

## Substance Abuse Prevention in American Indian and Alaska Native Communities

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In this article we review three categories of American Indian/Alaska Native (AIAN) substance abuse prevention programs: (1) published empirical trials; (2) promising programs published and unpublished that are in the process of development and that have the potential for empirical trials; and (3) examples of innovative grassroots programs that originate at the local level and may have promise for further development. AIAN communities are taking more and more independent control of substance abuse prevention. We point out that European American prevention scientists are largely unaware of the numerous grassroots prevention work going on in AIAN communities and urge a paradigm shift from adapting European American prevention science “best practices” to creating cultural “best practices” by working from inside AIAN communities.

**Keywords:** American Indian Alaska Native substance abuse prevention, substance abuse, prevention science

Prevention science has made enormous advances in the past two decades. Evidenced-based substance use prevention, some now in their fourth generation, have shown consistent, replicable, universal effects for children from both high- and low-risk families (1,2) with some interventions showing effects more than five years after baseline (3). As evidence for significant public health benefits from these programs has mounted, research has progressed to the empirical evaluation of national evidence-based prevention delivery systems. For example, two effectiveness trials for implementing the **PRO**moting **S**chool-community-university **Partnerships to Enhance Resilience (PROSPER)** are in progress, one in Iowa and Pennsylvania and another in Alabama, with a number of other states implementing or building capacity to implement the system.” (4). PROSPER and similar universal prevention programs (e.g., Botvin’s

Life Skills Programs, <http://www.lifeskillstraining.com/>) (5) are currently being implemented in African American, Latino, and American Indian (AI) communities, often without cultural adaptations.

As national enthusiasm for implementing universal substance abuse prevention programs grows, questions remain about cultural fit. For example, are the evidence-based, key malleable protective factors in the universal programs the same across cultures? And, if they are, to what extent will cultural interpretations of key protective factors enhance their effectiveness among different ethnic groups? Also, to what extent does the process of cultural adaptation affect fidelity to these key protective factors? (6) Perhaps more importantly, there is the concern that universal prevention programs overlook culturally specific risk and protective factors. For the most part, these questions have yet to be empirically addressed.

Meanwhile, cultural adaptations of universal substance abuse prevention programs are emerging at a rapid pace, and nowhere is this proliferation more evident than among American Indian/Alaska Native (AIAN) communities. There is tremendous diversity in these culturally based programs. Some merely modify existing program language without revising content; others culturally interpret known key malleable constructs and add specific cultural content, and still others, usually grassroots programs, focus mostly on identified cultural protective factors. In this review we will attempt to address this diversity. We will review three categories of AIAN substance abuse prevention programs: (1) published empirical trials; (2) promising programs, published and unpublished, that are in the process of development and that have the potential for empirical trials; and (3) examples of innovative grassroots programs that originate at the local level and may have promise for further development. We chose to include some examples of these local, culturally based prevention programs because they are such vital elements of AIAN substance abuse prevention. These programs are local and unpublished, so our list is not exhaustive and many very promising programs may have been overlooked.

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## SUBSTANCE ABUSE IN AMERICAN INDIAN/ALASKA NATIVE COMMUNITIES

According to the National Survey on Drug Use and Health (NSDUH), the rates of alcohol, illicit drug use, marijuana, cocaine, and hallucinogen past year use disorders were higher among AIAN adolescents and adults than other racial groups (7). However, these findings should be placed in context. Even though AIAN adults were more likely than other groups to meet 12-month criteria for alcohol use disorder, they were less likely to have used alcohol in the past year. Similarly, about the same percentages of AIAN adolescents (ages 12–17 years) and those in other racial groups used alcohol in the past year, but AIAN adolescents were more likely to meet criteria for 12-month alcohol use disorder (7). In general, AIAN adolescents tend to have earlier onset of substance use than other ethnic groups (8–10) and to move more quickly into regular use (11–14), resulting in earlier onset of substance use disorders (15).

