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PROGRAMMES

Background, conceptualization and design of a community-wide research program on adolescent alcohol use: Project Northland

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Abstract

Project Northland is a community-wide research program funded by the National Institute on Alcoholism and Alcohol Abuse, for a 5-year period (1990–95). The aim of the study is to prevent or delay onset of alcohol use among young adolescents, as well as to reduce use among those who are already drinkers. Twenty communities were recruited in northeastern Minnesota, an area referred to as the Northland, Arrowhead or Iron Range region, and then were randomly assigned to either Education or Delayed Program conditions. The 10 Education school districts have agreed to participate in 3 years of intervention programs in schools, with parents and in the community-at-large. One group of young adolescents, the Class of 1998 (sixth grade students in the 1991–92 school year), form the study cohort. Surveys (1991–94) of the Class of 1998, their parents, community leaders and alcohol merchants are the primary components of the program's evaluation. Many conceptual and methodological questions emerged during the development of the research protocols for Project Northland over the past 2 years. These questions are the impetus for this article. Specifically, the focus on young adolescents and alcohol use was selected, as contrasted with older adolescents or with multiple problem behaviors. The project was designed using a community-wide model that addresses both supply and demand issues, rather than limited to a school-based model. Intervention strategies and evaluation methods were chosen that could address community-level as well as individual-level behavior change, which required the development and application of new technologies. The rationale for these decisions may be useful to others considering community-wide health promotion efforts.

Introduction

Alcohol use among adolescents continues to be a major social and public health issue in contemporary American society. Every year since 1975, the Monitoring the Future Study has conducted a nationwide representative survey of approximately 17 000 high school seniors (Johnston *et al.*, 1990). In 1989, over 90% of the seniors had tried alcohol at least once in their life, over 50% reported having done so by the ninth grade and 33% reported recent heavy use (five or more drinks in a row in the previous two weeks). These rates are conservative estimates, since they do not include high school dropouts, where use would be expected to be more prevalent. Alcohol

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use can therefore be characterized as a normative aspect of adolescent social behavior.

Despite publicity on the widespread use of illicit drugs, tobacco and alcohol use exact the greatest public health toll in terms of associated morbidity and mortality (DuPont, 1985; Johnson, 1986; Goodstadt, 1987; Hansen *et al.*, 1988). Whereas tobacco use results in chronic diseases that manifest later in life, the health consequences of alcohol use are evident during adolescence. In particular, motor vehicle crashes kill more teenagers than any other single cause of death and the majority of these crashes involve alcohol (Moskowitz, 1983). Unintentional injuries, combined with homicides and suicides, account for 80% of all adolescent deaths; many of these deaths are associated with alcohol use (Blum, 1987; Rosen *et al.*, 1990).

In addition to the increased morbidity and mortality associated with alcohol use by adolescents, expected developmental tasks such as cognitive maturation, moral development, social competencies and school achievement also appear to be altered, delayed or harmed by precocious or excessive alcohol use (Jessor and Jessor, 1977; Semlitz and Gold, 1986). Thus, alcohol use among adolescents is not simply a normative and prevalent behavior, but is also a high-risk behavior with dire health consequences. These consequences are most tragically seen in premature mortality, but are also evident in social and psychological domains as well (Kelder and Perry, 1992).

In the US, alcohol use onset occurs primarily in early adolescence, specifically the sixth to ninth grades (Johnston *et al.*, 1990). Several researchers have suggested that alcohol use is part of a systematic progression of drug use (Hamburg *et al.*, 1975; Kandel, 1975, 1987; Donovan and Jessor, 1983). Tobacco and alcohol use have been identified as substances that are used first in this progression. Thus, these substances have been labeled as 'gateway drugs' since their use almost always predates the initiation of other drug involvement. The use of drugs like cocaine, amphetamines, barbituates and opiates is extremely low among adolescents who have not first used alcohol (Hansen *et al.*, 1988). This does not mean that alcohol use 'leads' to or causes harder drug use, but rather that earlier alcohol use may signal greater potential for alcohol-related problems and the progression to other drugs (Kandel, 1975; DuPont, 1985; Perry and Grant, 1988). Since the trend in the US is for experimentation with alcohol and tobacco at even younger ages (Johnston *et al.*, 1985; Hansen *et al.*, 1988), the implications of early use are particularly alarming.

