Suicide Prevention in American Indian and Alaska Native Communities: A Critical Review of Programs

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Relatively few intervention programs directed at prevention of suicide among American Indians and Alaska Natives have been reported in the literature. This article provides a critical review of selected preventive intervention programs that address suicide within this population. For each intervention included in the review, a description of its targeted population group, risk and protective factors addressed, intervention method, research design, program implementation, and outcomes is provided. Implication for practice and policy are identified, as well as recommendations for research.

For many American Indian and Alaska Native (AI/AN) communities, self-destructive behaviors such as suicide, suicide attempts, and suicidal ideation are significant health and social concerns. A large body of work has examined AI/AN self-destructive behavior (Bechtold, 1988; DeBruyn, Hymbaugh, & Valdez, 1988; Duclos & Manson, 1994; Thompson & Walker, 1990). This research has identified common factors that lead to suicide, as well as the dramatic variation in rates and patterns across tribal groups. For example, among certain groups of adolescents, suicides tend to occur in clusters. "Clusters" are a series of suicides approximated in time and place and etiologically linked with the other suicides in a series (Bechtold, 1988; Coleman, 1987; Keane, Dick, Bechtold, & Manson, 1996). Moreover, suicides in AI/AN communities tend to be alcohol and/or drug-related and involve a higher proportion of violent methods (hanging and guns) than are commonly used in the mainstream population (May & McClosky, 1998).

Even though American Indians and Alaska Natives represent a small minority group in America today, they are growing. They are the first inhabitants of North America, many of whom have suffered greatly both as groups and as individuals. The unique issues that they present demand careful attention and timely resolution. The challenge for suicide preventive and treatment intervention looms even larger in terms of cultural relevance and social sensitivity. Many tribes, in partnership with the Indian Health Service (IHS) and other government agencies, have designed and implemented programs intended to address the issues of suicide prevention and intervention,

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and related problems. Unfortunately, too few descriptions and analyses of these efforts have been published, and little is known about their effectiveness.

This paper opens with a brief discussion of the epidemiology of suicide among American Indians and Alaska Natives. It next turns to a critical review of selected suicide preventive intervention programs identified in the published literature and considers the methods used to evaluate each program. The discussion then shifts to practices and policies. Finally, it concludes with recommendations for future program efforts.

EPIDEMIOLOGY OF SUICIDE AMONG AMERICAN INDIAN AND ALASKA NATIVE POPULATIONS

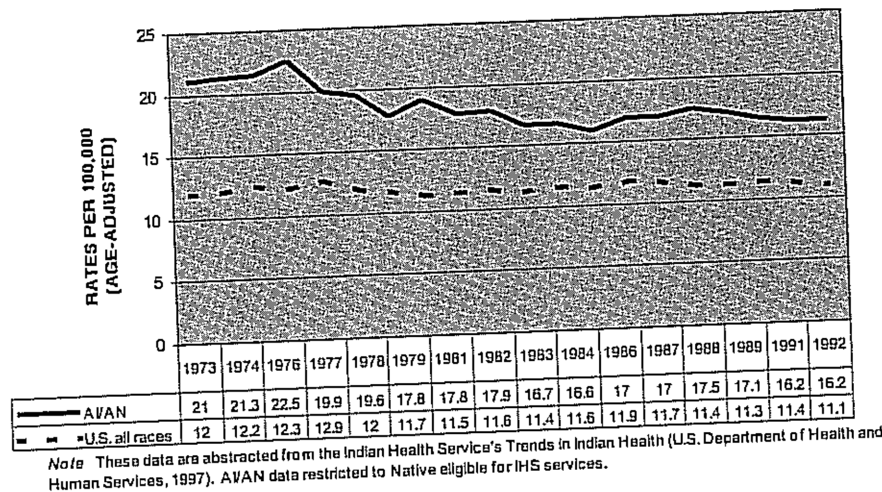
As of 1990, American Indians and Alaska Natives comprised .8% of the U.S. population (U.S. Census Bureau, 1990). Approximately 40% of this population continue to live in reservation communities (U.S. Department of Commerce, 1991). The IHS serves those living on or near these reservations and maintains records of completed suicides in constituent service populations. The most recent data available from the IHS show that the overall age-adjusted suicide rate for the AI/AN population was 19.3/100,000 between 1994 and 1996, compared to 11.2 for the U.S. general population (Indian Health Service, 1998 and 1999). As the figure indicates, suicide rates in recent years typically have been about 50% higher among the American Indians in the IHS service population than the rate of the general U.S. population; in other words, the ratio is 1.5:1 (Indian Health Service, 1997). This ratio has decreased from almost 2:1 in the early 1970s. Comparable data for American Indians living in urban environments are not readily available nor possible to accurately reconstruct because of difficulties in correctly identifying race and ethnicity on death certificates (CDC, 1993; Epstein, Moreno, & Bacchetti, 1997); those estimates that do exist are likely to be underestimates.

Age Differences in Suicides

Suicide among American Indians and Alaska Natives is predominantly a phenomenon of the young, especially of young males (Berlin, 1987). In the aggregate, AI/AN suicide rates over the past 40 years have been without exception higher than those of the U.S. general population for individuals between the ages of 5 and 44 years of age (Van Winkle & May, 1986, 1993); however, American Indians and Alaska Natives 45 and older are less likely to commit suicide than others in this age aggregate in the U.S. (Markides & Machalek, 1984; McIntosh & Santos, 1980-81; Shore, 1975).

