996 Edition. Tobacco Control Resource Center, Inc., 1996.
10. Coalition on Smoking or Health. State Legislated Actions on Tobacco Issues. Edited by Jessica Bartelt. December 31, 1995.
11. CDC. Youth Risk Behavior Surveillance -- United States, 1997. Morbidity and Mortality Weekly Report, 47(SS-3):1-89, 1998.
12. Downey LA, Gardiner JA, Kreps BC. Reducing Youth Access to Tobacco: A Partial Inventory of State Initiatives. University of Illinois at Chicago, Chicago, IL, 1996.
13. Coalition on Smoking or Health. State Legislated Actions on Tobacco Issues. Edited by Jessica Bartelt. December 31, 1995.
14. Forster JL, Wolfson M. Youth Access to Tobacco: Policies and Politics. Annual Review of Public Health, 19:203-235, 1998.
15. Wolfson M, Forster JL, Sidebottom AB, Hannan PJ, Steart DJ, Brodsky LB. Local Ordinances Regulating Youth Access to Tobacco: Results of a National Survey. Presented at the Annual Meeting of the American Public Health Association, Indianapolis, IN, November, 1997.
16. Forster JL, Hourigan M, Weigum J. The Movement to Restrict Children's Access to Tobacco in Minnesota. Presented to the Surgeon General's Interagency Committee on Smoking and Health. Washington, DC, May 31, 1990.
17. Forster JL, Komro K, Wolfson M. Survey of City Ordinances and Local Enforcement Regarding Commercial Availability of Tobacco to Minors. Tobacco Control 5(1):46-51, 1996.
18. National Cancer Institute. Monograph 3: Major Local Tobacco Control Ordinances in the United States. May, 1993.
19. Americans for Nonsmokers' Rights, (ANR), 1997.
20. Forster JL, Wolfson M. Youth Access to Tobacco: Policies and Politics. Annual Review of Public Health, 19:203-235, 1998.
21. Wolfson M, Forster JL, Sidebottom AB, Hannan PJ, Steart DJ, Brodsky LB. Local Ordinances Regulating Youth Access to Tobacco: Results of a National Survey. Presented at the Annual Meeting of the American Public Health Association, Indianapolis, IN, November, 1997.
22. MDH. Tobacco Use Prevention and Reduction in Minnesota: Elements, Roles, Costs of a Comprehensive Plan. MN Health Improvement Partnership, Tobacco Work Group, 1999.
23. CDC. Cigarette Smoking Before and After and Excise Tax Increase and an Antismoking Campaign--Massachusetts, 1990-1996. Morbidity and Mortality Weekly Report, 45(44):966-970, 1996.
24. Forster JL, Komro K, Wolfson M. Survey of City Ordinances and Local Enforcement Regarding Commercial Availability of Tobacco to Minors. Tobacco Control 5(1):46-51, 1996.
25. Shelton DM, Alciati MH, Change MM, Fishman JA, Fues LA, et al 1995. State laws on tobacco control--United States, 1995. MMWR 44(SS-6)
26. Talbot B. 1992. Adolescent smokers' rights laws. Tobacco Control 1:294-95
27. Carol J. 1992. It's a good idea to criminalise purchase and possession of tobacco by minors - NOT! Tobacco Control 1:296-97
28. Cismoski J. 1994. Blinded by the light: the folly of tobacco possession laws against minors. Wisc Med J 93:591-98
29. DiFranza JR, Godshall WT. 1996. Tobacco industry efforts hindering enforcement of the ban on tobacco sales to minors: actions speak louder than words. Tobacco Control 5:127-131
30. Mosher JF. 1995. The merchants, not the customers: resisting the alcohol and tobacco industries' strategy to blame young people for illegal alcohol and tobacco sales. J Public Health Policy. 16(4):413-32
31. Wolfson M, Hourigan M. 1996. Unintended consequences and professional ethics: Criminalization of alcohol and tobacco use by youth and young adults. Addiction. In press-
32. Working Group of State Attorneys General. 1994. No Sale: Youth, Tobacco and Responsible Retailing.
33. Perry CL, Jessor R. The Concept of Health Promotion and The Prevention of Adolescent Drug Abuse. Health Education Quarterly, 12(2):169-184, 1985.
34. Perry CL, Kelder SH, and Komro K. The Social World of Adolescents: Family, Peers, Schools, and Community. In S.G. Millstein, A.C. Petersen, and E.O. Nightingale (Eds.), Promoting the Health of Adolescents: New Directions for the Twenty-First Century, New York: Oxford University Press: 73-95, 1993.
35. Jessor R, Jessor SL. Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth. New York: Academic Press, 1977.
36. Conrad KM, Flay BR, Hill D. Why Children Start Smoking Cigarettes: Predictors of Onset. British Journal of Addiction, 87(12), 1711-24, 1992.
37. USDHHS. Preventing Tobacco Use among Young People: A Report of the Surgeon General. CDC: Atlanta, Georgia, 1994.
38. Codd M. Psychosocial Predictors of Smoking Among Young Females in Dublin. Doctoral dissertation, Division of Epidemiology, University of Minnesota, 1996.
39. Roski J, Perry CL, McGovern PG, Williams CL, Farbaksh K, Veblen-Mortenson S. School and community influences on adolescent alcohol and drug use. Health Education Research: Theory & Practice, (In press).
40. Lynch BS, Bonnie RJ. Growing Up Tobacco Free: Preventing Nicotine Addiction in Children. National Academy Press, Washington, DC, 1994.