Adolescent alcohol use prevention

Primary prevention of alcohol-related problems with adolescents clearly appears to be warranted, given the epidemiological data. Since alcohol use begins in early adolescence, targeted efforts are needed prior to and during this time of onset to prevent use by this age group and to delay onset with those who may eventually choose to use alcohol. These goals are consistent with adult expectations as evidenced by the wave of state legislation in the 1980s that raised the legal drinking age to 21 in states that had had a lower minimum drinking age. These goals are also compatible with the prevention literature which suggests that prevention efforts have been most effective just prior to onset in early adolescence (Flay, 1985; Ellickson and Robyn, 1987; Ellickson and Bell, 1990; Kelder and Perry, 1992). The few evaluated prevention programs with pre-adolescents have been less effective, perhaps since the successful programs have focused on the acquisition of social skills that are most appropriate for adolescents (Dielman *et al.*, 1986; Campanelli *et al.*, 1989). Programs for older adolescents are more appropriately secondary or tertiary prevention efforts, since use has often already been initiated and may have been already reinforced socially or even pharmacologically. Even if use is delayed rather than prevented, the potential for earlier drug involvement or associated problems is diminished, and the adolescent has been able to develop cognitively and socially without the interaction with or interference from alcohol use.

Although there is substantial co-variation among multiple adolescent social behaviors, including tobacco, alcohol and marijuana use, as well as precocious sexual behavior (Jessor and Jessor, 1977),

a targeted effort, focusing on alcohol use alone, may be necessary if sustained behavioral changes are to be accomplished. A program that includes the two licit substances (for adults), tobacco and alcohol, is often recommended but necessitates clarification about the differences in these substances and therefore different strategies. Societal norms concerning tobacco smoking have shifted considerably over the past two decades, resulting in a general belief in this country that people should not smoke (Moskowitz, 1983). This normative shift is not as prominent or unambiguous with alcohol. In the same two decades, alcohol has become more readily available and its associated problems more prevalent (Makela *et al.*, 1981; Walsh and Grant, 1985). Adult usage confers legitimacy on alcohol use as an acceptable adult behavior, and greater per capita consumption by adults (relative to adult tobacco use) results not only in increased availability of alcohol to young people, but also stronger incentives for adolescents to use alcohol through modeling and social approval among adults (Adler and Kandel, 1982; Kandel and Andrews, 1987; McAnulty *et al.*, 1989). Alcohol use is particularly functional to adolescents as a way of signalling the transition from childhood to adulthood (Botvin *et al.*, 1989), since it uniquely fulfills many of the psychosocial needs of this age group, such as providing a symbol of maturity or serving as an entree to the peer group social life. Therefore, combining messages concerning use of both tobacco and alcohol dilutes the potential of affecting either, since the social environment that supports use has changed substantially for tobacco use and the norms for tobacco and alcohol use now differ significantly. Additionally, the skills required to be an adolescent non-drinker are socially complicated, and require specificity and practice. For example, an adolescent in a party situation needs to know more than how to refuse offers of alcoholic beverages; they should consider alternative beverages or even whether to attend a party where illegal behavior is evident. Similarly, creating new environments that discourage adolescent alcohol use is both complex and idiosyncratic. Interventions to prevent access to tobacco might focus specifically on vending machines or quick stop markets, the primary places where adolescents obtain cigarettes (Forster *et al.*, 1989). Preventing access to alcohol involves off-sale alcohol outlets, labelling of beer kegs and supervising of adolescents' parties, with associated different methods and targeted groups of people. Even if perceived as inefficient, a focus on adolescent alcohol use alone may be required for effectiveness.

