

# THE IHS PRIMARY CARE PROVIDER



A journal for health professionals working with American Indians and Alaska Natives

April 1997

Published by the IHS Clinical Support Center

Volume 22, Number 4

## Update on HIV/AIDS Among American Indians and Alaska Natives

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The relationship between the United States and American Indians/Alaska Natives (AI/AN) with the human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) is in need of redefinition. The increasing number of AI/AN HIV and AIDS cases, a new generation of promising and expensive drugs, and rapid changes within the Indian Health Service (IHS) require the development of a new and more effective model of care. To determine the future direction for AIDS care it is imperative to review current data on reported AIDS cases and HIV infection among AI/AN, examine the cost of and access to new drugs, and summarize what is now known about those already infected.

### **AIDS among American Indians and Alaska Natives**

The AIDS epidemic among American Indians and Alaska Natives continues to grow. As of the end of December 1996, the Centers for Disease Control and Prevention (CDC) had reported a cumulative 475 cases of HIV infection and 1,569 cases of AIDS among American Indians and Alaska Natives (Table 1). In 1996, AI/ANs ranked fourth in AIDS case rates per 100,000 population among the five racial/ethnic categories reported by the CDC (Table 2).

From 1990 to 1995, the estimated AIDS-associated opportunistic illness incidence increased 45% in AI/ANs. Prior to 1993, the surveillance definition for AIDS included only opportunistic illnesses, and trends in the incidence of AIDS were evaluated by examining the number of AIDS-associated opportunistic illnesses diagnosed per year. Thus, the increase in AIDS-associated opportunistic infections shown in Table 3 does not necessarily reflect a similar increase in the number of AIDS cases.

For the years 1989-1991, AIDS was the ninth leading cause of mortality for AI/AN between the ages of 25-44.<sup>2</sup> AIDS rose to seventh leading cause of death in this age cohort for the years 1991-1993.<sup>3</sup>

As reported previously in *The Provider*,<sup>4,5</sup> misreporting of the ethnicity of AI/AN cases as either white or Hispanic has occurred with HIV/AIDS as it has with other reportable diseases. Therefore, it is probable that the actual number of AIDS cases is somewhat higher than what has been reported to the CDC.

### **In This Issue...**

- 49 Update on HIV/AIDS Among American Indians and Alaska Natives
- 54 HIV/AIDS Universal Precautions in Sun Dance Ceremonies
- 55 The HIV Center of Excellence
- 56 Homicide and Suicide Among Native Americans
- 57 Health Professionals Can Help STOP Gun Violence
- 58 Violence and Violence Prevention
- 60 Assault Injuries on the Hualapai Indian Reservation
- 65 Meetings of Interest
- 65 NCME Videotapes Available
- 66 Native American Medical Literature

**Table 1. Total number of cumulative cases of HIV and AIDS, all age groups combined, by ethnic group, reported through December 1996.<sup>1</sup>**

Race/Ethnicity	HIV Cases	AIDS Cases
Black	43,417	203,189
White	33,037	268,856
Hispanic	5,076	103,023
American Indian/Alaska Native	475	1,569
Asian/Pacific Islander	240	4,131

**Table 2. Annual AIDS case rate (in 1996) per 100,000 population, all ages combined, by race/ethnicity.<sup>1</sup>**

Race/Ethnicity	Rate/100,000
Black	89.7
Hispanic	41.3
White/Non-Hispanic	13.5
American Indian/Alaska Native	10.7
Asian/Pacific Islander	5.9

**Table 3. Estimated AIDS-associated opportunistic illness incidence, by race/ethnicity, 1990 and 1995, and percent increase from 1990 to 1995.<sup>1</sup>**

Race/Ethnicity	1990	1995	% Increase
White, not Hispanic	22,600	24,900	10%
Black, not Hispanic	14,600	24,800	70%
Hispanic	8,100	11,700	44%
Asian/Pacific Islander	300	480	60%
American Indian/Alaska Native	110	200	45%

### Cost of and Access to AIDS Drugs by AI/AN

The new class of drugs called protease inhibitors that includes saquinavir, zidovudine, and didanosine (Invirase™, Norvir™, and Crixivan™, respectively) has brought an enormous sense of hope to people living with AIDS, even to those in advanced stages of the disease, and their caregivers. Many cases have been reported of the human immunodeficiency virus being reduced below detectable levels in the blood of patients undergoing treatment with a combination of protease inhibitors and antivirals. The annual cost of these drugs per patient is in the range of \$10,000-\$16,000. This expense can be an unbearable burden for those health care agencies or organizations with limited drug budgets. It is for this reason that Congress has appropriated funds specifically for HIV/AIDS drug assistance programs through state departments of health. Unfortunately, it has not done so for the IHS and tribes; however, the IHS and tribes can theoretically access local

AIDS drug assistance programs.

The IHS did have an AIDS drug program that was funded by the Centers for Disease Control and Prevention (CDC) and operated by the IHS Clinical Support Center in Phoenix. The drug program insured access to needed drugs for patients, while the Clinical Support Center collected data on and tracked patients with HIV/AIDS being seen throughout the system (whether in IHS, tribal, or urban Indian clinics). In 1990, the AIDS drug program was transferred to Headquarters West, in Albuquerque. Due to a decision to mainstream the care of patients with HIV/AIDS (e.g., providing drugs and services with service unit funds), the IHS AIDS drug program was eliminated in late 1993. This was unfortunate since not only did the AIDS drug program at IHS allow for bulk purchasing of expensive drugs, but, as mentioned above, it also assisted with surveillance. Because there is now no IHS monitoring system, it is unknown whether, and to what degree, AI/AN patients dependent upon IHS for their care are able to access needed AIDS drugs.

The National Native American AIDS Prevention Center, located in Oakland, California, is aware of a few instances where patients have been counseled by IHS providers to seek care at state or county facilities so that they could be treated with drugs the IHS providers were unable to access. We also know of at least one instance where an urban Indian clinic has implemented a policy of not providing care to people infected with HIV for problems related to HIV.

### The National Native American AIDS Case Management Network

The National Native American AIDS Prevention Center (NNAAPC) pioneered a free-standing model of AIDS case management services for HIV-infected American Indians in Oklahoma in 1991, funded by a Human Resources and Services Administration (HRSA) grant (Title V of the Ryan White Act). That program, known as the Ahalaya Project, is based in Oklahoma City. NNAAPC attempted to emulate the effectiveness of a model in Dallas, Texas, called AIDS Arms,<sup>6</sup> that had been evaluated by the Robert Wood Johnson Foundation. This free-standing model of case management had been found more adept at meeting the needs of clients than traditional, institution-based (e.g., hospital-based) case management programs. Clients and case managers were freed from the constraints of a single provider so that, for example, if there were long waiting times or other barriers to services at one place, clients could be referred to others. This model had also improved access to a wider range of services.

NNAAPC theorized that such a free-standing case management model could be effective for AI/ANs because it could bridge the gap between those services provided to them by virtue of their status as Native Americans and those services provided by the AIDS services community. The model had the added benefits of being relatively inexpensive to operate, of focusing on access to existing services, and of creating increased collaboration and cooperation between various service providers. NNAAPC added traditional healing and culturally-specific programming to the design of the model. Other core services include referral, emergency client

assistance, HIV prevention education and counseling, and social and psychological support.

