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Development of a tobacco cessation intervention for Alaska Native youth

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Abstract

Tobacco cessation treatments have not been evaluated among Alaska Native (AN) adolescents. This pilot study evaluated the feasibility and acceptability of a targeted cessation intervention developed for AN youth. Intervention components were informed by prior focus groups assessing treatment preferences among AN youth, a social cognitive theoretical framework and feedback obtained from a teen advisory group. The intervention consisted of a weekend program where youth traveled by small airplane from their villages to stay overnight with other adolescents who quit tobacco use together. The program included recreational activities, talking circles, personal stories from elders and teen advisors, and cognitive behavioral counseling. Two intervention pilots were conducted from October 2010 to January 2011 using a non-randomized, uncontrolled study design with assessments at baseline and six-week follow-up. One village in Western Alaska was selected for each pilot with a targeted enrollment of 10 adolescents each. Participants were recruited for each pilot within five days, but recruitment challenges and ‘lessons learned’ are described. The first pilot enrolled nine adolescents (all female) aged 13–16 years; all nine attended the intervention program and 78% (7/9) completed follow-up. The second pilot enrolled 12 adolescents (eight females, four males) aged 12–17 years, of which seven attended the intervention program. Six of these seven participants (86%) completed follow-up. In both pilots, participants rated the intervention as highly acceptable. A targeted cessation intervention was feasible and acceptable to AN youth. The intervention will be tested for efficacy in a subsequent randomized controlled trial.

Keywords

Tobacco; tobacco cessation; adolescents; Alaska Natives

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INTRODUCTION

Adolescent tobacco use is a major public health problem in the United States. Each day, over 3800 adolescents younger than age 18 will smoke their first cigarette, and about 1000 adolescents become daily cigarette smokers (Substance Abuse and Mental Health Services Administration, 2010). The prevalence of current (past 30 day) cigarette smoking and smokeless tobacco (ST) use among adolescents aged 12–17 years is highest among American Indian and Alaska Native (AI/AN) youth (37%, 17%) compared with White (22%, 12%), Hispanic (10%, 5%), Black (9%, 3%), or Asian youth (7%, 3%) (Centers for Disease Control and Prevention, 2012). Cigarette smoking and ST use are each associated with adverse health risks during adolescence, including increased number and severity of respiratory illnesses and pre-cancerous oral lesions (e.g., leukoplakia), respectively (US Department of Health and Human Services [USDHHS], 2012).

Among AN youth from the Yukon–Kuskokwim (Y–K) Delta region of Western Alaska, 29% of 11–14 year olds and 63% of 15–18 year olds reported current ST use or cigarette smoking (Angstman et al., 2007). Lewis et al. (2004) found that among 377 Y–K Delta AN youth (grades 6–9), 34% currently smoked cigarettes, with higher rates observed among children residing in the villages (41%) than in Bethel (27%). Many Y–K Delta adolescents are exposed to tobacco *in utero* as the prevalence of tobacco use among women during pregnancy is 79% (Patten et al., 2008). The most common form of ST used by AN people residing in this region is Iqmik, a mixture of tobacco leaves and fungus ash (Renner et al., 2005). The addition of ash raises the pH of the tobacco and increases the amount of free (unionized) nicotine available for absorption (Renner et al., 2005), which likely contributes to addiction. Nonetheless, individual interviews and focus groups with AN adults and youth from this region indicate that Iqmik use is thought to be less harmful than other forms of tobacco because it contains mostly “natural” ingredients, e.g., ash (Renner et al., 2004).

The USPHS Clinical Practice Guideline on treatment of tobacco use recommends behavioral counseling as an evidence-based intervention for adolescents (Fiore et al., 2008). With some exceptions (Peterson et al., 2009), however, recruitment and retention are the two key challenges to conducting and evaluating youth cessation interventions (Backinger et al., 2008; Curry et al., 2007). Thus, researchers have highlighted the importance of identifying adolescent preferences to maximize receptivity to tobacco cessation interventions (Dent, Lichtman, & Sussman, 2001). Focus group work indicates adolescent tobacco users prefer to attend programs with peers and that programs should include “fun” recreational activities (Balch et al., 2004; MacDonald, Rothwell, & Moore, 2007; Molyneux et al., 2006; O’Connell et al., 2004).