A community-wide approach

Problem behavior theory suggests that the interaction of the social environment, personality and behavior can account for or predict adolescent alcohol use (Jessor and Jessor, 1977). Prevention programs with planned changes at the levels of the social environment, personality and behavior have demonstrated some success with adolescent tobacco and alcohol use (Perry and Jessor, 1985; Kelder and Perry, 1992). The majority of these programs have been school-based efforts, with an emphasis on social skills acquisition, and primarily have sought changes at the levels of personality and behavior. For the most part, these school programs could be considered demand reduction strategies. (For more complete reviews of this literature, see Tobler, 1988; Botvin and Dusenbury, 1989; Kelder and Perry, 1992).

Despite evidence for the success of some school-based prevention programs, the results with tobacco use have not been sustained and with alcohol use have been quite limited (Kelder and Perry, 1992). Etiologic research suggests that there are powerful influences in the home and community necessitating parental involvement and community participation in these efforts as well (Goodstadt, 1987). School-based efforts, then, may be a necessary, but not sufficient, component for long-term success of a primary prevention program (Griffin, 1986; Goodstadt, 1987; Pentz *et al.*, 1989). Direct attention to social environmental variables, such as parental behavior, peer role models, normative expectations and social support, seem to be particularly critical with the prevention of adolescent alcohol use.

Strategies that explicitly reduce or prevent access to alcohol by adolescents, through legislation, enforcement, policy changes or education, appear to

be important. Already this larger conceptualization of prevention has been fruitful in reducing tobacco use through the end of 12th grade (Perry *et al.*, 1989a, 1991). Likewise, the role of community availability in youth drinking has also been well-established (Wagenaar, 1983, 1986; O'Malley and Wagenaar, 1991). In addition to demand reduction, then, supply reduction approaches—in the home and community—appear both efficacious and necessary.

Project Northland

Given the rationale provided above, Project Northland was designed as an educational research project to test the effectiveness of a community-wide effort to prevent young adolescent alcohol use. The aim of the study is to reduce the incidence and prevalence of alcohol use among a cohort of young adolescents, the Class of 1998, who were sixth grade students during the 1991–92 school year. This cohort will be exposed to 3 years of school-based skills training, peer leadership, parental involvement and community-wide changes around the use of alcohol by adolescents. The components of the intervention are the outgrowth of previous research of the past decade that appeared both to be effective and feasible given the aims of the study (Pentz *et al.*, 1989; Perry *et al.*, 1989a,b; Forster *et al.*, 1990). The project is unique because it utilizes a larger number of communities in the design, focuses on young adolescents, involves multiple levels simultaneously within each community, and utilizes both demand and supply reduction strategies.

Research design and recruitment methods

The study sample consists of all adolescents in the Class of 1998 in 24 public school districts from six northeastern counties of Minnesota (N = 2419) as shown in Figure 1. These counties were selected because this area of Minnesota is at very high risk for alcohol-related problems, e.g. among the 87 counties in Minnesota, the number one and three counties for a composite of alcohol-related problems (morbidity and mortality) are in this region (NIAAA, 1991). These six counties include a total population of about 235 000 people with a primarily European