Tribal Differences in Suicides

There appear to be important differences in rates by tribe. For instance, May and Van Winkle (1994a) reported suicides among members of several New Mexican tribes, who ranged from 5 to 29 years of age between 1957 and 1987. For instance, between 1980 and 1987, suicide rates per 100,000 were 8.9, 20.1, and 31.3 for the Navajo, Pueblo, and Apache, respectively (May & Van Winkle, 1994a). Observed differences have been postulated to reflect variations in the degree of social control over individuals between these tribes and among many other tribes, a pattern very similar to that of Durkheim's overall theory of suicide put forth in 1897 (May & Van Winkle, 1994b). According to Durkheim, there is an inverse relationship between suicide and the degree of integration an individual has with her or his social group. Applying Durkheim's theory to AI/AN communities, those tribes characterized by low social integration, where band-level organization is generally the most binding form of social control, have higher rates of suicide in most years. Those tribes who have higher levels of social integration, where clan level organization is augmented by broader levels of control at the community level (e.g., clan and communal groups organized around larger, permanent group-supporting functions), have lower rates (May & Van Winkle, 1994b). Additionally, acculturation of tribal groups into the main-



	1973	1974	1976	1977	1978	1979	1981	1982	1983	1984	1986	1987	1988	1989	1991	1992
AI/AN	21	21.3	22.5	19.9	19.6	17.8	17.8	17.9	16.7	16.6	17	17	17.5	17.1	16.2	16.2
U.S. all races	12	12.2	12.3	12.9	12	11.7	11.5	11.6	11.4	11.6	11.9	11.7	11.4	11.3	11.4	11.1

Note These data are abstracted from the Indian Health Service's Trends in Indian Health (U.S. Department of Health and Human Services, 1997). AI/AN data restricted to Native eligible for IHS services.

Figure 1. Comparison of American Indian and Alaska Native AI/AN Suicide Rate by Year

stream of society (i.e., the degree of conformity to the culture of the dominant society) is also important, for tribal communities experience higher rates of suicide in times of high acculturation (Levy, 1965; Levy & Kunitz, 1971; May & Van Winkle, 1994b; Van Winkle & May, 1986, 1993). The lower rates of suicide among the Navajo may be explained partially by protection from acculturative stresses afforded this group by virtue of their large, relatively remote homeland. The Navajo traditional beliefs about death, and resulting proscriptions against any behavior that might invite death, continue to flourish. Similar differences have been found throughout the years in many studies of American Indians and Alaska Natives (Forbes & Van der Hyde, 1989).

Epidemiology of Suicide Attempts and Suicidal Ideation

Population-based data on the prevalence of suicide attempts and suicidal ideation for AI/AN populations are not generally available through a standard registration source. A series of school-based efforts, including boarding schools, have demonstrated higher mean levels of suicidal ideation among American Indian students than others (Blum, Harmon, Harris, Bergeisen, & Resnick, 1992; Dinges & Duong-Tran, 1994; Duclos & Manson, 1994; Howard-Pitney, LaFromboise, Basil, September, & Johnson, 1992; Kraus, 1974; Manson, Beals, Dick, & Duclos, 1989; May, 1987, 1990; Thompson & Walker, 1990). A summary of the ratio of suicide attempts to suicide completions from several American Indian studies indicated an average of 13 attempts per completions (May, 1987a), as compared to national rates ranging between 8 to 25: 1 (Moscicki, 1997).

In summary, American Indians and Alaska Natives have higher rates of suicide than do persons in the general population. This is clearest for those living in reservation communities. In fact, there is almost no valid data on nonreservation AI/AN populations. Young men are at special risk for suicide (Van Winkle & May, 1993). Cultural differences in suicides are found in studies that have used different methodologies, and there appear to be significant and intriguing patterns by tribe. The data for suicide attempts and suicidal ideation are less conclusive than those for suicides, but also suggest that American Indians and Alaska Natives, especially young females, are at increased risk for suicidal ideation.

Risk Factors for Suicidal Behavior

Generally, the risk factors for suicide among American Indians and Alaska Natives are the same as for other populations. These include mental and addictive disorders, access to firearms or other lethal means, recent and severe stressful life events, and intoxication (Moscicki, 1997); however, some risk factors are different, and others differ in relative importance. For instance, case control studies have shown family disruption to place American Indian adolescents at risk, as it does those of other ethnic groups and cultures (Dizmang, Watson, May, & Bopp, 1974; Ward, 1979). Also, as described above, certain tribal differences have been reported (May, 1994; Shore, 1975), reflecting variation in social structure and cultural characteristics. Levy and Kunitz (1987) reported that those violating marital endogamy rules, or marrying outside one's own group as a clan or tribe, were at increased risk in at least one community. Over 15% of American Indian students attend boarding schools-in part necessitated by the rural nature of many reservations, but also due to family dysfunction as well as educational tradition. Boarding school students may be at increased risk for suicide attempts and ideation (Dinges & Duong-Tran, 1993; Manson, Duclos, et al., 1989; Sack, Beiser, Phillips, & Baker-Brown, 1993) due to the characteristics that may direct them there and also to disruption of critical developmental processes. While alcohol use and other substance use are considered risks for suicide among other populations, alcohol use may be especially important in this regard among AI/AN populations-for both men and women (LaFromboise, 1996). The identification of risk factors will inform the development of effective interventions to prevent suicidal behavior and the comorbid behaviors that often co-occur.

ANALYSIS OF PREVENTIVE INTERVENTION PROGRAMS

To identify suicide preventive intervention programs among American Indians and Alaska Natives, an extensive literature search was undertaken. Because of the fugitive nature of the data and the fact that many preventive intervention programs are informal and independent of centralized programming and coordination, some relevant programs may have been excluded.