First year projections for Oklahoma were that the program would attract only twelve clients. By the third month of the project however, there were already 26 individuals who had requested case management assistance. That number did not include family members, who were also being served. Most had not been seen at other AIDS programs. Clients were predominantly infected by sexual exposure, although there were a handful who had been infected through injection drug use. Demand for case management services continued to increase, overextending the original staffing plan for the program. The project secured additional funding to add an extra case manager and to open a branch office in Tulsa to handle clients in the eastern part of the state.

The success of the model in attracting American Indians into care, combined with recommendations by a HRSA-sponsored national focus group of Native Americans looking at issues related to HIV/AIDS, led to HRSA's requesting NNAAPC to expand the model throughout the country, and to include Native Hawaiians. HRSA also wanted the project to develop a standardized intake process to collect data that could generate a demographic and needs profile of American Indian, Alaska Native, and Native Hawaiian people with HIV/AIDS. In 1992, NNAAPC released a request for proposals both for services planning and for replication of the case management model. Twenty-three tribal and urban Indian projects applied, and eleven were funded. Subcontracts were awarded to Native American agencies and tribes in Hawaii, Alaska, Washington, California, Arizona, Kansas, Minnesota, Wisconsin, New York, and North Carolina. Approximately half of these were rural and half urban. A newsletter for Native people living with HIV/AIDS published by Positively Native, a self-help group, was also supported by this grant until March 1, 1997.

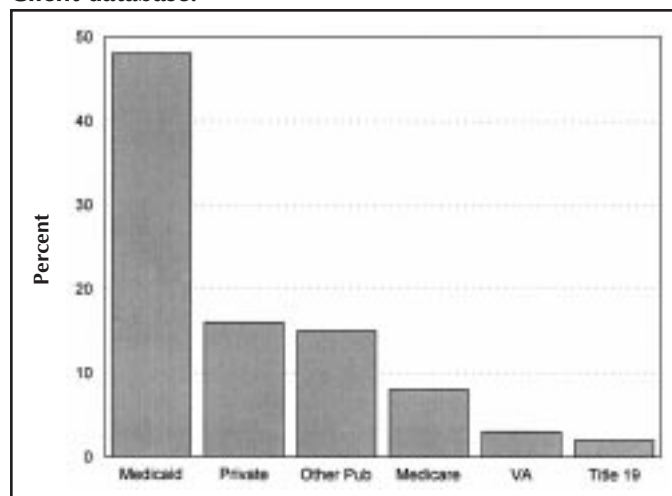
### The National Native American HIV/AIDS Client Database

One requirement for participation as a site in the case management network is the standardization of intake information and forms.\* This enables the overall project to develop both a local and a national picture of the profile and needs of Native Americans with HIV/AIDS. The number of participating agencies has grown beyond those funded by the program and we hope to continue to expand the data collection network further. Intake information provides baseline data, while bi-monthly follow-up data tracks changes in disease status, t-cell counts, stress level, and problems with housing, drugs, alcohol, or mental health.

\* Any case management programs providing services to American Indians, Alaska Natives, or Native Hawaiians with HIV/AIDS can participate in the national database. Participation requires adopting the standardized client intake form, and providing NNAAPC with quarterly data reports. There is no fee required. For further information, contact Dr. Paul Bouey at 510-444-2051.

As of September 1, 1996, the national network was serving 433 clients representing 82 tribes. This number includes 343 American Indians, 19 Alaska Natives, 62 Native Hawaiians, and 4 "other indigenous" persons (mostly Central or South American Indian). The average age at entry into the program was 33.8 years, with a range from 4 months to 60 years old. Eighty percent of the clients are male and 20% are female, a proportion of females slightly higher than for the AI/AN AIDS case data reported by CDC (85% male and 15% female). The average t-cell count at intake was 323, and the average interval between the date of diagnosis with HIV infection and the date of entry into the program was 3.03 years, with a range of .01 to 14 years. The majority of clients are still in relatively good health. Not surprisingly, most clients seen in this network rely upon publicly-funded medical care. Only 14.6% of clients have private medical insurance (Figure 1). The largest proportion of clients in our system are enrolled in the Medicaid program. This information, however, should be interpreted cautiously since the categories in Figures 1 and 2 are not mutually exclusive, and some clients make use of more than one source of coverage or care.

**Figure 1. Sources of payment for medical care for Native Americans in the National Native American HIV/AIDS Client database.**

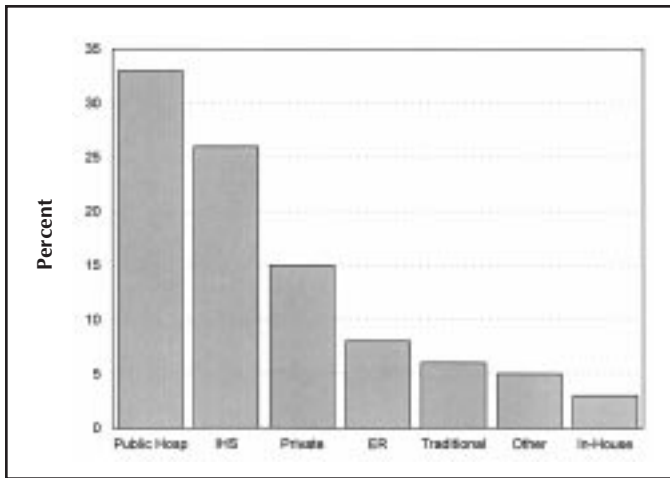


The majority of clients seek medical care at public hospitals and through the Indian Health Service (Figure 2). Fifteen percent utilize emergency rooms for treatment, an indication that some clients do not have access to or make use of a regular primary care provider.

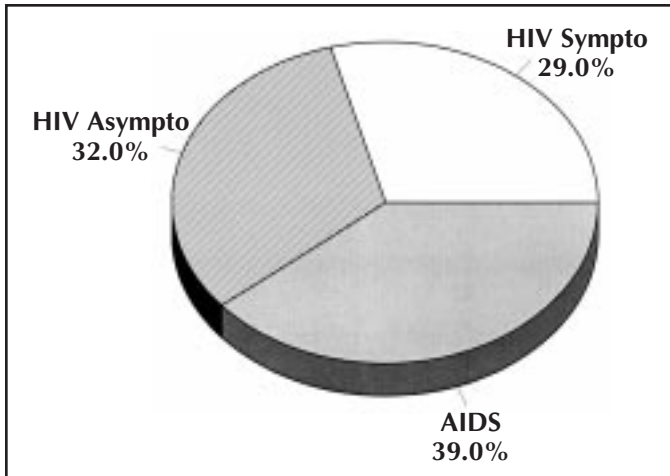
Clients who enroll for services are almost evenly divided between those already diagnosed with AIDS, those living with HIV infection without symptoms, and those with HIV infection who have begun to show symptoms, with slightly more people diagnosed with AIDS (see Figure 3).