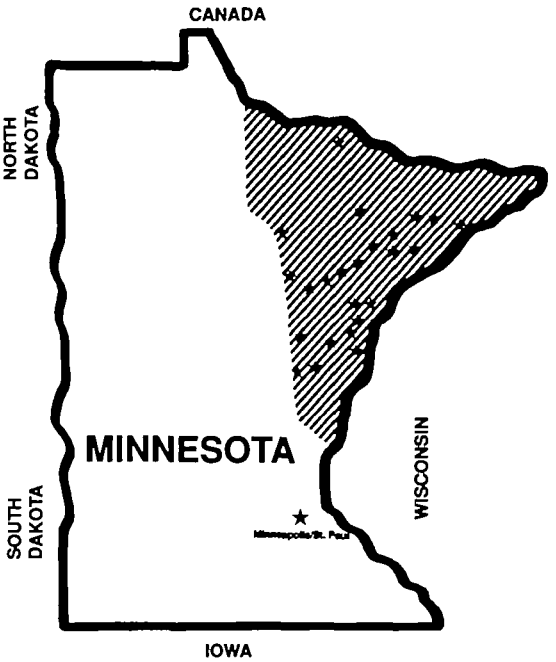

Figure 1. Map of Project Northland school districts.

ethnic composition. Adolescents from four Indian (Ojibway) reservations in this region attend public schools in the 24 school districts and generally exhibit a higher prevalence of alcohol-related problems.

Recruitment of communities for participation in Project Northland began in January 1991. We began with school districts, since their involvement and commitment was essential. Thirty school district superintendents received a letter describing the project with an invitation for their school district to participate in the study. Twenty-eight school districts (93%) agreed to meet in person with the principal investigator and intervention coordinator to learn more about the project, which was done by a formal presentation, a 9-minute videotape of the project and a question/answer period. The videotape presented the rationale for prevention efforts in early adolescence, the reason for selecting northeastern Minnesota, an overview of the school, peer leader, family involvement and community-wide programs, evaluation methods, and the research design, including random assignment of school districts to

treatment condition. Of the 28 school districts, 24 (80%) chose to participate in the study by the end of March 1991. Those that refused cited already having sufficient prevention programming in the schools. Upon agreeing to participate, an agreement was signed by a district representative and all appropriate' school principals in the participating districts, as well as by the principal investigator. This agreement is, in essence, a contract and states the responsibilities of both parties throughout the course of the study. This agreement is particularly useful when new school officials arrive or other changes occur during the study time period.

All of the school districts agreed to random assignment to either the Education or Delayed Program condition. The latter school districts will receive educational materials in 1994. We used data from our previous alcohol education research (Perry *et al.*, 1989c), and the Alcohol Use Score utilized with eighth grade students in that study, to calculate necessary sample sizes for students and communities. We anticipated a small but measurable inter-dependence of the alcohol use measures within school districts since some contamination may occur, and this consideration was also included in the calculations. The Project Northland design with 10 Education and 10 Delayed Program communities, with an average of over 70 students each in the age cohort, can detect a 0.25 difference in the alcohol use score with 0.95 power (Perry *et al.*, 1989c). This composite score measures occasions of alcohol use and heavy drinking within the previous year. Four of the 24 recruited school districts were first combined to achieve a total of 20 combined school districts; the combinations were made with district consent and were adjacent, small school districts. Ten of these combined districts were then randomly assigned to the Education group ($N = 1270$ students) and 10 to the Delayed Program group ($N = 1149$). The final study sample consists of all adolescents in the Class of 1998 in the 20 combined school districts and adjacent communities; the combined school district is the unit of analysis. By random assignment, most of the adolescents from the Indian reservations in this region are in schools that are in the Education group.

Evaluation methods

Evaluation methods for Project Northland were selected to measure change at five levels in each community. They consist of (1) a student survey for the Class of 1998 students, (2) a parent survey for the parents of the Class of 1998, (3) a community leader survey in the communities adjacent to the 20 combined school districts, (4) an observation study of potential underage buying of alcohol and (5) a survey of alcohol merchants. In addition, two methodological studies were undertaken prior to the student baseline survey. Wagenaar *et al.* (1991) examined whether student self-reporting of alcohol use was enhanced when students also provided physiological (saliva) measures of recent use. Williams *et al.* (1992) determined that sixth and eighth graders could provide reliable and valid self-reports of alcohol use and associated problems with the measures included in our student surveys. Table I provides a summary of the evaluation methods.