Although several decades of research have focused on testing interventions for adolescent smokers, these have not adequately addressed diverse populations or health disparities (Curry et al., 2007; USDHHS, 2012). Accordingly, increased research to develop and evaluate tobacco cessation interventions among AI/AN people and other diverse populations is a national priority (Cox, Okuyemi, Choi, & Ahluwalia, 2011; Fernander, Resnicow, Viswanath, & Perez-Stable, 2011; Fiore et al., 2008). Some preliminary feasibility studies targeting AI/AN adolescents using tobacco were reported (Horn et al., 2005; Tualii, Bush, Bowen, & Forquera, 2010). Tualii et al. (2010) adapted a culturally appropriate, web-based cessation program for urban AI/AN youth but did not report tobacco cessation outcomes. Other researchers (Horn, McCracken, Dino, & Brayboy, 2008; Horn et al., 2005) adapted the Not on Tobacco program to AI youth but found several barriers to recruitment, including parental consent. These researchers suggested the need for greater attention to cultural issues in programs such as inclusion of AI/AN role models as facilitators.

In prior formative work, we conducted 12 focus groups with Y–K Delta adolescent tobacco users to assess program preferences (Patten et al., 2009). The most important attributes of cessation programs reported were holding the program away from their village (i.e., in Bethel or Anchorage), use of a groupbased counseling format, inclusion of personal stories from elders and other ANs, and provision of medication. The primary motivators for quitting tobacco use were to enhance self-image and appearance, and potential health risks of tobacco use. The adolescents wanted to be future role models as non-tobacco users for their family and friends. Barriers were the social acceptability of tobacco use and lack of resources to quit. A unique cultural aspect is that participants reported their parents knew they used tobacco, and obtaining informed consent from parents was not perceived as a barrier to enrolling in a program.

The importance of early development (Stage I) of innovative behavioral addiction therapies has received increasing attention (Rounsaville, Carroll, & Onken, 2001). For tobacco users 17 years of age or less, effective behavioral counseling approaches are essential because the Food and Drug Administration has not approved the use of pharmacotherapy for tobacco cessation due to lack of efficacy in this age group (Fiore et al., 2008). In this preliminary study, we developed, pre-tested, and refined a culturally appropriate behavioral tobacco cessation intervention for AN youth. Information learned from this study could be useful in developing cessation interventions for youth in other AI/AN communities.

METHODS

This study was approved by the Alaska Area Institutional Review Board, the Mayo Clinic Institutional Review Board, and the Yukon–Kuskokwim Health Corporation (YKHC) Human Studies Committee and Board of Directors.

Study setting

The Y–K Delta region in Western Alaska has a total population of 25,000. Bethel (population 5000) is the hub of the 56 villages comprising this region. The geography and climate of the region pose severe transportation limitations. There is no road system connecting the villages and people travel by small airplane, boat, or snow-machine. Approximately 94% of the population outside of Bethel are of AN ethnicity (Yup'ik or Cup'ik), and are homogeneous with respect to language and culture. Few AN people are employed and most engage in subsistence living (Alaska Humanities Forum, 2003). The Y–K Delta Regional Hospital (YKDRH) in Bethel provides health care for AN residents.

Health behavior assessments of children and adolescents aged 6–20 are conducted by the village-based health aides as part of the Well Child Assessment Program (Angstman et al., 2007). The primary insurer of the region (Medicaid) reimburses for Bethel-based cessation program services for adolescents who report tobacco use, including travel (airfare) and lodging. However, this system of care has not been tapped to deliver youth tobacco cessation interventions. Thus, we designed a theory-based, culturally appropriate cessation treatment for adolescents that ultimately could be sustainable through the current clinical care delivery system.

Procedures

Treatment development—Intervention components were informed by focus group work (Patten et al., 2009; Renner et al., 2004), feedback obtained from a teen advisory group, and a social cognitive theoretical framework.

Teen advisory group

A teen advisory group was formed to provide feedback on the intervention materials and to participate in at least one group intervention program. The teen advisors were recruited from the Bethel area through word-of-mouth and by having an education/outreach table at the Bethel Regional High School. The research coordinator staffed this table and teens who indicated interest in helping other AN teens quit tobacco were provided with more details as well as the roles and expectations of the teen advisors. The requirements to be a teen advisor included AN ethnicity; no current use of tobacco, alcohol, or drugs; and in good standing in school. Moreover, advisors were required to complete a 45-min HIPAA privacy and confidentiality training and pass a paper-and-pencil test covering the course content. The six teen advisors included three males and three females. Three of the teens had used tobacco in the past and the others stated they had never tried tobacco.

Teen advisors were provided with brief training (two hours) on facilitating groups and how to address key questions or issues that may arise in a group setting. They received information on the short- and long-term risks of tobacco use, communication skills (e.g., listening skills, team building), and problemsolving skills.