There is immense diversity in substance use among AIAN cultures and communities. There are 564 federally recognized tribes and about 100 other tribes recognized by individual states (16). These tribes speak over 200 distinct languages and vary widely in economies, traditional ways, and spiritual beliefs. Epidemiologic evidence indicates substantial differences in drug and alcohol use across and within AIAN cultures (17–19). Generalizing across this array of cultures risks missing significant variations in risk and protective factors. It also is disrespectful of cultures that were nearly eradicated and are working hard to preserve unique cultural traditions and knowledge.

## CHALLENGES OF CULTURALLY SPECIFIC SUBSTANCE ABUSE PREVENTIONS

### Diversity

The number and distinctiveness of AIAN cultures pose unique problems for cultural adaptation of prevention programs. Not only are the cultures numerous and diverse, they are widely dispersed geographically, often on small rural reservations. There also is great variation in social contexts within tribal nations. Only about one-third of AIAN people reside on reservation lands (20). Some urban AIAN cultural centers serve hundreds of different cultures, which make culturally specific urban prevention programs impractical. Yet “Pan-Indian” prevention approaches are often viewed with suspicion in that they blur cultural distinctions among people who have been striving for generations to keep their cultures vital. Cultural adaptations that proceed nation by nation may be more respectful and manageable (21), but supporting and empirically evaluating such a multiplicity of culturally specific programs may be unachievable.

### Methodological Challenges

There are several fundamental methodological challenges to developing culturally specific prevention nation by nation. First, though the larger tribes are populous, many

AIAN cultures are scattered geographically into small communities and reservations. Even among the larger cultures, garnering a sample with adequate statistical power may mean forming multi-reservation or multi-community coalitions. It can take months and considerable costs in travel for presentations to tribal councils to gain the necessary tribal resolutions to form these alliances. Even when coalitions are established, they may be politically fragile. Often the result is very small samples of individuals or communities.

In randomized controlled prevention trials, the unit of analysis usually is groups, such as communities, schools, or reservations, which are assigned to conditions (control group vs. intervention group) (22). Given the small population sizes characteristic of many reservations and reserves, particularly for interventions that target specific age groups, multiple reservations (“clusters”) may need to be included in randomized controlled trials, as opposed to intervention and control groups made up of individuals or families within reservations. Individuals nested within a reservation tend to be more similar than those between reservations, resulting in greater variance between clusters than within them (23,24). This can result in difficulties detecting treatment effects of the intervention (24,25). Also, statistical power is influenced more by the total number of clusters (reservations) than by total participants (24). It is recommended that interventions contain at least 12 communities, in that interventions with 6 control communities and 6 intervention communities have been used to show treatment effects (26). However, larger numbers of communities could be necessary, especially if researchers are interested in relatively small intervention effects (24). Studies with fewer than four clusters per group should be avoided (24,27). The complications involved in bringing together multiple highly similar reservations or communities make fielding large, randomly controlled trials very challenging. Some of these problems have been addressed by innovative methodologies such as randomized and dynamic wait-list designs that allow for stepping communities into prevention while the waiting communities serve as controls. Dynamic wait-list designs have shown higher statistical power than traditional wait-list designs (28).

Requiring groups to wait for the prevention either as randomized controls or as wait-list controls is sometimes unacceptable to reservation communities in that they feel intense ownership of the cultural preventions they have developed and have strong values of equality and sharing. Although quasi-experimental designs can respond to this, grant review committees often view these unfavorably in that these designs are not as powerful as randomized controlled studies. Randomization within communities also raises cultural issues pertaining to unequal treatment, but more importantly, researchers have found that close-knit, kin-centered reservations share information and prevention materials, so that there is considerable control group contamination.

New, small sample analytic procedures are emerging that respond to some of these issues. These small sample

approaches employ within-subject designs with multiple observations per subject, or use bootstrapping techniques for more accurate statistical tests with small samples (29,30) (see also presentations at the Advancing Science with Culturally Distinct Communities: Improving Small Sample Methods for Establishing an Evidence Base in Health Disparities Research, Fairbanks, AL, August, 2011) (31).