Student self-report survey

Two student self-report questionnaires will be administered to all students in the Education and Delayed program communities at baseline (fall, 1991), and after the sixth (spring, 1992), seventh (spring, 1993) and eighth grade (spring, 1994) interventions. Students have been identified by their school ID number and can be tracked individually. Questionnaire I was developed to measure predicted Project Northland outcomes, including students' knowledge about alcohol; attitudes and normative expectations about drinking; adolescents' environment related to alcohol (i.e. their parents' expectations concerning teenage drinking, family rules about drinking, adolescents' perceptions about their access to alcohol, problems with riding in an automobile with a drinking driver), adolescents' behavioral intentions about drinking; indications of use of alcohol, tobacco products, marijuana, inhalants, cocaine/crack, as well as problematic alcohol use (i.e. five or more drinks in a row; drinking until falling down or sickness); and other indicators of Project Northland program exposure. The alcohol and other drug use questions were drawn from the 'Monitoring the Future' questionnaire and

allow for comparisons of our results with national samples (Johnston *et al.*, 1990). Other questions were written based on Project Northland program content, our previous research (Perry and Grant, 1988), as well as a review of others' research (e.g. Oetting *et al.*, 1984).

Questionnaire II was developed to broaden the student-based assessment beyond single time responses indicative of alcohol and other drug use problems to established personality measures. It expands the student self-report survey content to include psychosocial risk factors related to early alcohol use and also includes previously-developed problem behavior scales to assess Project Northland outcomes. Several of the content and alcohol and drug problem scales for the newly developed version of the Minnesota Multiphasic Personality Inventory for Adolescents (Butcher *et al.*, 1992; Williams *et al.*, 1992) form the basis of Questionnaire II. These scales include the *Adolescent Alcohol/Drug Problem Acknowledgement Scale, Adolescent Alcohol/Drug Problem Proneness Scale, Adolescent School Problems Scale, Adolescent Family Problems Scale* and *Adolescent Low Aspirations Scale*. In addition, a validity scale is included in Questionnaire II to identify inconsistent, invalid responders so they can be eliminated from the analyses.

Because the items and scales included in Questionnaires I and II were developed, for the most part, for adolescents older than those in sixth grade, Williams *et al.* (1992) compared the psychometric properties of these instruments for 825 sixth graders and 753 eighth graders in 22 schools in the Minneapolis/St Paul metro area. As expected, eighth graders provide slightly more reliable self-reports than sixth graders. For example, the internal consistencies for the scales in Questionnaire II ranged from 0.64 to 0.85 for eighth grade boys and 0.67 to 0.90 for eighth grade girls compared with 0.54 to 0.85 for sixth grade boys and 0.48 to 0.85 for sixth grade girls. The lowest internal consistencies occurred on a scale where few or no students endorsed the problem behaviors (i.e. sixth grade boys and girls had the lowest coefficient alphas for the *Alcohol/Drug Problem Acknowledgement Scale*, most likely due to little or no variability on this scale's items at an age when problem use is extremely rare). All the other scales' internal consistencies were 0.62 or higher, with half of the scales between 0.72 and 0.85 for sixth graders. This study also examined test–retest reliability, criteria and construct validity for both instruments, and scale development for Questionnaire I. Results from this study, along with the study by Wagenaar *et al.* (1991), were used to design the final instruments and protocols for the student surveys. Because the pipeline procedure did not produce significant increases in self-reports of alcohol use in the past year, month or week when saliva samples were also collected, it was not included in the testing in the sixth grade.