The research team developed a draft of the intervention materials, including a counselor manual, participant booklet, and follow-up newsletters. The research team met with the teen advisors both individually as well as a group to obtain feedback on the intervention materials. Materials were mailed to the teen advisors in advance for their review. The teen advisors found the content for the intervention to be educational, interesting, and culturally appropriate. They suggested allowing more free time and physical activity during the program to assist adolescent participants to manage nicotine withdrawal. The teen advisors' feedback on the follow-up newsletters suggested these should have less text and include more personal stories. The program schedule and follow-up newsletters were revised based on this feedback. Teen advisors were provided with a \$25 gift certificate for their feedback on the intervention materials and \$25 gift certificate for facilitation of a group intervention program.

Theoretical framework

The conceptual basis for the intervention was social cognitive theory (SCT) which posits personal change is influenced by both individual and social environmental factors (Bandura, 2004). In particular, self-efficacy has been postulated to be the most influential cognitive mechanism mediating behavioral change, and enhanced self-efficacy is associated with successful tobacco cessation. Outcome expectations about the effects of tobacco cessation (e.g., serving as a role model for others in the community) also occupy a pivotal role in SCT (Bandura, 2004; van Zundert, Ferguson, Shiffman, & Engels, 2010). Finally, SCT addresses the role of social support resources in behavior change, e.g., from parents and peers. Figure 1 illustrates how the intervention activities linked to expected theory-based outcomes.

Treatment components

Counseling increases tobacco cessation among adolescent smokers (Fiore et al., 2008) and based on preferences for interventions among AN youth (Patten et al., 2009), we chose to use a group counseling format. Consistent with our theoretical framework, to enhance peer-based social support for quitting, we developed a group-based program where adolescents from the same village could quit tobacco use together. Moreover, one to two teen advisors were selected to assist with each intervention program.

Two important learning mechanisms among AN people are role-modeling and story-telling (Pelusi & Krebs, 2005; Stillwater, Echavarría, & Lanier, 1995). Story-telling has been used

to preserve traditions of the culture, explain illness and health (Fienup-Riordan, 1994; Fleming, 1992; Tom-Orme, 2000), overcome cultural barriers to health behavior change (Hodge, Fredericks, & Rodriguez, 1996); and serve as social modeling and teaching tools (Krueter et al., 2007). Our focus groups documented that personal stories by appropriate role models is an acceptable intervention component among AN youth (Patten et al., 2009; Renner et al., 2004). Thus, the intervention program was designed to include talking circles and feature personal stories from AN elders and teen advisors. These individuals shared their stories of tobacco and how it had affected their family and community and shared why quitting tobacco is important.

Intervention sessions also included cognitive behavioral counseling to enhance self-efficacy and coping skills for remaining abstinent from tobacco. Cognitive behavioral strategies are effective for developing problem-solving skills and alternative responses to high-risk situations for relapse. While there has not been a particular counseling format recommended for youth, meta-analyses indicate that cognitive behavioral approaches are effective (Fiore et al., 2008). The counselors and teen advisors role-played situations involving social influence, such as when a family member or friend offers the adolescent tobacco. Each adolescent had the opportunity to observe behaviors modeled by others (attention processes) and to enact behavior (retention processes) (Bandura, 2004).

All aspects of the intervention addressed cessation advice and reinforced self-efficacy that adequately covered all forms of tobacco. Abstinence from *all* tobacco products was emphasized as the treatment goal. Sessions specifically addressed the health consequences of Iqmik and all forms of tobacco to discourage product switching. Focus groups of AN adolescents suggested that smokers might switch to Iqmik use as a cessation strategy (Patten et al., 2009), and prior studies examining ST interventions for adolescents and young adults found that participants began to smoke cigarettes as a cessation strategy (Walsh et al., 2003). The intervention content addressed the perceived safety of Iqmik by emphasizing the adverse health effects of nicotine and other tobacco components. This was accentuated by personal stories from an elder who used Iqmik and suffered health consequences. However, consistent with the Clinical Practice Guideline recommendations (Fiore et al., 2008) that ST users be offered the same counseling interventions recommended for cigarette smokers and studies indicating that counseling is effective for adolescents who use ST (Gansky, Ellison, Kavanagh, Hilton, & Walsh, 2002; Walsh et al., 2010), the cognitive behavioral intervention strategies were similar for stopping use of Iqmik or cigarette smoking.

Table I presents the intervention components and estimated duration, along with recreational activities provided as part of the program. The program comprised about eight hours of group didactics and discussion, cognitive behavioral coping skills training, talking circles, and personal stories and discussions with elders. For the first pilot, the program consisted of two days and one overnight stay. Based on participant feedback, the program was modified for the second pilot to be longer in duration, encompassing three days and two evenings.