In its seminal report entitled Reducing Risks for Mental Disorders, the Institute of Medicine (IOM) offered six criteria for describing and examining preventive intervention programs (Mrazek & Haggerty, 1994). These criteria pertain to (1) well-defined risk and protective factors from a developmental perspective; (2) the targeted population group; (3) the intervention itself; (4) the research design used to test the program; (5) evidence concerning the implementation; and (6) evidence concerning the outcomes. We used these criteria as a general guideline by which to analyze the programs selected for this review.

Based on the first four criteria, Table 1 compares information across nine programs that emerged from our review. Five of these programs were developed and implemented specifically to address the rising suicide rate among youth in participant communities. They are the Zuni Life-Skills Development (ZLSD) Curriculum (LaFromboise & Howard-Pitney, 1994, 1995); the Wind River Behavioral Health Program (BHP; Tower, 1989); the Tohono O'odham Psychology Service (Kahn & Delk, 1973; Kahn, Lejero, Antone, Francisco & Manuel, 1988; Kahn, Williams, Galvez, Lejero, Conrad, & Goldstein, 1975); the Western Athabaskan "Natural Helpers" Program (Serna, May, Sitaker, IHS & CDC, 1998); and the Indian Suicide Prevention Center (Levy & Shore, 1977; Shore, Bopp, Waller, & Dawes, 1972). The other programs contain suicide components as part of broader-spectrum efforts to address problem behaviors, such as alcohol and drug abuse or teen pregnancy. They are the Blue Bay Healing Center (Fleming, 1994); the Acoma-Canoncito-Laguna (ACL) Adolescent Health Program (Davis, Hunt & Kitzes, 1989); the Rainbow Lodge Alcohol Recovery Program (Fox, Manitowabi & Ward, 1984;

Table 1. Key Characteristics of Published Suicide Prevention Programs for American Indian and Alaska Natives

Program citation	Community	Targeted group	Intervention target	Risk and protective factors addressed	Intervention method	Intervention staff	Funder
• Zuni Life-Skills Development Curriculum (LaFromboise & Howard-Pitney, 1994, 1995)	Rural Arizona Zuni Pueblo	Adolescents age $m = 15.6$ yrs.	Suicide & related behaviors	• *Risk factors*: suicide potential, depression, hopelessness, psychological distress, stressful life events, drug use, self-esteem, anger expression • *Protective factors*: ways of coping, self-efficacy, problem solving, communication skills, information on suicide, goal setting, cultural & spiritual development	Selected, school-based curriculum	Teachers & counselors	Kaiser Foundation Zuni Public School District
• Western Athabaskan "Natural Helpers"	Rural New Mexico, pop 3225 Western Athabaskan Tribe	Adolescents 15-29 yrs.	Suicide & related behaviors	• *Risk factors*: family violence, alcohol & drug use, child abuse, spousal abuse • *Protective Factors*: self-esteem, team building	Selected, school-based curriculum	10 to 25 school-based natural helpers, mental health professionals, community	CDC
• Wind River Behavioral Health Program (Tower, 1989)	Rural Wyoming	NR	Suicide & related behaviors	• *Risk Factors*: depression, suicide of friends & family members, alcohol and drug abuse, community violence, child abuse & neglect, crime, high unemployment, lack of job skills • *Protective Factors*: cultural and [illegible]	Universal, indicated, community information meeting, parent groups, SADDS, ALATEEN, media, school, recreational groups	Mental, physical, health professionals, community members, teachers, youth	Kaiser Foundation
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
• Acoma Canoncito-Laguna Adolescent Health Program (Davis, Hunt, & Kitzes, 1989)	Rural New Mexico Acoma, Canoncito, & Laguna	Junior-senior high school students	Teen health promotion	• *Risk factors*: suicide, depression, despair, lack of social & economic opportunities, persistent poverty, tribal norms that operate against achievement & success, pressures to acculturate • *Protective factors*: self-esteem	School-based program promoting physical & mental health, SADD, teen awareness days, adventure clubs, teen life theater, intergenerational events, cultural events	Teachers, mental health professionals, adolescent advisory group, social service & health agencies, tribal leaders, community members	[illegible]

• Tohono O'odham Psychology Service (Kahn & Delk, 1973, 1975, 1988)	Rural Arizona Papago Indians Pop. 7000	Age: 7-70	Suicide and related mental health issues	• *Risk factors:* depression, alcoholism, suicide, economic privation, broken homes, emotional problems	Traveling clinic provid-ing:consultation to schools, hospitals, community health representatives, legal aid, BIA social work, tribal courts, police, head start, on group therapy, counseling services	Psychiatrist, clinical psychologist, medicine person, mental health technicians	UA,U.S. Dept. of Health, Education & Welfare; PHS, IHS
• Indian Suicide Prevention Center (Dizmang et al., 1974; Shore et al., 1972; Levy & Shore, 1977	Rural Idaho Shoshone-Bannock Indians Pop. 3,000	Adolescents age: 15-24	Suicide	• *Risk factors:* socioeconomic and interpersonal factors; self-destructive behaviors, alcohol & inhalant abuse, confusion of cultural identification; child-rearing practices, gender	Culturally sensitive program includes: referral system, advocates for at-risk incarcerated adolescents, community education, youth recreation activities	IHS, BIA, tribal police, social workers, physicians, community health representative, psychiatrist	
• Rainbow Lodge Alcohol Recovery Home (Fox et al.,1984	Rural Ontario Manitoulin Island Pop. 3,000	Youth, adults	Alcohol	• *Risk factors:* alcohol abuse, loss of history, loss of ethnic identity, family breakdown	Crisis intervention, recovery program, AA, education on alcohol abuse; cultural practices, spiritual practices, community outreach,school curriculum, marriage counseling, recreation program	Native mental health counselors, psychiatrist, teachers	NR
• PRIDE (Dorpat, 1994)	Urban Tacoma, WA Puyallup	Preschool through Grade 1	Drug education	• *Risk factors:* alcohol & drug abuse, stress, lack of communication skills, poor nutrition & health • *Protective factors:* decision making, self-esteem, identity	School-based curriculum infused with cultural relevancy	Teachers, school staff, community members, law enforcement	BIA Puyallup Tribal School District