The majority of clients have been tested for tuberculosis (TB) prior to enrolling in case management, because persons

**Figure 2. Where clients seek medical care.**



**Figure 3. HIV/AIDS status of clients in the National Native American HIV/AIDS Client database.**



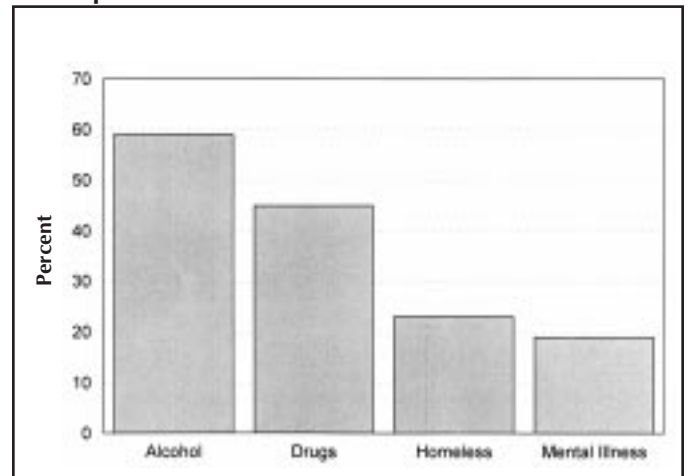
infected with HIV are at increased risk for developing TB. Other reasons for testing for TB include prevention of transmission and avoidance of multiple-drug-resistant *M. tuberculosis* organisms.

The CDC has recommended that AIDS patients infected with tuberculosis, and not already on protease inhibitors, complete TB treatment with a regimen containing rifampin (following the current guidelines by the American Thoracic Society and the CDC) before starting therapy with a protease inhibitor.<sup>7</sup> It appears that protease inhibitors interact with rifamycin derivatives, such as rifampin and rifabutin. These rifamycin derivatives accelerate the metabolism of protease inhibitors, resulting in subtherapeutic levels of the protease inhibitors. In addition, protease inhibitors retard the metabolism of rifamycins, resulting in increased serum levels of rifamycins and the likelihood of increased drug toxicity.<sup>7</sup> Antiretroviral agents, other than protease inhibitors, may be used concurrently with this regimen (for complete details, see reference 7). Recommendations for those patients with TB

who are already on protease inhibitors include three different treatment options, which are explained in detail in reference 7. The CDC warns that the management of patients with both HIV and TB infection "is complex, requires an individualized approach, and should be undertaken only by or in consultation with an expert."

A majority of clients report having a history of alcohol problems. Almost half have had drug abuse problems, and over one-fourth have been homeless at some point in their lives. About 20% have a history of mental illness (see Figure 4), while a little over 25% of clients are receiving mental health services at intake. It is clear that the majority of Native people with HIV/AIDS face not only a debilitating and life-threatening illness, but have other, sometimes more pressing problems that must be addressed. It has proven difficult, thus far in the experience of NNAAPC and its partners, to involve many IHS-funded substance abuse programs in caring for people with HIV/AIDS, with some notable exceptions. Involvement of substance abuse programs in the care of people with HIV/AIDS is an area that requires continued emphasis to prevent the further spread of HIV, keep those infected as healthy as possible as long as possible, and to enhance their quality of life. Recognizing this, the IHS Alcoholism and Substance Abuse Program Branch and the IHS AIDS Program are currently developing a joint workplan focusing on enhancing HIV prevention and treatment capabilities within the alcohol/substance abuse network of programs.

**Figure 4. Percentage of clients from the National Native American HIV/AIDS database reporting selected other health problems.**



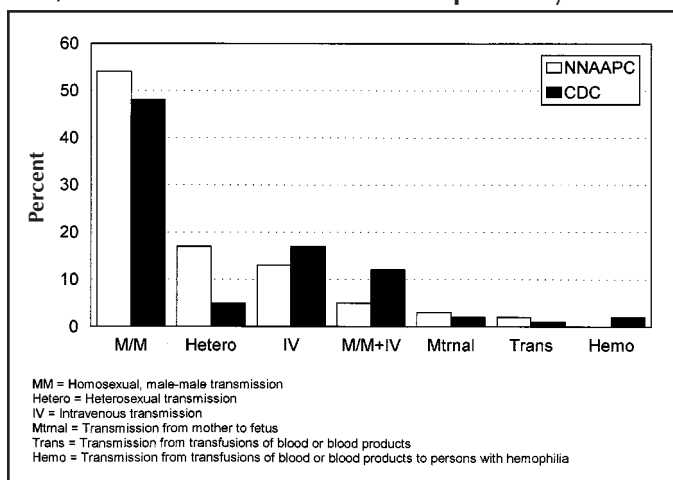
Clients in the national NNAAPC database have an HIV transmission profile slightly different from that of AI/AN AIDS cases reported to the CDC. Figure 5 compares transmission information from the NNAAPC database with the CDC data. The national case management network serves relatively more persons with heterosexually-transmitted AIDS than is reported in the data, and serves fewer individuals who



were infected as a result of the combination of homosexual and intravenous transmission or from IV drug use alone.

The national NNAAPC database will continue to evolve and will be refined during 1997. We encourage any site that is providing case management services to American Indian and Alaska Native people to participate.

**Figure 5. Comparison of route of HIV transmission between clients in the National Native American HIV/AIDS Client database and that reported by CDC.<sup>1</sup>**



### The Future of AIDS Care for AI/ANs

The intent of the National Native American HIV/AIDS Case Management Network was to increase the capacity of Native American communities to provide care for those with HIV/AIDS. While this has succeeded in most of the communities involved in the program, many other communities are only beginning to face the problem. The question is how such programs will be initiated and how they will be supported over the longer term. Clearly the problem is not going to go away.

The restructuring of IHS, tribal compacting, managed care, and the high cost of new AIDS drugs all impact AI/ANs living with HIV/AIDS, and those who serve them. We believe the evidence is already in: culturally-specific and culturally-competent services help clients to cope better with their illness and to seek care earlier in their disease process. We know from client surveys that have been part of the evaluation of the case management program over the past five years that clients believe they receive better care because they are served by Native American-specific programs.

The Ryan White Care Act is the vehicle that provides most of the AIDS-related funding for care. It is only in Title V of that Act, Special Projects of National Significance, that Native American-specific language is to be found. Although a serious attempt was made during the reauthorization of that statute to insure that funding for Native American programs was made available under both Title II and Title V, state opposition to any set-asides for AI/AN in Title II, combined with an overall focus of Title V on innovations in research, has placed Native

Americans with HIV/AIDS in a weak position. A few urban Native American AIDS care programs have been able to win contracts with local jurisdictions under Title I of the Ryan White Care Act, the section of the act that funds those cities with the largest numbers of AIDS cases. These include, or have included, San Francisco, San Diego, Phoenix, New York, and Seattle. It has proven exceedingly difficult for AI/AN AIDS programs to win Title II grants. Therefore, the care of HIV-infected Native Americans is a matter that has yet to be addressed fully.

In the meantime, American Indian/Alaska Native people with HIV/AIDS, the Indian Health Service, tribal health systems, and urban Indian clinics all face serious problems, most of which are related to health care access, the cost of medical care, and the question of who will pay for it. The breaking up of the IHS medical care system into smaller tribal units creates a loss of economies of scale that increases the burden of cost. This does not necessarily have to be the case. By working in collaboration with one another (including the tribes, the federal government, state governments, and the private, non-profit sector), we could expand buying power and share financial and human resources. In that way, everyone could benefit, not only larger communities.