To enhance the overall appeal of the program, the intervention program incorporated developmentally appropriate, active and engaging activities, such as journaling, physical activity, games, movie night, roleplaying, and real-life examples. All adolescents received a T-shirt that was imprinted with a tobaccofree message and design.

The booklet provided to adolescents at the groupbased program was designed to provide a visual reference for the teen as the counselors and other facilitators discussed each topic. It provided a place for the adolescent to write in personal reasons for stopping tobacco use, triggers, and coping strategies. The adolescent could also journal their story of becoming tobacco free and include any other notes.

Follow-up support—To enhance parental support for the adolescent, written materials on tobacco cessation were provided to the consenting parent at study enrollment with culturally appropriate tips on how to support the adolescent. In addition, cessation referral information was provided to the parent (i.e., Alaska state quitline and YKDRH Nicotine Control and Research Program).

Five colorful newsletters were developed with written tips on how to manage urges, stay quit, and personal stories. The featured stories were real-life examples of ANs from the Y–K Delta region who were previous tobacco users who successfully quit. Their names were changed to maintain anonymity. The stories included when they started, how long they used tobacco, what prompted them to quit, how they quit, and benefits of quitting. The newsletters were mailed to the adolescent at weekly intervals following the group-based program.

Counselor training

Program counselors were certified tobacco treatment specialists and/or individuals with a behavioral/social science degree with substantial experience in delivering interventions for tobacco cessation as part of a research protocol. All counselors were trained on the manual-based intervention using didactics, role-plays, and mock sessions. Counselors completed a checklist indicating topics covered for each session.

Elders and other speakers

Two elders (one male, former cigarette smoker; one female, former Iqmik user) who were former tobacco users were chosen to speak at the intervention programs. There was difficulty finding non-tobacco using elders in the villages or in Bethel. Through word-of-mouth and recommendations by YKDRH staff two elders agreed to talk with the teens. The elders were screened for appropriateness by research staff, including a background check and checking the state of Alaska sexual offender database. Elders received a \$100 honorarium for facilitation of each intervention group program and all transportation and lodging expenses were provided. Elders stayed overnight in a hotel or other location separate from where lodging for the youth was provided.

In addition to elders, volunteer speakers were solicited from YKDRH employees, including a physician, substance abuse counselor, dentist, and dental hygienist. With the exception of a physician, all other YKDRH volunteer speakers were the same for both programs.

Elders and other volunteers were required to complete a 45-min HIPAA privacy and confidentiality training and pass a paper-and-pencil test covering the course content.

Intervention pilot testing

The intervention was piloted using a non-randomized, uncontrolled study design with assessments at baseline and at six-week follow-up. Two pilot groups were conducted and the intervention was refined after each pilot group.

Participants

The pilot programs were conducted in Bethel in October 2010 and January 2011, respectively. Based on the primary aim of feasibility, one village was selected for each pilot group with a targeted 10 adolescents recruited from each village (Lancaster, Dodd, & Williamson, 2004; Rounsaville et al., 2001). Our projected group size of 10 for the intervention was based on feasibility considerations, to permit full application of the elements of the program (including group discussions) while insuring adequate one-on-one time with each youth to support individual behavioral change plans.

All recruitment, intervention, and follow-up took place during the nine-month school year (September– May) as the summer is devoted to food gathering efforts, such as fishing and berry picking. Prior to the pilot programs, the study coordinator traveled to each of the two villages selected to focus on communitybased activities that would build support for the project. The study coordinator engaged volunteers from each village, such as health aides and school personnel to serve as a liaison between the village and research staff in Bethel who also posted recruitment flyers and told others about the project. The study coordinator made presentations in the schools to provide information about the project. Interested adolescents and their parents were encouraged to meet with the study coordinator.

During the course of screening and enrolling participants for this study, numerous barriers were encountered. The barriers to recruitment included: (1) an overall lack of interest in quitting tobacco among teens, (2) lack of enthusiasm toward tobacco cessation from school staff and village health aides, (3) although obtaining parental consent did not present a barrier, parents were often unwilling or did not have the time to accompany teens to screenings, (4) lack of opportunity to present information about the study to groups of teenagers except during school activities, (5) scheduling difficulties with schools (classes were already regularly interrupted and doing presentations further interrupted class time), (6) limited time to talk to teens one-on-one about the study prior to them coming in for screening, (7) teens did not show up for screening appointments, regardless of reminder calls, and (8) inability to contact teens by telephone.

In an effort to address these barriers, we found that the following procedures worked well and increased our study recruitment: (1) enabling teens to communicate with the study coordinator via text messaging, (2) encouraging teens to quit together, with friends and/or siblings, and (3) encouraging teens to convey information about the study to their friends.