AA= Alcoholics Anonymous. NR = Not reported. SADD = Students Against Drunk Driving. OSAP = Office of Substance Abuse Prevention. HIS = Indian Health Service. UA = University of Arizona. UNM = University of New Mexico. PHS = Public Health Service. HED = Health and Environment Department. BIA = Bureau of Indian Affairs.

Ward, 1979, 1984; Ward & Fox, 1977); and the Positive Reinforcement in Drug Education (PRIDE) program (Dorpat, 1994).

Risk and Protective Factors

As suggested by the IOM criteria (Mrazek & Haggerty, 1994), a well-defined, documented description of risk and protective factors is a crucial first step in formulating an effective intervention. Moreover, these factors should be examined in relation to the developmental tasks of the targeted group. Prevention efforts should be built on the risk reduction model in order to achieve success.

The ZLSD program, Wind River BHP, ACL Adolescent Health Program, and the Blue Bay Healing Center provide the greatest detail in terms of description of risk and protective factors and how these factors subsequently informed the development of preventive intervention strategies. Various elements of these preventive interventions were designed to address specific risk and protective factors and to follow the status of the targeted group over time.

The IOM criteria also underscore the importance of considering the potential causal role of risk or protective factors. To varying degrees, each of the programs addresses factors that are commonly associated with suicide potential, such as depression, hopelessness, and psychological stress; however, seven of the programs focus on culture-specific factors particularly salient among American Indians and Alaska Natives, notably lack of cultural and spiritual development, loss of ethnic identity, cultural confusion, and acculturation (see Table 1).

The ZLSD and Blue Bay programs provide details of how each identified culture-specific factors are thought to he related to suicidal behavior. Moreover, both programs argue for the importance of including culture-specific protective factors in the intervention strategy. Unfortunately, none of the programs reviewed offers epidemiological evidence that the risk or protective factors targeted are statistically correlated with, precede, or mediate suicide or suicide-related behavior.

Carefully Described Population Group

Another critical ingredient to consider in examining preventive intervention programs is the detail in describing the target population. Program descriptions should provide information about relevant sociodemographic variables and the degree to which the group actually demonstrates the risk factors. The intervention level can be determined based on the risk status of the targeted group.

Each of the programs reviewed provides some information regarding the risk status of the target population and the level of intervention. For example, the ZLSD, "Natural Helpers," and PRIDE programs contain curricula that all students experience, including such topics as alcohol/drug abuse education, suicide, self-esteem enhancement, problem-solving, and effective communication. However, with the exception of the ZLSD program description, which includes a list of measures as well as citations, and the Tohono O'odham program, none of the other program descriptions provide sufficient detail regarding how individuals were determined to be at risk.

Tribal name and geographic location typically are included in published literature about programs and other research, an inclusion that has created considerable tensions between tribes and researchers in AI/AN communities. Confidentiality is an especially important issue for any research conducted in Native communities and should be protected appropriately at community and individual levels. More recent efforts at local community review and approval of publications have codified these concerns (Manson, 1989).

The ZLSD program collected but did not report information about personal and family characteristics, such as parents' marital status and drug use habits, sources of social support, and degree of tribal identification. None of the other programs report details about family configurations or exposure to major life transitions. The Tohono O'odham program offers greater detail than most about local living conditions.

Intervention Method

Careful description of the method of intervention is critical for the evaluation and replication of programs. The Institute of Medicine criteria suggest that detailed descriptions of intervention site, institutional and cultural context, ethical considerations, and special physical aspects of the environment are needed. Moreover, any special techniques, including media devices and learning exercises, should be included, and the precise length of exposure to the intervention should be indicated. Yet few programs report the level of detail needed to assess the success or failure of an intervention. With the exception of the ZLSD program, the programs reviewed here included little detail about intervention content.

Most of the programs describe the site, cultural context, and length of the intervention. The ZLSD program devoted considerable attention to the ethical and cultural ramifications of including discussions of suicide in the curriculum, because talking and even thinking about suicide is taboo in Zuni culture. The description of the process that it employed in tailoring the curriculum to the context of the Zuni culture should serve as a model for other preventive intervention efforts.

Research Design

The IOM emphasizes that program reports should include descriptions of the research methodologies, of the evidence concerning implementation, and of the evidence concerning outcomes. Ideally, a program should be based on evidence from a randomized controlled trial of adequate size that is part of a longitudinal study. However, tests of preventive interventions may employ a number of other designs, including pre/post-test with group comparisons and quasi-experimental designs (i.e., experimental designs that lack randomization). Such designs, require detailed descriptions of the comparison groups (Mrazek & Haggerty, 1994) and are not considered true tests of efficacy or effectiveness of an intervention.