41. Lynch BS, Bonnie RJ. Growing Up Tobacco Free: Preventing Nicotine Addiction in Children. National Academy Press, Washington, DC, 1994.
42. Chaloupka FJ, Grossman M. Price, Tobacco Control Policies and Youth Smoking. National Bureau of Economic Research, 1996.
43. Wasserman J, Manning WG, Newhouse JP, Winkler JD. The Effects of Excise Taxes and Regulations on Cigarette Smoking. Journal of Health Economics, 10:43-64, 1991.

"Partners in Health" – Center for 4-H Youth Development

Nikki Sigler Andrews, M.Ed.
Center for 4H Youth Development, University of
Minnesota

The evolving mission of the Center for 4-H Youth Development, as part of the University of Minnesota [U of MN] Extension Service, is to act as a catalyst, advocate and resource for...

- Quality youth development programs,
- Communities becoming more intentional about youth development,
- Professionals and volunteers seeking to understand and do youth development,
- The generation of new knowledge that enriches the practice of youth development

4-H has acknowledged the importance of addressing young people's health and wellness since its inception, with health as one of its four H's (along with Head, Heart and Hands). Initially, 4-H defined health as resistance to disease, enjoyment of life and efficiency. In the early 1900's, we helped kids resist rampant life-threatening diseases. As we enter the 21st century, 4-H has recognized societal changes. We continue to educate youth to reduce the incidence of disease, but we also educate young people to be leaders and contributing members of their communities and to take the lead in establishing, maintaining and promoting healthy lifestyles.

The Center for 4-H youth development is one of few publicly funded youth organizations. We collaborate with state and local agencies around issues that affect our communities. At the local level, 4-H/Extension Educators typically collaborate with partners with a variety of other local entities, from their local public health contact to their school liaisons. Though it varies by county, 4-H Educators around the state may be working with youth on anything from cross-age teaching programs to organizing after-school programs or community clubs.

At the state level, the Center for 4-H Youth Development partners with various organizations to support positive youth development. We are currently co-located with the Division of Pediatrics and Adolescent Health, Konopka Institute for Best Practices in Adolescent Health and the Children, Youth and Family Consortium in the new Gateway building on the Minneapolis campus of the U of MN. The intent is to create a youth development center. We also partner with the School of Public Health at the U of MN as well as the Minnesota Alliance with Youth, and the Minnesota Department of Health. We are currently working on a variety of health-related issues, such as allergies and asthma and alcohol, tobacco and other drug use.

At a national level, Extension sponsors the National Network for Health/Healthy People Healthy Communities Initiative. As part of this initiative, several working groups have been formed around specific issues identified as needs in communities nationwide. One area of need is Alcohol, Tobacco and Other Drug [ATOD] information. Nikki Andrews, with the Center for 4-H Youth Development, is the Extension liaison with the ATOD workgroup group and Laurie Meschke, from Maternal and Child Health in Epidemiology at the School of Public Health, is the convener of this national workgroup.

To find out more about 4-H/Extension, and the variety of programs and resources available, contact your local Extension Educator, email Nikki Andrews at the Center (sigle003@umn.edu) or visit the website at <http://www.fourh.umn.edu>.