Potential participants were screened in person in the adolescent's village. Face-to-face screenings were conducted at the village health clinic. Written informed consent was obtained from the parent and written assent obtained from the teen to conduct the screening procedures that included collection of a saliva specimen sample for analysis of cotinine and administration of the Center for Epidemiological Studies Depression Scale (CES-D, Radloff, 1977).

Eligibility criteria were: (1) AN ethnicity, (2) between 12 and 17 years of age, (3) provided written assent, (4) parent provided written consent, (5) self-reported daily use of Iqimik, commercial ST, and/or cigarette smoking in the last seven days with current tobacco use verified with a NicAlert™ salivary cotinine test strip value of > 0 (Cooke et al., 2008); (6) willing to make a quit attempt, and (7) had access to a working telephone. Exclusionary criteria were: (1) adolescent would potentially pose harm to self or other group participants, and/or disrupt the group process based on parental/teacher/self-report or behavior at screening (i.e., intoxication), (2) CES-D score of 16, or (3) current (past three months) participation in any pharmacological or behavioral tobacco treatment.

PROCEDURES

A baseline interview lasting about 90 min was conducted by the study coordinator in-person and privately in the adolescent's village. At six weeks following enrollment, a telephone-based assessment of those who attended the group-based program to assess treatment use and acceptability was done. Participants received a \$40 gift card after completing each assessment.

After the baseline assessment, adolescents received culturally and youth-specific, written self-help materials for quitting tobacco. The consenting parent also received culturally

appropriate written materials that included tips to support their adolescent and cessation referral information. The Bethel-based group intervention program was scheduled within two to three weeks of the adolescent's study enrollment. The study coordinator provided written instructions to both the parents and adolescents regarding the group-based program, e.g., rules to follow during the program, what to bring, date of the scheduled program, and travel and lodging arrangements. The study coordinator arranged the adolescents' travel to Bethel (chartered small airplane), and followed up with the parents and teens by telephone to confirm the travel arrangements. The parents were responsible for transporting their adolescent to and from their respective village-based airport. The study coordinator emphasized that adolescents would be asked to stop using tobacco at the point of commencement of the program in Bethel.

The intervention programs occurred on the weekend, with participants staying one evening (Pilot 1) or two evenings (Pilot 2). The program and housing for the teens took place at a youth center and vocational training center, respectively. All meals and snacks were provided.

Three counselors staffed each program. In addition, one elder (male, former cigarette smoker) and two teen advisors (both female) participated in the first pilot program. Two elders (a male, former smoker and a female, former Iqmik user) and one teen advisor (female) participated in the second program.

MEASURES

Baseline characteristics

A culturally appropriate baseline interview, developed in our previous work (Patten et al., 2009) documented age, ethnicity, language, education, and home restrictions on tobacco use. Adolescents who smoked cigarettes were administered the seven-item adolescent version of the Fagerström Tolerance Questionnaire (FTQ) (Prokhorov, Pallonen, Fava, Ding, & Niaura, 1996; Prokhorov et al., 2000). The FTQ has a scoring range of 0–9, with scores of 6 or more indicating severe dependence. Among adolescent smokers, the FTQ has adequate internal consistency reliability (alphas = 0.71–0.75) and correlate with intensity and duration of cigarette smoking (Cohen, Myers, & Kelly, 2002). Participants reporting Iqmik and/or commercial ST use were also administered a nine-item, modified version (FTQ-ST) developed and validated for measuring dependence among ST users (Boyle, Jensen, Hatsukami, & Severson, 1995; Thomas et al., 2006); potential scores range from 0 to 13 with a cut-off score of 6 indicating severe dependence.

Feasibility measures

Participant recruitment data included the number of subjects screened, the number excluded for each of the specific inclusion and exclusion criteria, and the number of eligible adolescents who agreed to participate. Study retention was based on the proportion of adolescents attending the group-based program who completed the six-week follow-up assessment.

Treatment use and acceptability measures

Attendance at the group-based program was documented by research staff. At the conclusion of the program, adolescents were asked to provide openended feedback on treatment components that were most and least helpful and their input on program duration. In addition, participants were asked if they would recommend the program to another teen to which they responded yes or no. Participants were also asked about the perceived

helpfulness of the program in assisting them to become tobacco-free with response options: very helpful, somewhat helpful, a little helpful, and not at all helpful.

At six-week follow-up, participants were asked the extent of written materials read with response options: none, some, most of it, all of it; and if they liked the printed materials (response options: not at all; somewhat; yes but could be better; yes, very helpful). They were asked about the helpfulness of the program after they returned home, the mailed newsletters, and the written materials provided to their parent with response options: very helpful, somewhat helpful, a little helpful, and not at all helpful. Adolescents were asked if they planned to share what they learned with their family and friends with response options: definitely would, probably would, maybe, probably would not and definitely would not.