Table I. *Project Northland evaluation timeline*

	1991 Fall	1992 Spring	1993 Spring	1994 Spring
Classroom survey of Class of 1998 (N = 2400 students)	×	×	×	×
Telephone survey of parents of Class of 1998 (N = 1200 parents)	×	×	×	×
Community leader survey in 28 communities (N = 140 adults)	×			×
Alcohol purchase attempt observations of off-sale liquor outlets (N = 112 outlets)	×			×
Merchant survey of employer/employees of off-sale liquor outlets (N = outlets)	×			×

Parent survey

An assessment of parental involvement in Project Northland programs, parental normative expectations about adolescent alcohol use and other outcome variables will be collected in annual telephone

surveys. Interviews will be conducted with a 50% random sample of approximately 1200 parents in both the Education and Delayed Program communities annually with two data points occurring in the 1991–92 year (fall baseline and after the spring intervention). These methods of obtaining data from parents have been useful and reliable previously (Perry *et al.*, 1990). Overall, parent participation has been extremely high, with over 90% of parents participating in the telephone surveys. Information from these surveys has been used to assess needs, guide intervention development, assess exposure and examine impact of school-based programs.

The Parent Survey is currently underway. One of the goals of the instrument is to incorporate specific items or scales that are planned for use on the student assessment, the merchant survey and the community leadership instrument. Inclusion of similar items across these four instruments will allow for comparisons of the normative expectations across multiple groups (i.e. parents, students, community leaders and merchants), as well as other important Project Northland outcomes (e.g. increase in knowledge and program exposure).

Community leader survey

Project Northland investigators have interviewed 140 community leaders in 28 communities adjacent to the 24 school districts in the study. The purpose of the survey is to collect data characterizing power and leadership structures in each town; to assess leaders' views of adolescent alcohol access restriction policies; to assess community expectations about underage drinking; and to identify key community leaders and activists who may join the community task forces.

The 28 communities that were selected for this evaluation were adjacent to each of the recruited school districts. Selection was based on several critiera: (1) formal incorporation as a city with formally elected public officials, (2) a major population center within the school district and/or (3) having a population above 600 unless no town of such size exists within the district. Using these criteria, investigators identified 28 communities. (These do not constitute all communities adjacent to the school districts or all of those that will participate in school and family programs.) In each community, five leaders were surveyed including the mayor, police chief (or chief local law enforcement officer), chair of the local Chamber of Commerce or business association, the local newspaper editor (weekly or daily) and the senior education official residing in the community (usually a school principal).

Alcohol purchase attempt observations

The purpose of the alcohol purchase attempts was to determine the rate of success in purchasing alcohol without age identification in Education and Delayed Program communities. These attempts were made by young women purchasers who were at least 21 years old, but who were determined by a panel of individuals (including bartenders) to appear about 18 years old. Since alcohol purchase is illegal in Minnesota for those younger than 21 years, we used older confederates. The communities involved in the alcohol purchase attempt observations were the same 28 as were identified for the Community Leader Survey. A list of 112 licensed retail alcohol outlets, their license classifications and their addresses was obtained from the Minnesota Department of Public Safety for these 28 communities. Baseline results indicate that about 47% of the 336 total purchase attempts at the 112 outlets resulted in sale of alcohol without age identification (Forster *et al.*, 1991), suggesting considerable ease of purchase in this area.

Alcohol merchant survey

The alcohol merchant survey was conducted by telephone with the 112 outlets in Education and Delayed Program communities in which purchase attempts were made. The survey contains questions about each establishment's general characteristics, sales practices, policies and practices concerning age identification, employee training, and other policies designed to discourage youth alcohol purchase. It also includes questions concerning the frequency of purchase attempts by underage individuals, merchant's perceptions about availability of alcohol in the community to underage individuals, opinions on community support or opposition for various alcohol control measures, and perceptions of

responsibility of community groups and institutions for the problem of youth access to alcohol.

It is expected that the results of this merchant survey will inform the community-wide policy strategy, especially if considerable discrepancies between merchants and purchase attempts are noted. Level of receptivity to greater monitoring of age identification will also be gauged. The merchant survey should provide baseline data for eventual evaluation of the impact of the community intervention on community policies and practices.