If we are to continue to improve AIDS care for AI/AN, the Indian Health Service, tribal health systems, urban Indian clinics, and Native American AIDS programs and agencies will all have to contribute their strengths. None of us can do the work alone. By working together in collaboration with one another we can insure that the AIDS care provided to our population is at least equal to, if not better than, that provided to the most affluent Americans.

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# HIV/AIDS Universal Precaution Practices in Sun Dance Ceremonies

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*Jennifer Giroux, MD; Joan Takehara, MPH; Charon Asetoyer, MA; and Thomas Welty, MD, MPH. At the time this work was done, Drs. Giroux and Welty and Ms. Takehara were with the IHS Aberdeen Area Epidemiology Program in Rapid City, South Dakota. Ms. Asetoyer is the Director, Native American Women's Health Education Resource Center.*

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**Note:** A larger report dealing with this subject will be published in the *Journal of Health Education* later this year. IHS and tribal providers, in areas where the Sun Dance is performed, are encouraged to support the implementation of the recommendations discussed below.

The human immunodeficiency virus (HIV; the virus that attacks the immune system and develops into acquired immune deficiency syndrome or AIDS) can be transmitted by exposure to HIV-infected blood and genital fluids, and prenatally from the pregnant female to her offspring. The highest concentration of this virus in those infected is found in the blood, making exposure to blood, potentially, an experience that could ultimately lead to death.

The Aberdeen Area Indian Health Service (AAIHS) has recognized the potential of HIV transmission through piercing of the skin and flesh offerings that occur during the Sun Dance ceremony and has provided training to spiritual leaders on the use of universal precautions since 1988. Suggested precautions include:

1. If you have open cuts or sores on your hands, avoid assisting with piercing, and exposure to blood.
2. Use latex gloves when piercing or taking flesh offerings and change gloves between contact with each dancer. Place used gloves and other contaminated materials in plastic bags that are labeled "Hazardous Waste." Consult with your local IHS facility for the recommended procedure to properly dispose of these items.
3. Be very careful when using sharp instruments or needles. Gloves are only a barrier; they cannot prevent needle sticks or scalpel lacerations.
4. If gloves are not available, wash hands (between contact with each dancer) in a bleach and water solution (one part bleach to ten parts water).
5. Use a new scalpel or needle on each dancer or participant.

6. Dispose of scalpels and needles in puncture-proof containers, labeled as "Hazardous Waste."
7. Use the bleach and water solution (1:10) in the puncture-proof container to kill any organisms on used scalpels and needles.
8. Take the puncture-proof containers to an IHS service unit for disposal. Do not leave the used containers where someone could get exposed to their contents. The service unit can dispose of containers and their contents in a manner that will prevent injuries.
9. Do not share items exposed to the blood of another person (examples: ropes or pegs).
10. Contact the local IHS service unit if you are not able to obtain the needed supplies (scalpels and needles, gloves, bleach, puncture-proof containers) or need more supplies.

As implied in the above guidelines, the medical supplies recommended for universal precaution practices at Sun Dance ceremonies include disposable scalpels and needles, puncture-proof hazardous waste disposal containers, bleach, and latex gloves. The AAIHS makes medical supplies available to American Indian spiritual leaders and dancers participating in Sun Dance ceremonies. All IHS facilities are encouraged to provide this service when so requested by spiritual leaders. For further information contact Carol LaFromboise, AAIHS Communicable Disease Program (605-226-7456) or Charon Asetoyer of the Native American Women's Health Education Resource Center (605-487-7072). □



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# HIV Center of Excellence

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The Indian Health Service Phoenix Area HIV/AIDS/STD (human immunodeficiency virus/acquired immunodeficiency syndrome/sexually transmitted diseases) Program has been redesigned to include a clinically-based center of excellence for HIV prevention, care, medical treatment, and research and has been relocated to the Phoenix Indian Medical Center. The planning, development, and establishment of the HIV Center of Excellence (HIV COE) was initiated in the fall of 1996.

## Background

The Phoenix Indian Medical Center (PIMC), a 137-bed hospital, provides a wide array of inpatient and outpatient services to some 45,000 American Indians living in six local communities. In addition, PIMC serves as a regional referral center, providing specialty services to a total population of 120,000 American Indians from throughout the Phoenix and Tucson Areas (most of Arizona, Nevada, and Utah). The PIMC employs over 750 staff members, including Native Americans who mirror the varied tribal cultures represented in the community being served, as well as the varying differences and degrees of acculturation within the American Indian community. The PIMC has been the medical provider to the vast majority of American Indians with HIV infection reported in the Phoenix metropolitan area and has provided referral and consultative services for HIV-infected American Indians at reservation-based tribal and Indian Health Service (IHS) facilities throughout the Area, including a substantial number of clients originating from the Navajo and Tucson Areas.

The HIV Center of Excellence was created to address the escalating need for comprehensive care and treatment of HIV/AIDS conditions. Initial planning activities have included: (1) a seroprevalence study to project HIV prevalence trends and to identify future resource needs, (2) a comprehensive chart review and utilization study to quantify and specify resource needs, and (3) a qualitative and quantitative learning needs assessment of providers to obtain the data required to develop a comprehensive training program to enhance the quality of HIV care and treatment.

## Goals and Objectives

The primary goal of the HIV COE project is *to provide the highest quality of medically appropriate clinical care to AI/ANs with HIV disease through establishment of an integrated service delivery system and design approach based on local or regional network initiatives, emphasizing local/regional provider partnerships that include tribal health departments and the IHS.* The secondary goals and projected outcomes of the project include: (1) Enhancing the ability of IHS/tribal health care delivery systems to plan for, develop, and evaluate clinical HIV programs, and (2) Strengthening the skills of IHS/tribal practitioners to provide optimal HIV care and treatment consistent with cultural mores.

The objectives to achieve these goals are to: (1) increase the availability of culturally-sensitive and competent HIV counseling and testing, (2) increase access to client-centered, culturally-relevant case management, (3) improve the quality of life for clients by extending the asymptomatic phase and reducing the occurrence of opportunistic infections through early intervention and health promotion activities that integrate medical, behavioral health, and traditional Native American concepts of healing, (4) expand access to alternative treatments through research and clinical trial activities, (5) increase clinical skills by providing training and education, and (6) strengthen the ability of IHS and tribal programs to plan, develop, implement, evaluate, and sustain research, care, and treatment programs.

## Cultural Component

PIMC has a strong traditional practice component that facilitates accessing traditional healers upon client request and inclusion of traditional practitioners in program planning. A sweat lodge is located on the campus and is used by traditional providers serving clients and staff. Traditional practices such as talking circles are established providing a uniquely supportive environment for culturally competent services.

The HIV COE will provide HIV care and treatment within an appropriate cultural context rather than the conventional approach of western medical model. The model will address issues such as values, beliefs, customs, and degree of acculturation or inculturation that affect concepts of illness and death, health care seeking behaviors, and adherence to treatment regimens. Ethnic, cultural, and class-related factors that shape responses (positive or negative) to HIV/AIDS will be identified and applied in the process of developing a successful, appropriate, and integrated response to the HIV epidemic in the American Indian community.