Tobacco use status

Self-reported tobacco use status during the previous 7 -and 30-day periods was obtained at six-week followup. We did not obtain biochemical verification or collect long-term follow-up data on tobacco use status. Our goal for this phase of the research was to assess feasibility and obtain feedback from the youth on helpful and not helpful treatment components to refine the intervention. Self-reported tobacco use status was obtained only from teens who attended the group-based program.

RESULTS

Pilot 1

Feasibility of recruitment—Recruitment for the first pilot was completed over a period of five days. A total of 12 adolescents were screened and nine enrolled. Among those screened, reasons for ineligibility included scoring 16 or higher on the CES-D Questionnaire and use of nicotine replacement therapy (NRT) within the previous three months.

Participants—Table II presents baseline characteristics of the nine adolescents enrolled.

Treatment use and acceptability—All nine adolescents attended the group-based program. The male elder who was a former cigarette smoker spoke at this program. He focused his story on the harmful effects he and others in his community had experienced from cigarette smoking. Feedback obtained at the conclusion of the program indicated the program was highly acceptable. All nine participants reported they would recommend the program to another teen and that the program was somewhat/very helpful in becoming tobacco-free. The most helpful aspects included the tobacco/Iqmik information and activities/games components. The dental presentation was rated as particularly helpful. Six of the nine recommended the program be longer in duration.

The six-week assessment was completed by seven (78%) of the nine adolescents. Table III presents treatment use and acceptability ratings for these seven participants.

Tobacco cessation—Using an intent to treat approach with adolescents missing data or lost to follow-up classified as using tobacco, at six-weeks, the self-reported 7-day and 30-day point prevalence abstinence rates were 11% (1 of 9) and 0% (0 of 9) respectively. None of the adolescents reported using NRT or other medications in the last seven days.

Treatment refinement—Based on findings from this first pilot, the program was refined to be longer, consisting of a three day, two evening program. We also adjusted the program schedule to include more recreational activities. No changes were made to the newsletters or written materials.

Pilot 2

Feasibility of recruitment—Recruitment for the second pilot was completed over a period of five days. A total of 13 adolescents were screened of which 12 enrolled. One adolescent screened was not eligible due to NRT use within the previous three months.

Participants—Table II presents baseline characteristics of the 12 adolescents enrolled.

Treatment use and acceptability—Seven of the 12 attended the group-based program. Three did not attend due to a conflict with another scheduled event and two did not show for reasons unknown. Both elders spoke at this program. The male elder's story and examples about cigarette smoking was similar to that in the first pilot. The female elder was a former Iqmik user and she primarily spoke about Iqmik. She shared how she had lost many of her teeth due to Iqmik use – effects that were visible to the teens. Feedback obtained at the conclusion of the program indicated the program was highly acceptable. All seven participants reported they would recommend the program to another teen and that the program was somewhat/very helpful in becoming tobacco-free. The most helpful aspects included the dental presentation and activities/games components. Six of the seven recommended the program be longer in duration and one indicated it should be the same.

The six-week assessment was completed by six (86%) of the seven adolescents who attended the group-based program. Table III presents treatment use and acceptability ratings at follow-up.

Tobacco cessation—Among adolescents attending the intervention program and classifying missing data or lost to follow-up as using tobacco, at six weeks, the self-reported 7-day and 30-day point prevalence abstinence rates were 86% (6 of 7) and 71% (5 of 7), respectively. None of the adolescents reported using NRT or other medications in the last seven days.

Treatment refinement—Based on the findings from this second pilot, we decided to keep the program to consist of three days, two evenings for evaluation in a subsequent randomized trial. No other changes were made.

DISCUSSION

This study represents the first step toward systematic behavioral treatment development and pilot testing of a new approach to tobacco cessation among AN youth. This study addressed an important gap in the field. To our knowledge, no previous study has designed a targeted tobacco cessation intervention for AN youth (Fiore et al., 2008; Grimshaw & Stanton, 2006; Sussman, Sun, & Dent, 2006). Strengths of this study are the intervention was based on our prior focus group work and a solid theoretical framework, and developed with input and advice from the community. This study builds on our successful 12-year partnership with the Y-K Delta AN community and addressed an important community concern (Enoch & Patten, 2004). Results indicate that a group-based intervention program was feasible among AN youth, as indicated by the recruitment and retention rates and high ratings of treatment acceptability. Several recruitment “lessons learned” were gained from this pilot study which could be helpful for designing youth tobacco cessation programs in remote AI/AN communities. Examples of recruitment barriers were scheduling time to meet with teens and lack of enthusiasm for quitting. To address these barriers, procedures that worked well included communicating with the teens via text messaging and encouraging teens to quit together, with friends and/or siblings. Text messaging to the teens’ personal cell phones was also found to work well for retention at follow-up and teens preferred this method of

communication. Through a recent federal initiative, most ANs in this region have cell phones with text messaging capabilities (Mohatt, McDiarmid, & Montoya, 2000).