Of the nine programs identified in this analysis, none employ a randomized design. In fact, only two programs identify any type of research design. Specifically, the ZLSD program uses a quasi-experimental design, with intervention and no-intervention conditions. In addition to a comparison group, pre- and posttest measures are also included in the ZLSD. The comparison group includes students from the same school as those receiving the intervention curriculum. Random assignment to intervention groups was not possible due to institutional constraints. The Western Athabaskan "Natural Helpers" program uses extensive longitudinal data, epidemiologic data for pretest and program design, and prospective data of both an epidemiologic and programmatic nature to monitor effectiveness.

Program Implementation

Examination of whether an intervention was delivered according to its design (i.e., the intended objectives were met and processes of the intervention were implemented) is necessary. Evidence from external observers, detailed program archives, or the target participants can substantiate the degree to which the intervention was delivered as planned (Mrazek & Haggerty, 1994). Four of the programs report that process evaluations either had been or were going to be done. The ZLSD program includes feedback from teachers and students regarding perceptions of and experiences with the curriculum that was implemented during a pilot project. As a result of these comments, changes were made for the main trial. The Blue Bay program uses key informant interviews for a process evaluation, with results indicating a consensus that the objectives were being met. Other programs (i.e., PRIDE, ACL program) do not report any results from a process evaluation. Process evaluation has been done for a number of years by the Western Athabaskan "Natural Helpers" program, but the results have not been published yet (Philip May, personal communication, September 8, 1998).

Outcomes

The IOM stipulates that a description of the evidence about the outcomes should be included in the evaluation. Changes in prevalence and incidence rates of suicidal behavior, and in risk and protective factors, should be reported. The identification of unanticipated side effects, data regarding the costs and benefits of the intervention, and any benefit-cost or cost-effectiveness analysis should be assessed as part of the intervention evaluation (Mrazek & Haggerty, 1994).

Of the programs reviewed, only the ZLSD program indicates that changes in risk and protective factors were measured, with reductions noted in certain risk factors (LaFromboise & Howard-Pitney, 1995). Three of the programs ("Natural Helpers," Wind River, and Rainbow Lodge) indicate that surveillance records of suicidal behaviors were kept and/or identify decreases in suicide rates as the method for evaluating the effectiveness of the program. None of the programs report the occurrence of unanticipated side effects, and none report the outcome of the program in terms of benefit-cost or cost-effectiveness (although the Blue Bay program reports that a budget analysis of the alcohol program was done, with no results reported; Fleming, 1994).

Two of the programs report no specific evaluation measures (Wind River, Tohono O'odham). Results are impressionistic, based on reports that no suicides occurred on the first anniversary of a suicide epidemic and reports of increases in the number of cases seen at a mental health program per year.

In summary, information on the effectiveness of suicide preventive intervention programs among AI/AN communities is scarce. There are few descriptions of programs in the literature and even fewer with any type of evaluation effort. Only one of the programs discussed in this review identifies a specific research design with a comparison group. None of the other programs include a control or comparison group, although the ACL program was replicated and/or modified in three other communities. In addition, data analyses are not undertaken in most of the programs, because the numbers (when available) were reportedly too small for statistical comparison. As a result of these constraints or omissions, the effectiveness of the programs cannot be determined. In many cases, the reported effectiveness of the programs is impressionistic. Where rates of suicide attempts and completions were recorded, there were decreases in those rates after a prevention program or intervention was delivered, which the authors present as evidence of the effectiveness of the program.

Because many of the programs were developed for the particular communities in which they were implemented, the generalizability of the results is somewhat limited; however, core program components can be tailored to other AI/AN communities, because many of the basic risk factors (e.g., age, family disruption, school conditions) cut across communities. Because the cost of these programs is not discussed, the benefits in terms of cost-effectiveness and/or cost-offset cannot be identified.

The absence of formal proactive evaluation is indicative of the majority of AI/AN programs that have been reported in the literature. As a result, programs may be implemented that have not been shown to be effective for the AI/AN communities that they are meant to help. The necessity of identifying programs proven to be effective is evident when one considers the limited amount of funding available.

PRACTICES AND POLICIES

Programs that offer mental health treatment and suicide prevention to AI/AN populations are far fewer in number than what is actually needed; although collaboration between the tribes and other government entities and agencies has produced some promising programs (American Indian/Alaska Native Suicide Task Force, 1996). The IHS and other agencies support several programs and resources specifically related to suicide preventive intervention. The American Indian/Alaska Native Community Suicide Prevention Center and Network, which is administered by the Jicarilla Apache Tribe, pro-

vides crisis response and assistance with suicide prevention program development (DeBruyn, Wilkins, Stetter-Burns, & Nelson, 1997). The Alaska Division of Mental Health and Developmental Disabilities disbursed funds to local residents for the development of village and community-based suicide prevention projects (Berger & Tobeluk, 1991).

The major funders for suicide preventive intervention programs among AI/AN communities are the IHS, other government agencies (e.g., Bureau of Indian Affairs, CDC, Office of Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration), certain states (Alaska), and private foundations (e.g., Henry J. Kaiser Family Foundation). Health services are provided by the IHS to American Indians and Alaska Natives living in the U.S. and belonging to a federally recognized tribe. This setup is slowly altering as tribes are increasingly taking over IHS clinical services through contracts and compacts, and IHS has collaborated with other federal agencies for mental health research, treatment, and prevention (American Indian/Alaska Native Suicide Task Force, 1996). In spite of these changes in service provision, funding for mental health programs, including suicide preventive intervention projects, is well below what is necessary to meet the need for services to address these problems. New funding initiatives are needed.