### Cultural Values and Scientific Methods

The challenges of culturally specific AIAN preventions run deeper than methodological issues. Cultural values often conflict with European American (EA) scientific values and methods. AIAN scholars and practitioners are beginning to push back by raising questions about underlying EA epistemological assumptions pertaining to what constitutes “evidence” for evidence-based interventions (32–35). EA evidence-based “best practices” may be culturally insensitive and intrusive. Some “cultural adaptations” of evidence-based programs still teach EA ways of parenting, EA social skills, and problem solving techniques. They may ignore significant cultural differences in family configurations and functioning, and miss differences in norms for interpersonal communication and approaches to problems.

New initiatives are emerging that redefine “best practices.” The Oregon Tribal Best Practices initiative is an excellent model for tribal identification of best practices, their implementation, and evaluation (36) but this innovative approach is far from the norm. As dialogue regarding culturally appropriate prevention increases, innovative ways to evaluate prevention outcomes are emerging, including practice-based evidence and community-defined evidence (32,37–39).

There are other serious disconnects between EA science and AIAN knowledge and values. Complicated statistical analyses often demonstrate outcomes that AIAN people have known for generations. Yet this translation of cultural knowledge into EA scientific language is necessary to make the outcomes acceptable for Western science. Moreover, EA science values findings that generalize across groups and may view small sample, culturally specific research as local and of limited public health significance. Conversely, AIAN people want to emphasize the unique protective aspects of their traditional ways and resist generalizations across cultures that ignore or dilute cultural diversity. It is no wonder that some AIAN communities are opting for their own prevention programs and rejecting EA scientific approval and oversight. These “grassroots” prevention programs are based on cultural knowledge, guided by cultural values, and evaluated informally. They remain “under the radar” of EA prevention science in that they are rarely if ever published and are informally passed between reservations and across AIAN cultures.

### AIAN PREVENTION TRIALS

Given the challenges to be overcome, it is not surprising that there have been so few large randomized controlled

AIAN substance abuse prevention trials. The largest and best known is the school-based adaptation of Botvin’s Life Skills Training program by Schinke and colleagues (40) for third through fifth grade AI children. The study randomized 1396 AI students from 27 elementary schools in five states into two intervention arms and one control arm, with three annual follow-ups. The Life Skills intervention schools had 24% lower rates of alcohol use and 53% lower rates of marijuana use than control schools (41).

Schinke’s Personal Intervention Curriculum subsequently was adapted for use in with fifth and sixth grade Alaska Native students in 14 elementary schools in frontier Alaskan communities (42,43). The school-based Think Smart program focused on the use of inhalants (Harmful Legal Products) and consisted of 12 one-hour sessions and three booster sessions. The design was a two-group, randomized, matched control trial. Based on 30-day dichotomous use measures, the intervention had strong direct effects for reducing inhalant use, but was not effective in reducing alcohol, marijuana, or tobacco use. The investigators found no mediating or moderating effects of the intervention on students, and suggested an alternative community-level interpretation of the reduction in inhalant use. That is, the small communities were made more aware of harmful legal products and reduced the students’ access to such products.

Early quasi-experimental studies have provided evidence for the importance of cultural content. Working in an urban AI center, Moran (44) used community meetings to identify core values acceptable across the represented AI cultures. The value-based Seventh Generation Program was tested with 257 intervention fourth through seventh graders and 127 controls. At the one-year follow-up, intervention children had less positive attitudes toward alcohol use, manifested fewer depressive symptoms, and reported higher self-esteem and perceived social support than the control group children. The intervention children (5.6%) were less likely than the controls (19.7%) to report drinking alcohol in the past 30 days.

Other early quasi-experimental studies have suffered from multiple design flaws that resulted in confusing or unconvincing outcomes. For example, Petrovsky and associates reported conflicting evidence for cultural involvement (45). They reported positive associations for 30-day marijuana use and cigarette smoking with attendance at cultural events such as powwows. Past-month alcohol use increased in both the intervention and control groups; however, the increase was slower in the intervention group. This study provides an early example of working with AI communities to develop cultural content for prevention programs.