In addition to the quantitative data elicited during the follow-up assessment, the study coordinator was able to obtain anecdotal feedback from the teens regarding their perceptions of the intervention. All participants reported they enjoyed the intervention, with many emphasizing time away from their respective village as being the most enjoyable aspect. The inclusion of games/recreational activities and food was especially beneficial. There were several volunteers comprising YKDRH providers who spoke at the program and with the exception of a physician, the speakers were the same for both pilots. Anecdotal feedback regarding the speakers contained mixed responses, with some teens enjoying the speakers and others not. Teens consistently reported that the dental presentation was something they remembered and enjoyed. This feedback was especially present in the second pilot, where the female elder spoke about her personal adverse oral health issues as a result of chewing Iqmik. Overall, it seemed that the dental presentation had the most impact on the teen participants.

With respect to theory-based treatment components (Figure 1), teens responded well and were engaged in intervention activities involving story-telling and talking circles. Social support from other teen participants and written tips provided to parents were also perceived as helpful. As noted above, group activities building social support, counseling, and education (e.g., dental presentation) were also well received. However, in both pilots, there was a lack of interest among the teens in role-play activities. To accommodate this, the teen advisors and counselors reviewed potential scenarios involving offers from parents or peers to use tobacco and problem-solved with the teens about how they could deal with these high-risk situations without using tobacco.

We did not assess whether the participants read the follow-up newsletters specifically. Instead, we asked about extent to which they read all of the printed intervention materials provided during the study. The amount of materials read in each pilot was high with 86% in the first pilot and 100% in the second indicating they had read all or most of the materials.

Limited inferences can be made from this pilot study given the small sample size, lack of inclusion of a comparison or control group, lack of biochemical verification of self-reported tobacco use, and only adolescents attending the group-based program were contacted for follow-up. The main aim of the pilot programs was to assess feasibility and acceptability with the goal of refining the intervention and recruitment procedures in preparation for an efficacy trial. The self-reported abstinence rates will be biochemically confirmed in the subsequent trial which is feasible based on prior research conducted in the region (Patten et al., 2010).

It is interesting to note the marked difference in the self-reported abstinence rates across the two pilot programs. We speculate this may be due to the longer program duration in the second pilot as intervention dose is correlated with tobacco cessation outcomes (Fiore et al., 2008). Another reason could be village effects in that adolescents from one village may have more support for quitting than another. In our subsequent efficacy trial, we will use a cluster randomized design with village as the unit of assignment. From that study, we will estimate the effect size and intra-class correlation coefficient necessary for planning the sample size for a larger scale efficacy trial. Furthermore, it is possible that having different elders speak at the programs may be an important factor. This may be due to gender effects or type of tobacco discussed by the elder. In the second pilot, the female elder discussed her own experience with adverse oral effects of Iqmik use. Her story may have reinforced the dental

presentation which teens found to be very helpful. Unfortunately, formal feedback ratings of the elders were not obtained from the participants.

As the intervention was targeted and developed with feedback from Y–K Delta adolescents, it may lack generalizability to other AI/AN youth. However, some aspects of the program such as peers quitting together are novel and could be considered in other adolescent populations. In addition, many findings from the literature on youth intervention preferences are similar to those found among Y–K Delta AN adolescents. For example, youth prefer group-based “fun” recreational program activities and quitting with peers.

This preliminary study allowed for systematic refinement of a behavioral treatment manual using participant feedback. The pilot testing was also useful for working through logistical challenges such as recruitment of youth. The intervention and study procedures were refined in preparation for a randomized controlled trial. In that trial, we will assess theorybased outcomes (mediators) including self-efficacy, outcome expectancies, and perceived social support for non-tobacco use (Figure 1).

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Figure 1. Intervention logic model illustrating links between intervention activities and theory-based outcomes.

Table I

Components of a group-based tobacco cessation intervention developed for AN adolescents.