A 1996 report by the American Indian and Alaska Native Suicide Task Force identified additional needs for suicide intervention in AI/AN communities. The most urgent include: increased availability of mental health services, such as crisis services and treatment for substance abuse and mental disorders; comprehensive and community-based programs to address multiple risk factors; collaboration among tribal, state, and federal entities; consistency and flexibility of programs over time; validation of cultural diversity and traditional healing; additional relevant research; and consistent financial support (American Indian/Alaska Native Suicide Task Force, 1996).

SUMMARY AND RECOMMENDATIONS

Suicide remains a serious mental health concern among American Indian and Alaska Native populations. Unfortunately, relatively few comprehensive preventive interventions that are community based and address multiple risk factors for suicidal behaviors have been developed and implemented in these communities. Even fewer programs have incorporated a research design that includes formal evaluation-an essential component for determining the effectiveness of such programs. Although funding has been available for the development of programs that address suicide and other mental health problems, it is limited, at best. New sources for funding should be identified.

A number of recommendations have been previously advanced with respect to basic and applied research for the prevention of suicide among AI/AN youth. A framework developed by the U.S. Department of Health and Human Services *Secretary's Task Force on Youth Suicide* (1989) was used to identify the following areas of need: (1) data development; (2) risk factors for youth suicide; (3) evaluation of interventions to prevent youth suicide; (4) suicide prevention services; (5) public information and education; and (6) broader approaches to preventing youth suicide (Duclos & Manson, 1994). Specific recommendations related to these areas, as identified in Duclos and Manson (1994, pp. 261-268), are included (see Table 2) and compared to those recommendations reported in or suggested by the programs identified in this analysis.

Data Development

Accurate, timely, and valid qualitative and quantitative data on suicidal behavior among AI/AN adolescents should be developed, using broadly applied and culturally specific instruments and measures. The programs reviewed here provided several recommendations related to data development. Specifically, the programs advocate for:

Table 2. Recommendations for Basic and Applied Research for Data Development and Risk Factors for Suicide Targeting American Indians and Alaska Natives

Data Development	Risk Factors for Youth Suicide
• Document the clustering/imitation dynamics of AI/AN suicide. • Describe cross cultural & cross-ethnic definitions of suicide & self-destructive behaviors, & develop lexicon of traditional ideas. • Conduct psychological autopsies & in depth case studies of completed suicides & attempts. • Conduct descriptive epidemiologic studies of suicide & related psychiatric disorders among AI/AN youth. • Evaluate tbe efficacy of broadly applied clinical instruments as to their sensitivity & reliability in AI/AN communities. As needed, develop culturally sensitive tools for assessing suicidal behavior among AI/AN. • Evaluate current recordkeeping systems & practices on children & adolescents in regard to suicide & self-destructive behavior. • Develop standardized recordkeeping & monitoring systems applicable in a variety of service systems, including clinical, educational, & detention. Develop subsequent case registers of AI/AN suicides & violent deaths. • Develop a culturally sensitive diagnostic manual & casebook for mental health problems of adolescents.	*Characterize suicidal behaviors & suicides:* • Complete meta-analytic suicide studies to identify salient environmental & psychological influences. • Develop empirical typology of attempters/completers & etiologic factors from secondary analysis of existing data sets. • Compare the antecedents of AI/AN suicide to the antecedents of suicide in the general population. • Conduct extensive social & clinical histories of suicide victims. • Uncover situational contexts of attempters—who, what, where, when, how. • Study AI/AN physiology & biochemistry in relation to alcohol & heredity. • Investigate & compare the epidemiology of cluster suicides with noncluster suicides in AI/AN communities. Investigate social response to serial suicides & other community variables in AI/AN communities, where clustering has occurred. *Specific risk factors:* • Survey local communities in regard to their perception of risk. • Evaluate the degree of risk for suicide in terms of the following: lack of attachment & bonding; multiproblem family background; family history of suicide; anomic; situational; & clinical depression; hopelessness; anxiety disorders & states; history of previous attempt; abuse; neglect; & domestic violence; acculturation stress; conduct disorders 7 behavioral dyscontrol; alcohol abuse & dependence; co-morbidity; fetal alcohol syndrome & mental retardation/developmentally disabled; gender roles; genetic precursors; neurobiological precursors; temperamental precursors; status of local service ecology; psychopharmacological prescribing patterns; economic factors both micro & macro levels; social labeling & stigma; place of residence; detainment & criminal justice encounters. *Trigger factors:* • Intoxication • Acute interpersonal rejection or loss • Acute actual or perceived failure *Protective factors:* • Ascertain the nature and extent of cultural norms as well as social controls in regard to preventing suicidal behavior. • Study the positive role of different school environments. • Examine successfully adaptive versus minimally adaptive family styles using stratified samples longitudinally. • Evaluate the status of Indian/Native health.

Evaluation of interventions to prevent youth suicide	Suicide prevention services

Evaluation of interventions to prevent youth suicide

- Evaluate treatment outcomes using broadly applied instruments & measures. Assess the efficacy of these instruments to accurately measure outcome in a cross-cultural setting. As needed, develop culturally relevant outcome measures.
- Conduct longitudinal studies of outcomes of preventive interventions targeted to high-risk children.
- Investigate the efficacy of the following: Self-esteem programs as they relate to risk for suicide, community response teams, interventions targeting feelings of isolation, problem-solving curriculum as an effective tool in decreasing future family discord & suicide, peer-support, peer-counseling networks, IHS suicide crisis intervention team, IHS mental health clinical programs, post-interventions in school setting, diagnostic & therapeutic services for preschool children, different biomedical treatment modes as preventive efforts, in-home services to parents & children during early years, programs targeting alcohol & substance abuse, "hunter safety" & gun control, preventive interventions in correctional settings, current hospital emergency room interventions, screening & intervention in primary care settings, media containment—soft print & broadcast media