Cultural relevancy and competency will be maintained

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through a multi-faceted approach. The multi-disciplinary HIV Advisory Committee that includes traditional representation will address care and treatment issues in planning functions and activities. To assure response to tribally-specific cultural issues, the program will utilize Native staff, community and consultant resources.

Tribal practitioners are available for client services and provider education. A major emphasis will be on-going inservice education for providers addressing specific cultural issues as needed.

### Current Funding Sources

Current federal funding for HIV care and treatment is through the Health Resources and Services Administration (HRSA) under the Ryan White Care Act. As currently enacted, funding is limited to metropolitan statistical areas\* with high rates of HIV/AIDS, and to state health departments; there are limited avenues of access to these resources for the IHS/tribal/reservation-based

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\* Metropolitan statistical areas are defined by the U.S. Bureau of the Census. For a thorough definition, see: D'Angelo AJ. American Indians and Alaska Natives: defining where they reside. *The IHS Primary Care Provider*. 1996;21(3):36-42.

facilities providing care to AI/AN living with HIV disease. This roadblock denies rural/reservation-based Indian populations, who are the most needy, with the least alternatives to care, access to these resources. The HIV COE seeks to establish linkages with other entities to explore alternatives in securing support for underserved populations.

### Conclusion

The Centers for Disease Control and Prevention has funded National Regional Minority Organizations (NMRO) such as the Intertribal Council of Arizona to provide HIV/AIDS community education and prevention programs. These programs, however, include neither education or case management of persons with HIV infection nor focused counseling for high risk individuals and HIV-infected people. To supplement these activities of the NMROs, it is critical that the IHS/tribal health systems provide clinically-based intervention services including early detection of HIV infection, focused counseling for high risk individuals, and case management/coordinated care for those infected.

The Phoenix Indian Medical Center HIV Center of Excellence is dedicated to the provision of appropriate and effective care and treatment enabling IHS and tribal programs to assist HIV-infected American Indians and Alaska Natives and maintain the health and well-being of tribal communities. □

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## Homicide and Suicide Among Native Americans, 1979-1992

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*The following is an excerpt from a surveillance report on Native American homicide and suicide published by the National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (CDC), in 1996. Information about obtaining the complete report, at no charge, is included at the end of the article.*

Violence is a leading cause of death and disability for all Americans, but it is a particular threat to American Indians and

Alaskan Natives. From 1979-1992, 4,718 American Indians and Alaska Natives (Native Americans) who resided on or near reservations died from violence: 2,324 from homicides and 2,394 from suicide. During this 14-year period, overall homicide rates for Native Americans were about 2.0 times higher, and suicide rates were about 1.5 times higher, than U.S. national rates. Rates varied widely, however, among the regional Areas of the Indian Health Service (IHS). Native Americans residing in the southwestern United States, northern Rocky Mountain and Plains states, and Alaska, had the highest rates of suicide and homicide. From 1990-1992, homicide and suicide combined ranked as the fourth leading cause of death for Native Americans, exceeded only by heart disease, cancer, and unintentional injuries.

Both homicides and suicides occurred disproportionately among young Native Americans, particularly males. From 1990-1992, suicide and homicide ranked either second or third



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as the leading cause of death for all Native American males 10-34 years of age. For Native American females age 15-34 years, homicide was the third leading cause of death. Almost two-thirds (63%) of male victims and three-quarters (75%) of female victims were killed by family members or acquaintances.

Firearms were the predominant method used in both homicides and suicides. From 1979-1992, just over one-third (38%) of Native American homicide victims were killed with a firearm, with the firearm-related homicide rate among Native Americans increasing 36% from 1985 to 1992. Firearms were used in nearly 60% of Native American suicides.

Several distinctive characteristics of violent death among Native Americans emerged from this study:

- The age distribution of suicide rates for Native Americans is quite unlike that for the general population, because of high rates among young adults and lower rates among the elderly.
- Although firearms are the predominate method for both homicides and suicides, Native Americans have a lower proportion of firearm-related homicides and suicides than is found in the U.S. population.
- The proportion of homicides in which the victim and the perpetrator were family members or acquaintances is somewhat greater for Native Americans than for the U.S. population at large.
- Patterns and rates of homicide and suicide among Native Americans differ greatly from region to region.

There are many promising interventions to prevent violence, but because each Native American community is unique, prevention strategies should be planned with careful attention to local injury patterns and local practices and cultures. Given community differences and the multiple and complex causes of homicide and suicide, a simple and uniform approach is inappropriate. Success will come only through a variety of interventions,

tailored to the specific local settings and problems. Also essential is continued surveillance and evaluation for the effectiveness of the prevention programs that are put into place.

The information in this report should be useful to public health practitioners, researchers, and policy makers in addressing this important public health problem among American Indians and Alaskan Natives.

For our *Surveillance Summary* report, data on homicide and suicide are drawn from three sources:

- detailed mortality tapes prepared by the CDC's National Center for Health Statistics (NCHS) and based on data from state death certificates.
- these same NCHS mortality data, which the IHS has categorized by Area.
- data (homicide only) compiled from the Federal Bureau of Investigation's Supplementary Homicide Report (FBI-SHR) on victim/perpetrator relationship and weapon type.

The report is 50 pages in length, with 16 figures and 12 tables. Tables and figures include years of potential life lost before the age of 65 (YPLL-65), ten leading causes of death by age group and sex, victim and perpetrator relationship, information on weapon type, and detailed breakdowns of homicide and suicide rates by IHS Area and the leading methods, such as firearms, bodily force, or hanging.

Single copies of *Homicide and Suicide Among Native Americans, 1979-1992*, are available, without charge, by writing to the National Center for Injury Prevention and Control, CDC, Division of Violence Prevention, MS-K60, 4770 Buford Highway NE, Chamblee, GA 30341-3724. You may fax your request to 770-488-4349, or obtain the document through our webpage ([www.cdc.gov/ncipc/ncipchm.htm](http://www.cdc.gov/ncipc/ncipchm.htm)). Once at our homepage, click on "Publications" and follow that to an order form for our NCIPC publications. □

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## SPECIAL ANNOUNCEMENT □

### Health Professionals Can Help STOP Gun Violence

Every day in the U.S., 14 children or teens die in shootings associated with suicides, homicides, or unintentional injuries. The epidemic of firearm violence affects all of us.

Health professionals interested in addressing firearm violence with parents and teens can get help from the STOP program, created by the Center to Prevent Handgun Violence and the American Academy of Pediatrics. The STOP (Steps to Prevent Firearm Injury) program kit includes a monograph for background information about the scope of the problem, a suggested reading list, counseling tips, and parent education pamphlets. Since 1994, health professionals in all disciplines have received this kit and have provided firearm injury prevention messages during routine injury prevention

counseling, in public and private primary care settings, in home visiting programs, in schools, and other settings.

As a health care professional, you have the opportunity to speak to children and parents about the guns they are likely to come in contact with in their own homes or in the homes of relatives or friends they visit. With guns in nearly half the homes in the U.S., all children are at risk for gun injury or death.