Recent quasi-experimental designs have become much more sophisticated. The Alaska People Awakening Team’s cultural prevention targeting suicide and co-occurring alcohol abuse is an excellent example of what can be done with quasi-experimental studies with small samples (29). Using hierarchical linear modeling with four time points on a small sample of adolescents and adults, the team was able to show that perceptions of community

protective factors (e.g., safety, enforcement of community alcohol policies, positive role models, social support, and opportunities) increased over time for both age groups. This research groups' small samples approach could become a model for culturally specific AIAN prevention program trials.

### IN-PROGRESS, UNPUBLISHED, AND PROMISING PREVENTION INITIATIVES

AIAN prevention is still at the stage where publications focus on the process, theory, or description of interventions rather than documenting outcomes. For example, in a recent special issue of the *Journal of Psychoactive Drugs* entitled "Growing Roots: Native American Evidence Based Practices," (2011) only one article reported an actual trial (46), seven articles described the process of developing an intervention or the roots or history of an intervention, and six were primarily theoretical. All of these articles represent important contributions yet they foretell promise more than evidence of efficacy.

Bigfoot and Funderburk (47) describe an innovative, culturally based, parent-child interaction therapy, its history, and adaptation process. The approach is ripe for evaluation trial as is Gone and Calf Looking's (48) "culture as substance abuse treatment" approach. These are theoretically sophisticated approaches that would benefit from empirical trials. Walker and Bigelow's (49) description of the process of developing a community-based methamphetamine intervention demonstrates the complexities of working with multiple tribal communities. An incredible amount of community organization work was done, but did not establish the tribal coalitions necessary to carry out joint needs assessments for comprehensive substance abuse interventions. The authors conclude that large-scale, nationwide best practice initiatives for AIAN people on the order of PROSPER may not be practicable.

The Robert Wood Johnson Foundation's Healthy Nations Initiative I, launched in 1993, funded 14 AIAN communities to draw upon cultural strengths to develop innovative strategies for reducing substance abuse among their people. Although to date this initiative has generated no published prevention trials we could locate, a 2003 evaluation article argues that the effort has resulted in significant policy changes and program development at the local level (50). Similarly, the Substance Abuse Mental Health Services Administration's (SAMHSA) Circles of Care grants provide AIAN communities with three-year planning grants to evaluate their children's current mental health services and to "design a holistic, community-based, coordinated system of care to support mental health and wellness for children, youth and families" (p. 4) (51). As of 2010, 23 programs had been funded through the Circles of Care process and nearly one-half of these had received subsequent SAMSHA funding (52). Initiatives such as these are creating capacity and empowering local communities to adapt and/or design their own prevention programs.

There are numerous community-based prevention programs currently in progress that have yet to complete trials or otherwise have been unpublished in academic journals. For example, Journey's of the Circle is a promising culturally based life skills intervention based on the tradition of the canoe journey among Pacific Northwest Coastal cultures (53,54). The program focuses on life skills that contribute to bicultural competencies and is an excellent example of community-based participatory research (CBPR) that is well done. Although a trial based on 117 Seattle Public School students is in progress, we could locate no published trial results to date.

There have been several promising AI adaptations of Spoth's Strengthening Families Program (55,56) (for a history of Strengthening Families see Kumpfer, Alvarado, Smith, & Bellamy, 2002) (57). The earliest adaptation was the eight session Bii-Zin-Da-De-Dah (Listening to One Another) Program that focused on fifth to eighth grade Ojibwe children and families. At one-year posttest, the children, aged 10-12 years at the time of the intervention, were less likely to have experimented with alcohol than those in the control group (58). Based on these findings, the popularity of the family-centered program, and family graduation rates that were higher than those for EA families in the original Strengthening Families Program, the intervention was revised to focus on early adolescents (3rd and 4th graders) and to include more cultural content, and then piloted. The result was a 14-session family intervention. A nine Ojibwe reservation randomized controlled trial was not funded in that, although the investigators could demonstrate adequate statistical power by randomizing communities within reservations, they could not demonstrate that the communities were sufficiently similar to avoid potential confounds. Although there has been no randomized controlled trial of this family-centered intervention, it has been popular at the grassroots level. It has been adapted to Navajo (59), Lakota (Takoja Niwiciyape, Giving Life to the Grandchildren), Canadian Ojibwe, and Swampy Cree First Nations (60). The program has been sustained at the reservation level via state and tribal funding and has been adapted for use in some school systems.