Suicide prevention services

- Conduct organizational research on successful interagency approaches and barriers to effective service delivery.
- Intervene with high-risk parents to reduce the incidence of suicidal behavior among their offspring.
- Create youth community centers for after school, weekends, and summer use.
- Develop a community intervention approach using several communities with high suicide rates.
- Develop intervention techniques for hospital emergency room use.
- Expand successful demonstration projects with broader range of outcomes.
- Create a primary preventive intervention for suicide clustering.
- Involve Indian/Native adolescents in the design of interventions.
- Target youth who are facing "existential crisis" leaving or staying on the reservation.
- Establish alternatives for children/adolescents whose families are dysfunctional both in and outside tribal settings.
- Survey services actually received by Indian/Native youth.
- Increase access to adolescent-specific mental health services in school-based and youth centers.
- Adapt various risk factor interventions for school curriculum.
- Develop alternatives to incarceration for adolescent substance abuse and status offenders.
- Compare private/state/local/federal strategies and policies for reducing Indian/Native suicidal risk.

Public information and education

Training:

- Evaluate the adequacy of child/adolescent training among tribal, state, and federal mental health providers in regard to care for Indian/Native youth.
- Develop culturally meaningful ways of training tribal mental health providers to recognize, assess, treat, and manage the spectrum of psychiatric disorders.
- Ascertain effective methods for organizing and equipping local advocacy groups-youth as well as adult-to prevent adolescent suicide.
- Evaluate the impact of IHS child and adolescent mental health training funds.

Broader approaches

Universal/promotive interventions:

- Develop and evaluate the effectiveness of the following: residential alternatives for Indian/Native children/adolescents living within dysfunctional families, cultural heritage immersion programming, community youth centers, increased access to adolescent-specific mental health services in school-based settings, adolescent alcohol/drug abuse treatment programs, culturally modified child-rearing intervention based on communal approaches, gender-specific interventions based on adult role modeling, intensive in-home services to children, role of traditional ceremonial activities

(continued)

Table 2. Recommendations for Basic and Applied Research for Data Development and Risk Factors for Suicide Targeting American Indians and Alaska Natives *(continued)*

Public information and education	Broader approaches
Recruitment: • Investigate ways to get more qualified people interested in working in these areas.	*System-oriented change:* • Assess the viability of integrating suicide prevention activities with other health promotion efforts. • Evaluate different models of organizing human services in terms of increased efficacy for detecting and treating individuals at risk for suicide. • Determine the factors that promote the diffusion of "health care fads" in Indian/Native programs and means for channeling such activities into outcomes consistent with tribal service priorities.
Public information: • Describe the paths and dynamics by which information about suicide flows through Indian and Native communities. • Develop methods for comprehensive networking among individuals, community-based organizations, agencies, and institutions to facilitate suicide research and prevention activities (e.g., a computerized resource directory, central coordination of conferencing). • Evaluate the compliance of the Bureau of Indian Affairs in meeting the provisions of 25 USC 2455 and 25 USC 2434(b), which require systematic recording and dissemination of information about substance abuse involvement in juvenile criminal encounters. • Assess the nature and extent of the impact exposure to media reports about local suicide deaths has on an Indian/Native community. • Implement knowledge gained in research.	*Miscellaneous:* • Determine factors that facilitate appropriate tribal consumption of Western technology without undermining existent traditions. • Investigate the nature and predictors of resiliency among Indian/Native children as well as its relationship to mental health status.
Community education: • Develop and evaluate the efficacy of educational programs to promote more positive and encouraging attitudes among adults toward Indian/Native youth. • Investigate the potential of broad-based community education in preventing suicide clusters.	

Note: These recommendations are from Calling From the Rim: Suicidal Behavior Among American Indian and Alaska Native Adolescents (Duclos & Manson, 1994).

1. Documenting the cluster or imitation dynamics of AI/AN suicides.
2. Conducting psychological autopsies or in-depth case studies of suicides and suicide attempts (looking at such things as family background, history of difficulties, reports of psychological evaluations).
3. Conducting descriptive epidemiologic studies (i.e., describing general characteristics of the distribution of a disease as related to person, place, and time) of suicide and related psychiatric disorders among AI/AN youth.
4. Developing a standardized recordkeeping and monitoring system that can be applied across a variety of service systems, with special emphasis on subsequent case registers of AI/AN suicides and violent deaths (for example, see Wind River program).

A number of the programs (e.g., "Natural Helpers," Rainbow Lodge, Wind River) suggest consistent surveillance of suicide attempts and suicides (an epidemiologic database) in order to track the trends in suicidal behaviors, to assess the effects of the programs on these trends, and to distinguish between epidemic and endemic suicides. As the "Natural Helpers" program suggests, data obtained from population comparisons of suicide rates would be important in helping to determine cyclical patterns of completions, as well as providing valuable information about possible outcome measures and effects for the evaluation of programs. In addition, an investigation of why rates are higher in certain AI/AN communities could be used to develop effective prevention and/or intervention programs.

Risk Factors for Youth Suicide

Multidisciplinary research to determine and evaluate the risk factors for suicidal behavior among this particular population should be developed, including community surveillance data, biobehavioral and antecedent risk factors, as well as risk factors for suicide clustering and contagion. A number of recommendations related to risk factors have been suggested, some of which also follow from the programs. For instance, the Wind River program recommends conducting extensive social and clinical histories of the victims and uncovering the situational contexts of attempters.