Gun-related injuries and deaths are preventable! The STOP kit is available free to health professionals. For your free kit, contact the Center to Prevent Handgun Violence, 1225 Eye Street N.W., Suite 1100, Washington, DC 20005 (phone: 202-289-7319; fax: 202-408-1851). □

# Violence and Violence Prevention

*Lemyra DeBruyn, PhD, Behavioral Scientist, Division of Violence Prevention, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia; Beverly Wilkins, Family Violence Prevention Coordinator, Indian Health Service (IHS) Mental Health/Social Services Program, Albuquerque, New Mexico; Maria Stetter-Burns, MPA, Training and Administrative Officer, IHS Mental Health/Social Services Program; and Scott Nelson, MD, Chief, IHS Mental Health/Social Services Program.*

The brief article, *Homicide and Suicide Among Native Americans, 1979-1992*, in this issue, presents salient points from a larger report of the same title published by the Centers for Disease Control and Prevention in 1996. The data on American Indian and Alaska Native (AI/AN) suicide and homicide indicate that violence is a particular threat to AI/AN populations. Figures 1 and 2, depicting IHS data,<sup>1</sup> show the age-adjusted homicide and suicide death rates for American Indians and Alaska Natives compared with the U.S. All Races rates. While the homicide death rates have decreased 40% since 1972-1974, and the suicide death rates have decreased 23% since that same period of time, rates for suicide and homicide in AI/ANs are still higher than those for the U.S. All Races.

As the summary notes, there is great regional variation in rates of homicide and suicide among American Indian and Alaska Native (AI/AN) populations (see Figures 3 and 4). However, no tribe is completely spared of these forms of violence, nor from other violent behaviors, such as child abuse, youth violence, intimate partner violence (domestic violence), and other forms of family violence, all of which can lead to fatal outcomes.

The fact remains that homicide and suicide take a proportionately high number of lives among AI/ANs. Many tribes have expressed growing concern about suicide and homicide, as well as other forms of violence. It can be argued that violence begets violence; therefore, communities must organize to address these issues.

More and more data indicate that violent behaviors are learned and passed from one generation to the next. Leaders in many communities, Indian and non-Indian alike, are taking a long, hard look to determine what must be done to stop the violence. Many tribes have taken a stand against violence and have made it clear that family and community violence is not a traditional or acceptable behavior.

The different patterns of violence in AI/AN communities, as well as the diversity of the AI/AN communities themselves,

Figure 1. Age-adjusted homicide death rates.<sup>1</sup>

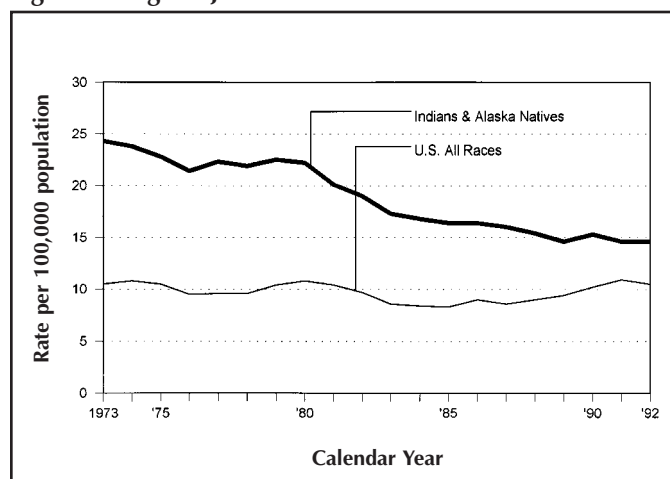
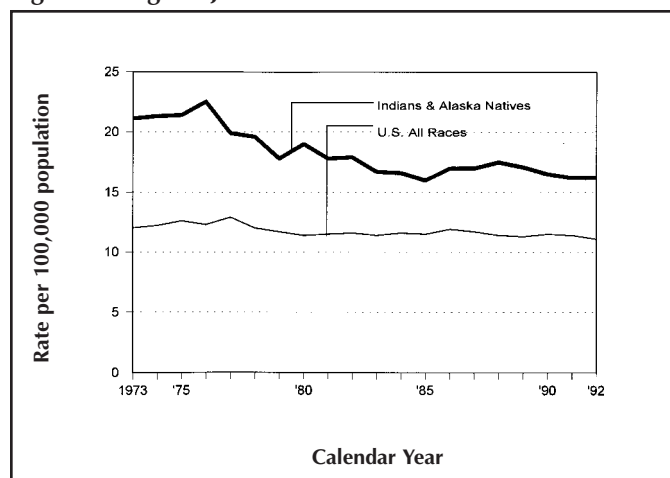


Figure 2. Age-adjusted suicide death rates.<sup>1</sup>

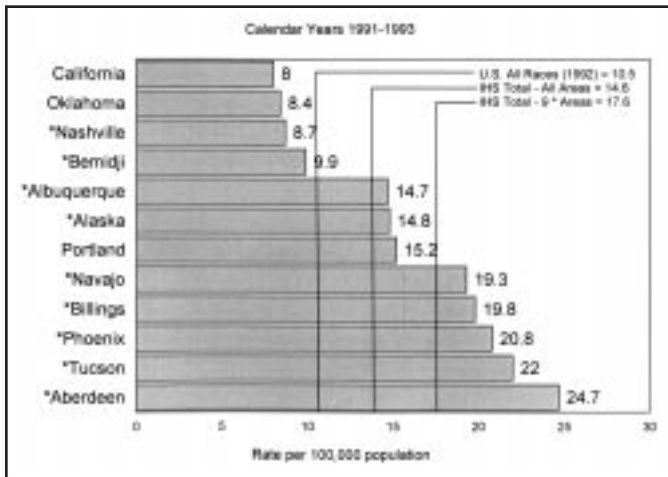


call for multifaceted violence prevention and intervention approaches. To be effective, evidence indicates that violence intervention and prevention efforts must be consistent over time, while demonstrating flexibility as community conditions shift and change.

Table 1 shows the number of years of potential life lost before age 65 from homicide and suicide, a reflection of their impact on AI/AN communities. This is yet another reminder of the need for resources to address fatal and other violence in AI/AN populations.

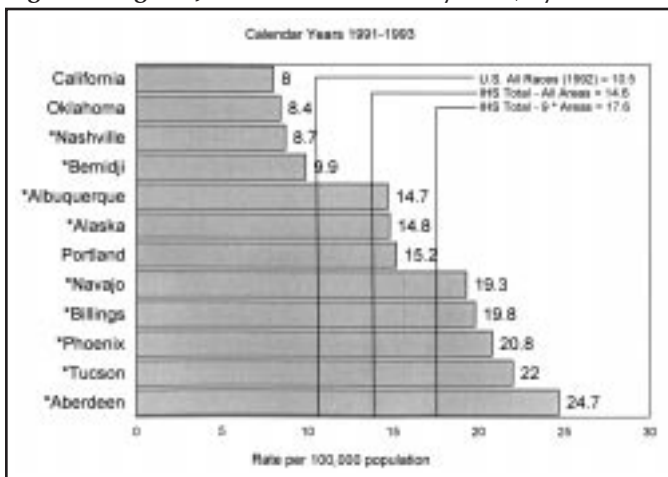
While few in number, resources for assistance have grown

**Figure 3. Age-adjusted homicide mortality rates, by IHS Area.<sup>2</sup>**



\* California, Oklahoma, and Portland areas have documented underreporting of Indian race on death certificates, hence the selection of the other nine areas.