Intervention program

The 3-year intervention program includes planned parental involvement, peer-led school-based programs and community-wide policy changes in the Education communities. Adolescents in the Class of 1998 will be exposed to the intervention during their sixth to eighth grades (1991–94). The Delayed Program communities receive Project Northland materials in fall 1994. All of the programs share a common theoretical model (Perry *et al.*, 1989c). This is unique because it targets alcohol-related environmental variables (such as opportunities, barriers, social support and modeling) more comprehensively than in previous prevention research. Each component of the intervention is briefly described below and is summarized in Table II.

Parental involvement

Parents are perhaps the most potent and significant health role models for their children (Nader *et al.*, 1989); they also provide specific opportunities or barriers to adolescent alcohol use in their homes. It was determined that the sixth grade intervention would focus on parents, in order to provide skills for parents prior to the time of early onset, as well as to establish policies around alcohol at home. The sixth grade program was developed based on the 'home team' approaches that had been promising with cardiovascular health promotion (Perry *et al.*, 1989, 1990). The 'Slick Tracy Home Team' consists of four activity books and a family night at school. The activity books are given weekly to the students at school and are required as homework for the four weeks. Each book includes introductory materials on a given theme presented in a comic strip with boy (i.e. Slick Tracy) and girl (i.e. Breathtest Mahoney) detectives as the main characters. The comic strip is followed by two to three short activities for sixth graders and their parents. Also included is a section for parents providing information and tips on how to communicate with their children about alcohol use. The major themes include facts and myths about adolescent alcohol use, alcohol advertising and adult role models, friends and peer pressure, the consequences of drinking, and setting up family guidelines. Students return a signed scorecard to school each week to indicate the activities that they and their parents complete. Students whose parents are either unable or unwilling to participate are encouraged to complete the activities with another adult (i.e. relative, friend or a teacher who has volunteered). A family fun night at school (Slick Tracy Night) follows the four weeks of activities, with a display of posters created by the sixth graders around the Slick Tracy themes and their ideas about prevention. In the seventh and eighth grades, additional family fun nights and skills training sessions are planned.

Peer-led school-based programs

Two programs will be implemented for the seventh and eighth grades that involve peer-led school curricula. Each program consists of eight 45-minute classroom sessions primarily taught by elected and trained classroom peers (Klepp *et al.*, 1986). The two curricula are adapted from previous studies. The seventh grade program, Amazing Alternatives!, focuses on skills training to remain a non-drinker (Perry *et al.* 1989c). The eighth grade program, Shifting Gears, extends these skills into the arena of drinking and driving (Perry *et al.*, 1989a). Classroom teachers are trained to organize these sessions and to facilitate productive peer group discussions and role plays. In addition to these two classroom programs, student 'social clubs', led by peer leaders will be organized beginning in the seventh grade. The objective of these 'social clubs' is to provide alcohol-free recreational opportunities for Class of 1998 students.

Table II. *Project Northland intervention components*

School-based and peer leadership programs		
1991–92	The Slick Tracy program	Four sessions of peer-led activities in class to introduce Slick Tracy Home Team concepts.
1992–93	Amazing Alternatives!	Eight sessions of peer-led activities around resisting influences to use alcohol and normative expectations.
	Alternatives!	Multiple extra-curricular social events planned by peer leaders for all seventh grade students.
1993–94	Shifting Gears	Eight sessions of peer-led activities around non-drinking, safe driving and healthy partying.
Parent involvement programs		
1991–92	The Slick Tracy Home Team	Four weeks of activities for sixth graders and parents to complete at home around adolescent alcohol use issues, presented in comic book format.
	The Slick Tracy Night	A family night for sixth graders to share health-related projects and posters with their families.
1992–93	The Amazing Alternatives Home Program	Four weeks of activities for seventh graders and parents to complete at home in addition to a fall alternatives fun night for the family.
1993–94	Shifting Gears Parents Nights	A series of forums on adolescent health issues.
Community-wide programs		
1991–92	Task Force Development	Community leaders are convened by Project Northland coordinators, policy options are prioritized and community kick-off is implemented.
1992–93	Adolescent Alcohol Use Access	Task forces implement education and enforcement to reduce teenage access to alcohol.
1993–94	Policy Development	Task forces develop and plan implementation of new policies around adolescent alcohol use.