A promising, innovative, Alaskan prevention program developed by Wexler uses traditional story telling methods as way to enhance resilience by focusing children on the positive aspect of their lives and community (61,62). Children are taught to develop and present short digital life stories that increase their sense of accomplishment and efficacy, remind them of the positive aspects of their lives, community and culture, and leaves behind a booster "artifact" that will be viewed over and over again by the children, peers, and family. The investigator is in the process of designing an empirical trial of the digital story-telling method.

There has been at least one funded equine-assisted substance abuse prevention pilot among the traditional horse cultures of the Great Plains. The Shonga Ska (Sacred Horse) Program piloted with the Omaha Nation involved separate interventions for boys and girls aged 9-13 years.

The program was successfully piloted and a manual developed (63) but extremely small samples prevented publication. Although lack of infrastructure initially impeded sustaining the program, program elements have been adapted for use by the Omaha Nation Public School System (64). Equine-assisted prevention programs have proliferated at the grassroots level among Great Plains horse cultures, but we were able to locate no empirical trials to date.

### GRASSROOTS PROGRAMS

AIAN communities have not been sitting passively by, waiting for outsiders to present and adapt prevention programs. Encouraged by initiatives such as the Robert Wood Johnson Foundation Healthy Nations and SAMSHA's Circles of Care, they have been actively developing culturally based programs at the local level. Many of these programs are based on underlying theory such as the Medicine Wheel that stresses mental, physical, emotional, and spiritual balance for physical and mental well-being. Typically these grassroots programs incorporate traditional language, spirituality, and practices. Some are school-based, either in tribal schools or at on-reservation public schools. For example, one elder petitioned the local school board to have traditional spirituality accorded the same school activities status as other church groups, and initiated weekly smudging, pipe ceremonies, and talking circles for the children. Teachers became enthusiastic supporters because they noted significant classroom behavioral changes after the weekly ceremonies.

Local equine-assisted programs are emerging all over the Great Plains. These programs draw on the spirituality and pride of the great horse cultures that dominated the plains from the mid-1700s forward. They vary from the adaptation of equine-assisted therapy techniques (65–67), to teaching horsemanship, to single “rides” that emphasize cultural pride, dignity, and sobriety. The Piya Mani Otipi Equine-Assisted Therapy Program for Adolescents with Substance Use Disorders: A Lakota Model, led by Ed Parsells, is one such program that is in place on the Rosebud Reservation.

The Chief Big Foot Ride (now the Future Generations Ride) from Standing Rock Reservation to Wounded Knee has been ongoing annually since 1985. This ride has generated numerous similar rides across the Great Plains that raise funds and increase cultural awareness and pride. White Plume has been very active with equine-assisted programming among the Mandan, Hidatsa, and Arikara people. For a video slide show pertaining to her work with the Healing Horse Program, see [http://www.youtube.com/watch?v=7OTC\\_zfxwLs](http://www.youtube.com/watch?v=7OTC_zfxwLs). These equine-assisted interventions, based on Great Plains horse cultures, are immensely popular and attractive to young people. Even though there are now program manuals and many examples of programming, there has yet to be an empirical trial. The primary challenges to these programs involve capacity. There needs to be an infrastructure to maintain the animals and

highly trained facilitators to safely carry out the intervention. Also, because groups of about 10 children are the maximum for safety reasons, trials must be small sample designs.

Summer cultural immersion camps abound. Most reservations have summer camps that teach traditional activities and language. Some reservations have set aside land and developed infrastructure with cabins and work areas for such programs. These programs take the form of school outreach experiences, day-camps, residential camps for children, and family camps that offer with a wide array of cultural experiences and activities that are constantly being developed and refined.