**Figure 4. Age-adjusted suicide mortality rates, by IHS Area.<sup>2</sup>**



**Table 1. Ten leading causes of Years of Potential Life Lost (YPLL) before age 65, American Indians and Alaska Natives, 1990-1992.<sup>3</sup>**

Rank	Cause	YPLL*	%*
1	Unintentional injuries	109,697	29.3
2	Heart disease	26,802	7.2
3	Homicide	24,845	6.6
4	Suicide	24,691	6.6
5	Malignant neoplasms	24,607	6.6
6	Perinatal period	22,379	6.0
7	Congenital anomalies	22,293	6.0
8	Alcoholism	21,964	5.9
9	Sudden Infant death Syndrome	18,460	4.9
10	Human immunodeficiency virus	4,985	1.3
	All other causes	57,398	15.3

\* Numbers and percentages are exactly as found in reference number 3.

in recent years through federal and private foundation funding for violence prevention programs. Two of these resources, as well as information about what one tribe is doing to combat violence, are listed below:

- **American Indian/Alaska Native Community Suicide Prevention Center and Network.**

Administered by the Jicarilla Apache Tribe, Dulce, New Mexico, the AI/AN Community Suicide Prevention Center and Network provides crisis response and suicide prevention program development assistance to tribes throughout the United States. The Center, in its first year of operation, is funded by the National Center for Injury Prevention and Control of the Centers for Disease Control and Prevention and the Indian Health Service Mental Health/Social Services Program.

Trainers from diverse American Indian and Alaska Native communities throughout the United States are available to assist tribes in planning suicide prevention and intervention programs. They come primarily from the health care field, and include social workers, mental health providers, child welfare workers, suicide and domestic violence prevention advocates, and others. Assistance from the Center can include training on suicide crisis and grief intervention, school-based suicide prevention, suicide prevention program and crisis response team development, data collection/surveillance, and program evaluation. The Center also publishes a regular newsletter and will have a website in the future for easy access to information on suicide prevention and intervention.

For information, contact Monica Carrasco, Center Coordinator, Jicarilla Apache Tribe, at 505-759-3162 or 800-942-7440.

- **Family Violence Prevention Coordinator and Child Abuse Prevention Coordinator, Indian Health Service, Headquarters West.**

Suicide and homicide are fatal outcomes often related to other violent behaviors within families and communities. Assistance in addressing violence against women and child abuse among AI/AN communities is offered by the Indian Health Service Mental Health/Social Services Program in Albuquerque, New Mexico.

The Family Violence Prevention Coordinator, Beverly Wilkins, focuses on the prevention of violence against women among AI/ANs. Ms. Wilkins works closely with the Department of Justice in the administration of the Violence Against Women Act (VAWA) grants to 68 AI/AN communities. For information on assistance from the Indian Health Service, VAWA grants, and Victims of Crime Assistance (VOCA) for AI/AN communities through the Office of Victims of Crime, contact Ms. Wilkins at 505-248-4245.

The Child Abuse Prevention Coordinator is Ramona Williams, MSW. Ms. Williams can be reached at 505-248-4245.

- **Violence Prevention Programs funded by the Indian Health Service.**

For information on other violence prevention

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programs funded by the Indian Health Service, contact Maria Stetter-Burns, MPA or Scott Nelson, MD, at 505-248-4245.

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# Assault Injuries on the Hualapai Indian Reservation: A Descriptive Study

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## Introduction

Injuries are the leading cause of death for Americans aged 1-44 years.<sup>1</sup> Intentional injuries due to assault, homicide, and suicide represent approximately one-third of all injuries.<sup>2</sup> In 1992, there were 25,488 homicides in the United States.<sup>3</sup> During 1979-1992, the homicide rate for American Indians was approximately twice the national average.<sup>4</sup> The rate of nonfatal injuries due to assault probably exceeds the homicide rate by more than 100 times.<sup>2,5</sup>

Although the epidemiology of assault-related violence has been studied in several American Indian/Alaska Native communities,<sup>6,7</sup> most studies have focused on general U.S. homicide epidemiology or trend data.<sup>3,4,8</sup> Assaults are a leading cause of injuries on the Hualapai Indian Reservation. As discussed in other articles in this issue, knowledge of the epidemiology of assaults at the local level is required for the development of effective prevention and intervention strategies. This study examined the epidemiology of assault-related injuries that occurred during a three-year period on the Hualapai Indian Reservation.

## Methods

Situated in the high desert of northern Arizona, the Hualapai Indian Reservation (HIR) is home to 1,300 tribal members. Most live within a five mile radius of Peach Springs, Arizona. Ambulatory medical services are provided by the Indian Health Service (IHS) at the Peach Springs Health Center (PSHC). Individuals with serious injuries are trans-

ported at least 50 miles (and up to 140 miles) to various contract care hospitals by helicopter or by ambulance operated by the Peach Springs Emergency Medical Services (EMS).

To be included in this study, each victim had to be an American Indian treated by EMS or PSHC ambulatory and/or contract health services (CHS) for any assault injury that occurred on the HIR between 1992 and 1994. Injuries ranged from minor to severe. Minor injuries include scrapes, bruises, and other injuries that require minimal, outpatient, medical treatment. Severe injuries include fractures of major bones, loss of consciousness, injuries requiring hospitalization, and fatalities. Including minor injuries in this study may skew the data analysis as noted in the discussion section.

An "assault" was defined as a violent event in which one person uses physical force intentionally to cause harm, injury, or death to another. This category includes the following: "attacks," defined as unprovoked physical violence inflicted upon a victim by one or more assailants; "fights," in which physical force is reciprocated between individuals; "domestic violence," where physical abuse is between two individuals who are in or have had an intimate relationship, or between a parent and adult child in the same household; "child abuse," in which a minor is physically abused by an adult; and "rape," which includes all forms of unwanted sexual aggression.

Potential cases were identified by reviewing the PSHC Emergency Room (ER) log and PSHC ambulatory visits for any injury with a reference to assault. The ER log is a list of emergency response incidents compiled by the EMS and PSHC. In addition, a database of ambulatory clinic visits made between December 1, 1993 and December 31, 1994 was obtained from PSHC. Death certificates from the State of Arizona were reviewed to identify homicides from 1992-1994.

Our primary data sources were PSHC medical charts and EMS ambulance run sheets. We obtained additional data from



the Bureau of Indian Affairs Law Enforcement Center (LEC), PSHC Contract Health Services (CHS), and the Arizona Department of Health Services (ADHS). LEC data sets consisted of information contained in police dispatch logs and incident reports. An ADHS database was used to obtain severity and cost data for contract health cases when this information was not available through CHS. We used these data sources to confirm potential assault cases identified in our initial review, and to collect such information as demographics, assault circumstances, nature and severity of injuries, substance use, and referrals to other agencies.

Referrals to social services were identified from entries in patient charts. Law enforcement involvement was identified by notation in patient charts and by reviewing LEC records. EMS and PSHC do not determine blood alcohol levels of assault victims. However, subjective assessments of altered behavior, alcohol odor, and statements made by the victim regarding substance use may be noted in EMS run sheets, PSHC medical records, and LEC incident reports. We determined alcohol or drug involvement if use was noted in the EMS, medical records, or police reports.

Data were collected by the staff sanitarian and field sanitarian, IHS Kingman Field Office, with assistance from IHS Area and district staff. Data were analyzed using Epi Info, Version 6.02 statistical software.