<i>Day 1 (Friday late afternoon)^a</i>	
–	Talking circle. Introductions and personal stories from counselors about how tobacco has affected their lives (30 min)
–	Dinner
–	Talking circle. Elder's personal story about how tobacco has affected their life (30 min)
–	Outdoor physical activity/games/journaling
<i>Day 2 (Saturday)</i>	
–	Breakfast
–	Outdoor physical activity
–	Talking circle. Personal stories from adolescent participants about how tobacco use has affected them and why they want to quit. Followed by journaling (one hour)
–	Health consequences of tobacco use: Iqmik and other forms of tobacco and the benefits of quitting (one hour)
–	Lunch
–	Physician's presentation on physiological effects of tobacco and nicotine (30 min)
–	Talking circle: YKDRH Behavioral Health Staff tells personal stories about how tobacco is affecting the teen participants and their community and the benefits of quitting tobacco use (30 min)
–	Dentist and dental hygienist presentation on effects of tobacco on oral health (one hour)
–	Game – tobacco bingo
–	Managing withdrawal symptoms (30 min)
–	Cognitive behavioral coping skills training (e.g., managing negative mood, social cues to using tobacco) (one hour)
–	Dinner
–	Talking circle: Elder's personal story about how tobacco has affected their life (30 min)
–	Outdoor physical activity/games/other activities
–	Movie night
<i>Day 3 (Sunday)</i>	
–	Breakfast
–	Remaining tobacco-free at home: identifying and managing high-risk situations and lapse/relapse (30 min)
–	Adjourn

Note

^aDay 1 activities were incorporated into Day 2 for the first pilot that consisted of only one evening stay.

Table II

Baseline characteristics of AN adolescent tobacco users enrolled in a pilot study of a group-based cessation intervention.

Characteristic	Pilot 1 (N = 9) n (%) or mean ± SD	Pilot 2 (N = 12) n (%) or mean ± SD
Female gender	9 (100)	8 (67)
Age (years)		
12	0 (0)	1 (8)
13	2 (22)	2 (17)
14	4 (44)	2 (17)
15	1 (11)	5 (42)
16	2 (22)	1 (8)
17	0 (0)	1 (8)
Yupik ethnicity	9 (100)	12 (100)
Fluent in English language	9 (100)	12 (100)
Fluent in Yupik language	9 (100)	12 (100)
Current grade in school		
6–8	5 (56)	8 (67)
9–12	4 (44)	4 (33)
CES-D score	8±4	7±4
No. of adults at home		
1	2 (22)	2 (17)
2	4 (44)	9 (75)
3	2 (22)	0 (0)
4	1 (11)	1 (8)
No. of children at home 17 years		
0	2 (22)	0 (0)
1	1 (11)	0 (0)
2	1 (11)	4 (33)
3	5 (56)	8 (67)
Others in home smoke cigarettes (yes)	7 (78)	7 (58)
Others in home chew tobacco (yes)	9 (100)	12 (100)
Complete smoking ban in the home	4 (44)	3 (25)
Complete chewing ban in the home	0 (0)	0 (0)
Age tried tobacco for first time		
3–5	1 (11)	4 (33)
6–10	7 (78)	5 (42)
11	1 (11)	3 (25)
Tried to stop using tobacco	4 (44)	12 (100)
Current tobacco use: <i>past 30 days</i>		
Cigarette smoking	0 (0)	2 (22)
Snuff	3 (33)	3 (25)

Characteristic	Pilot 1 (N = 9) n (%) or mean ± SD	Pilot 2 (N = 12) n (%) or mean ± SD
Iqmik	9 (100)	12 (100)
FTQ-ST score (chewers) ^a		
1–3	5 (56)	3 (25)
4–6	4 (44)	9 (75)

Notes: Because of rounding, not all percentages total 100. Percentages are based on non-missing data

^aIn the second pilot, two of the adolescents also smoked cigarettes. The FTQ score for both was 2.

Table III

Treatment use and acceptability ratings at six-week follow-up by pilot group.

Outcome	Pilot 1 (N = 7)^a n (%) or mean ± SD	Pilot 2 (N = 6)^a % (n) or mean ± SD
Liked printed materials (some- what/yes could be better/yes very helpful)	7 (100)	6 (100)
Amount of printed materials read		
All	4 (57)	2 (33)
Most	2 (29)	4 (67)
Some	1 (14)	0 (0)
Program was somewhat/very helpful when returning home from retreat	5 (71)	6 (100)
Mailed newsletters from coun-selors somewhat/very helpful	4 (57)	4 (80)
Information provided to parents was somewhat/very helpful to assist in quitting	6 (86)	3 (50)
Probably/definitely plan to share what was learned with friends	3 (43)	4 (67)
Probably/definitely plan to share what was learned with family	4 (57)	4 (67)

Notes: Because of rounding, not all percentages total 100. Percentages are based on non-missing data

^aNumber of adolescents in each pilot group who completed the six-week follow-up assessment.