In summary, there is an enormous amount of creative work at the local level that goes unnoticed by EA researchers. This work is unfettered by the need for trials and EA methodologies, and some practitioners have told us that they prefer this. These programs are guided by theory and predicated on the assumption that traditional cultural values, as expressed in cultural activities, are strong protective factors. The prevention science community needs to be made aware of these innovative programs. There is much that could be learned from them. Also, there is a need for theoretical publications that acknowledge grassroots programs are not atheoretical, but very much grounded in traditional world views and guided by strong assumptions pertaining to risk and protective factors. Future work, ideally by cultural insiders, should chronicle this grassroots work, delineate the cultural theories on which they are based, and demarcate the kinds of evidence that support them.

### DISCUSSION AND CONCLUSIONS

There has been rapid progress in substance abuse prevention among AIAN communities in the past few years, but some of the most innovative and creative cultural work is largely out of sight of the EA prevention research community. Cultural disconnects and the challenges to empirical testing of prevention programs, coupled with funding initiatives that have promoted community-based program development, have contributed to a proliferation of local programs that are unacknowledged and untested by EA science. The involvement of EA prevention science is further obstructed by standards for randomized controlled trials that were developed for large, school-based, universal preventions. Even multiple reservation studies have difficulty achieving both randomization and intraclass correlation requirements that have become the gold standard. Also, the extreme diversity in cultures raises the continual dilemma of cultural specificity versus multicultural approaches. Culturally specific programs are small and often local. Multicultural approaches may be larger and have greater statistical power but may dilute key protective factors by glossing over cultural differences in favor of “core AIAN values.”

For all the CBPR work that has been done, many EA researchers continue to work from a Western colonial paradigm that ignores, diminishes, and reinterprets native

ways of knowing. It is becoming clear in the grassroots prevention efforts that AIAN programs are theoretically driven but the theories do not reflect Western values. They are spiritually based and emphasize balance. Similarly, these programs are evidence-based, although the criteria for what constitutes evidence may be very different from EA criteria. The recent surge in empirical studies documenting the protective aspects of traditional cultural ways and spirituality are essentially translations from cultural ways of knowing into statistical evidence.

Despite progress, the development of culturally appropriate, evidence-based substance abuse prevention programs among AIAN people is still at an early stage. There remain “two worlds” of prevention work: scientific trials and local practice. Scientific prevention trials encounter numerous barriers as they attempt to bridge cultural disconnects. These barriers are not just “nuisances.” They reflect very real differences in world views. Though well-intentioned, EA researchers even yet do not fully understand the potential for eroding the very cultures they are attempting to protect. Some prevention research adapts and implements programs that teach EA parenting processes based on assumptions about nuclear and two-parent families rather than extended family configurations. They teach life skills based on individualistic values and EA interaction styles rather than indigenous community-oriented values. At its worst, this is analogous to the “educational” programs of the boarding school era.

Meanwhile, AIAN communities are going forward independently. Two processes are at work. First, AIAN communities remain angry and skeptical after decades of exploitation by EA researchers. Second, as communities become more empowered to create their own interventions, they are becoming less apt to rely on outsiders. That is, why must they have approval and validation from EA scientists? At the same time, EA research is almost completely unaware of the depth and extent of grassroots prevention programs across the diversity of communities. It may be time to revise the current adaptation paradigm. Rather than adapting EA best practices to AIAN cultures, perhaps we should be working to understand what is being done at the grassroots level, and adapt EA science to identify and operationalize key cultural protective factors to systematically evaluate outcomes. For a start, it would help to know what is out there, what programs are popular and viewed as affective, and why. This would serve two purposes. First, it would act to increase communication and sharing across AIAN communities and reduce the tendency to continually reinvent content. Second, it may well lead to empirical trials that would result in a set of individual cultural “best practices.”

Even though much good work has been done, there is a need to deepen the partnerships we have learned to establish through CBPR to incorporate and blend both cultural and EA evidence to support prevention outcomes. EA prevention science provides a wealth of sophisticated evaluation methodology and there is no reason this cannot be respectful and useful to AIAN prevention science. The next step for culturally based prevention science may be

to blend EA science and theories with cultural ways of knowing and cultural theories. This approach would acknowledge and respect different worldviews with different theories, and take into account both AIAN and EA ways of providing evidence to provide truly “evidence-based best practices.”

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## Declaration of Interest

the authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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