Community-wide policy changes

The Project Northland community-wide approaches are intended to empower citizens in these communities to build their own capacity for prevention based on building networks of support and encouraging broad-based participation (Berger and Neuhaus, 1977; Riessman, 1983; Rappaport *et al.*, 1984). Practically, this means engaging networks of public and private organizations in coordinated activity around adolescent alcohol use prevention (Brown and Detterman, 1987; Rogers and Storey, 1987). These efforts have begun by identifying and meeting community leaders (through the leadership survey described above). From this process, community coordinators were hired who are forming community-wide task forces. Members of the task forces represent varied sectors in the community (business, education, government, etc.) with an active interest in prevention. These task forces, working with University investigators and staff, identify major community problems around adolescent alcohol use, develop and implement a policy action plan, evaluate this plan after 1 year, and then re-focus as necessary. This approach builds on our previous work with community task forces targeting cardiovascular disease (Mittelmark *et al.*, 1986) and youth access to tobacco (Forster *et al.*, 1990).

In the early stages of this process, the analysis of community-level archival data has been extremely useful as we learn to uniquely characterize each community. These data provide a structured record of standard demographic variables including population, education, race, employment statistics, political and economic indicators. In addition, data on alcohol violations and arrests, liquor licenses and local parent and/or community groups focusing on alcohol education and prevention are documented.

Strategies that task forces will be asked to consider

fall into four categories: (1) community-wide education efforts such as educating merchants about the legal consequences and ways of avoiding underage sales; (2) enforcement of existing laws; (3) development of local ordinances and administration of policies such as restricting the location of alcohol advertising and outlets, and (4) the development and enforcement of school policies. These policies primarily address local community conditions of marketing, sale and availability, and are designed to reduce access and thus place barriers between the adolescent and a dangerous product (Beauchamp, 1981; Forster, 1982; Wagenaar and Farrell, 1989). These barriers reduce the burden of personal decision-making for the adolescent, place some responsibility for behavior change on adult merchants, law enforcement officials and policy makers, and project community-level norms around adolescent alcohol use that are consistent with the parent involvement and school-based programs.

Discussion

Project Northland, as a prevention research project, has already provided a considerable number of scientific and practical challenges. As we have attempted to meet these challenges, the lessons learned may be useful to our colleagues and to the public. The first challenge was to isolate an appropriate and acceptable community goal: to prevent or delay young adolescent alcohol use. This goal has substantial epidemiological support and has been positively endorsed by all of our communities.

The second challenge was to design a powerful, yet feasible community-wide intervention. We relied on previously successful strategies using peers and curricula, which ought to be enhanced by parent involvement and community-wide policy change. However, by making the school district and adjacent communities the unit of intervention and assignment, it is also the unit of analysis, and thus has necessitated 20 distinct school districts for an adequate sample size. This large number of school districts and communities, all a 3–6 hour drive from the University of Minnesota, has required the hiring of local staff for each Education community, and more formalized training and communication systems. These steps will eventually be useful as others plan larger dissemination efforts.

Our third challenge has been to create evaluation methods that will be sensitive to changes at the student, parent and community levels. In addition to standardized written questionnaires with adolescents, we are using phone surveys with parents and alcohol merchants, face-to-face interviews with community leaders and young adult confederates who attempt to buy alcohol in each community. These separate measures should provide data that will validate each other, as well as monitor where and how change is or isn't taking place, including changes in Delayed Program communities. A final challenge has been organizational: to maintain a structure for the study that encourages collaboration between scientist and citizen, that is sufficiently rigorous for the scientific enterprise and yet flexible enough to incorporate ideas from members of the community on how to proceed, and thereby to embrace the idiosyncrasies and local community problems that are expected to occur when the community is the 'subject' of research.

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