It and other programs encourage investigating and comparing the epidemiology of cluster suicides with noncluster suicides and investigating the social response to cluster suicides and other community variables in AI/AN communities where clustering has occurred; evaluating the risk for suicide based on such factors as multiproblem family background, family history of suicide, hopelessness, alcohol abuse/dependence, and domestic abuse; and determining the presence of trigger factors, such as intoxication, acute rejection or loss, and acute actual or perceived failure (see Dizmang et al., 1974; Ward, 1979). In addition, several programs (e.g., Blue Bay, Wind River, "Natural Helpers") advocated for increased risk screening or the identification of individuals at risk for suicide attempts or suicide, as well as additional research into the reasons for higher suicide rates in certain communities.

Evaluation of Interventions to Prevent Youth Suicide

The efficacy and cost- benefit of suicide preventive interventions targeting AI/AN youth should be evaluated. Although formal evaluations were not always completed or the results were not reported, the value of evaluation efforts was suggested in many of the programs. Recommendations related to the evaluation of interventions and suggested by the programs (e.g., ZLSD, ACL, Wind River, PRIDE) include investigating the efficacy of activities such as self-esteem programs that relate to suicide, community response teams, problem-solving curricula, peer-support and peer-counseling networks, IHS Suicide Crisis Intervention Teams and Mental Health Clinical Programs, preventive interventions in correctional settings, and media containment. In addition, the replication and evaluation of these programs were recommended in order to assess their usefulness in other communi-

ties, as was additional research to determine effective strategies for suicide prevention.

Suicide Prevention Services

Research on the development, delivery, and evaluation of suicide preventive interventions in reducing suicidal behavior among AI/AN youth should be supported. Several programs, including Tohono O'odham, Wind River, and ACL, recommended: intervening with high-risk parents to reduce the incidence of suicidal behavior among their offspring; creating youth community centers or providing other activities for youth; developing a community intervention approach; expanding successful demonstration projects with a broader range of outcomes; creating a primary preventive intervention for suicide clustering; involving AI/AN adolescents in the design of interventions; increasing access to adolescent-specific mental health services in school-based and youth centers; adapting various risk factor interventions for school curricula; developing alternatives to incarceration for adolescent substance abuse and status offenders (i.e., those who commit crimes for behaviors that bring one to court only in the case of juveniles, such as truancy or curfew violation); and conducting research on successful interagency approaches and barriers to effective service delivery. The programs advocated providing other activities for the youth in their communities, providing some type of hospitalization for individuals who attempt suicide, and reviewing the emergency call systems. Some programs suggest a crisis intervention approach to suicidal behaviors, comprehensive services, and/or multidimensional prevention programs or interventions.

Public Information and Education

Information and education pathways of health service providers and the public should be developed and evaluated in regard to prevention, diagnosis, and treatment of suicide among AI/AN youth. A number of such recommendations are suggested by the programs (e.g., ACL, Indian Suicide Prevention Center, "Natural Helpers"). These include: assess the nature and extent of the impact that exposure to media reports about local suicide deaths has on an AI/AN community (as was done in the Wind River program), and develop methods for comprehensive networking among individuals, community-based organizations, agencies, and institutions to facilitate suicide research and prevention activities. Additional recommendations related to community education include: develop and evaluate the efficacy of educational programs that promote positive and encouraging attitudes among adults toward AI/AN youth, and investigate the potential of broad-based community education in preventing suicide clusters.

Broader Approaches

The combined efforts of all sectors of society, public and private, to address broad preventive strategies that target a range of self-destructive behaviors should be investigated. Several of the programs (e.g., ACL, Blue Bay, PRIDE) supported recommendations related to broad-hased interventions and to system-oriented change, including: the development and evaluation of the effectiveness of programs like community youth centers, increased access to adolescent-specific mental health services in school-based settings, and adolescent alcohol/drug abuse treatment programs; and assessment of the viability of integrating suicide prevention activities with other health promotion efforts (which was done in the ACL program). Many of these recommendations are consistent with the recently announced priorities for prevention research at the National Institute of Mental Health (NAMHC Workgroup on Mental Disorders Prevention Research Report, 1998).

It is very likely that other suicide prevention programs and interventions are conducted by and for American Indians and Alaska Natives, but the results are not available in the published literature. Efforts are needed to increase the awareness and involvement of AI/AN communities by publishing the work that has been and is being done to address the problem of suicide. Examples of such work

can be found in journals, like American Indian and Alaska Native Mental Health Research, which also has produced a monograph, entitled Calling from the Rim: Suicidal Behavior Among American Indian and Alaska Native Adolescents (Duclos & Manson, 1994), as well as in annotated bibliographies on suicide and suicide attempts (May & McClosky, 1998).

The majority of programs identified in this review support two themes: the need for cultural relevance in all aspects of program development and implementation, and the importance of community involvemenr. American Indians and Alaska Natives need to mobilize themselves and become involved when preventive interventions are planned for their communities. There is an additional need for AI/AN communities to be comprehensive when identifying ways of addressing the problem of suicide, considering its relationship with other life events (e.g., substance use, unemployment). Lessons from the OSAP/CSAP Community Partnership Demonstration Grants and the RWJF Healthy Nations Initiative have demonstrated the need for all sectors of the community to become involved in the problems they are faced with, including both formal and informal groups, such as mental health agencies or grassroots community groups. Local AI/AN communities are in a better position to understand the complexities of the problems that may affect them, and, as a result, they should ultimately create the solutions to these problems.

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