## Results

During the three-year period, 236 individuals were assaulted: 119 were males and 117 were females (Table 1). One person was fatally assaulted, 11 were hospitalized, 223 received outpatient treatment, and severity could not be determined for one victim. Males were 4.5 times more likely than females to require hospitalization for severe injuries (8% versus 2%, respectively). In contrast, females were more likely than males to be treated for injuries requiring outpatient care (98% versus 91%). The average victim age was 27.6 years; the majority (80%) were ages 10-39 (Figure 1).

**Table 1. Assault injury severity by victim's gender.\***

Severity	Victim Gender		Total
	Male Number (%)	Female Number (%)	
Fatal	1 (100.0)	0 (0.0)	1
Hospitalized	9 (81.8)	2 (18.2)	11
Outpatient	108 (48.4)	115 (51.6)	223
Unknown	1 (100.0)	0 (0.0)	1
<b>Total</b>	<b>119 (50.4)</b>	<b>117 (49.6)</b>	<b>236</b>

\* Percentages are calculated across each category.

**Figure 1. Assaults by victim age (N=236)**



Documentation of assailant information in victims' medical records was limited. The information most often reported was gender, race, and number of assailants per incident. Four times more assaults were committed by males than females (102 vs. 22, respectively), for the 124 cases in which gender was reported. The majority of incidents (81%) involved a single assailant.

The relationship between the victim and assailant was recorded in 142 cases (Table 2). In the remaining 94 cases, the identity of the assailant was unknown or not documented. Family members and intimates accounted for 58% of all assaults in which the relationship was documented. Within this category, the majority of assaults were committed by the victim's spouse or intimate. Females were 5.1 times more likely to be assaulted by a spouse or intimate than males. Males were 2.3 times more likely to be assaulted by friends or acquaintances than females.

**Table 2. Relationship of assault victims to assailants, for documented cases.**

Assailant Identity	Victim Gender		Number (%)
	Male	Female	
<b>Family Member (n=82)</b>			
Spouse/Intimate	7	44	51 (35.9)
Sibling	7	2	9 (6.3)
Parent	2	8	5 (3.5)
Other Family Member	8	9	17 (12.0)
<b>Acquaintance (n=60)</b>			
Casual acquaintance	25	10	35 (24.6)
Schoolmate	6	5	11 (7.7)
Friend	5	3	8 (5.6)
Neighbor	1	3	4 (2.8)
Co-worker	1	0	1 (0.7)
Gang member	1	0	1 (0.7)
<b>Total</b>	<b>63</b>	<b>79</b>	<b>142 (100.0)</b>

Alcohol use by the victim, assailant, or both, was documented in more than half (58%) of all cases. Only 9 incidents documented drug involvement. Hospitalized victims had 1.6 times more documented substance involvement than victims receiving outpatient care (64% vs. 39%, respectively). In the fatality case, alcohol involvement was documented for both the victim, a 30-year-old male, and his assailant. Male victims were 2.3 times more likely to have used alcohol than females (59% vs. 26%, respectively).

As expected, most assaults occurred in the evening hours; 50% occurred between 4:00 pm and midnight. Almost half (47%) of assaults occurred on Saturday or Sunday. Although the distribution of assaults by month showed no clear pattern, most occurred in December, August, and January. The type of assault was documented in 86% of cases (Table 3). Fights were most common (36%), followed by domestic violence (22%), attacks (21%), child abuse (4%), and rape (2%). Males were 2.5 times more likely than females to be involved in a fight, while females were over six times more likely than males to be victims of domestic violence, and twice as likely to be victims of child abuse. Assault injuries due to gangs were practically non-existent, with only one case documented. Attacks and fights accounted for the majority of assaults requiring hospitalization (46%, or 5/11, each); there was one hospitalization due to domestic violence.

Most assault injuries (52%) were caused by bodily force, followed by blunt objects (21%) (Table 4). The type of weapon was not identified in 39 cases. Blunt objects were implicated most frequently (46%) for severe injuries requiring hospitalization. In contrast, for milder injuries requiring only outpatient care, bodily force was most often implicated (51%). Only three incidents involved assault by a firearm. A motor vehicle was used to commit the one homicide.

We determined the physical location of assaults in 160 cases (Table 5). The majority (42%) occurred in residential areas, followed by outdoor locations (15%), institutional (9%), and business locations (2%). Seventy-six assaults (32%) occurred in unknown locations. The majority of assaults in residential settings occurred at the victim's home (74%).

The costs of medical care include transportation, hospitalization, and outpatient treatment. For 10 of the 11 hospitalizations, costs ranged from \$1,236 to \$31,964, with an average of \$8,024. Cost data were not available for the majority of assault cases that received outpatient care. However, 19 outpatient visits had costs ranging from \$315 to \$4,133, with an average of \$1,062.

Social services involvement was documented in only 40% of child abuse cases (Table 6). Documentation of social services involvement was even less in cases of rape (20%), domestic violence (8%), fights (7%), and attacks (4%). Police involvement, as documented in the medical chart, was noted in all cases of child abuse, followed by rape (80%), domestic violence (65%), fights (64%), and attacks (64%). Police records confirming the reported referral of police cases were found for 60% of rape cases, 46% of domestic violence cases, 40% of child abuse, 39% fights, and 28% of attacks.

## Discussion

The typical assault victim on the Hualapai Indian Reservation is a young to middle-aged adult injured by bodily force during a fight in a residential area by a known male assailant. Males and females are equally likely to be assault victims; however, when milder, outpatient, injuries are excluded, male victims outnumber females by a factor of five. Other studies have shown that most assaultive violence is committed by males,<sup>5,9</sup> and that males are more likely to be victims of violence than women. Intervention and prevention efforts would be most effective targeting fights, the leading cause of assault injuries in males. Equal efforts aimed at domestic/family violence would address the leading cause of assault injury to females.

**Table 3. Assault type by victim's gender.**

Type of Assault	Males	Females	Total (%)
Fights	61	24	85 (36.0)
Domestic violence	6	46	52 (22.0)
Attacks	29	21	50 (21.2)
Rape	2	3	5 (2.1)
Unknown	18	16	34 (14.5)
Total	119	117	236 (100.0)

**Table 4. Type of weapon used in assaults.**

Type of Weapon	Number (%)
Fist, foot, body	122 (51.7)
Blunt object	49 (20.8)
Knives and sharps	13 (5.5)
Vehicle	4 (1.7)
Fire/heat	1 (0.4)
Other	5 (2.1)
Unknown	39 (16.5)
Total	236 (100.0)

**Table 5. Physical location of assaults.**

Location	Number (%)
Residential	98 (41.5)
Outdoors	36 (15.3)
Institutional	21 (8.9)
Business	5 (2.1)
Unknown	76 (32.2)
Total	236 (100.0)

**Table 6. Referral of assault cases to social services and law enforcement.**

Type of Assault	Number	Referral to Social Services*		Citation of Police Involvement*		Record filed at Police Dept.	
		No.	(%)	No.	(%)	No.	(%)
Brawls/fights	85	6	(7.1)	54	(63.5)	33	(38.8)
Domestic violence	52	4	(7.7)	34	(65.4)	24	(46.2)
Attack	50	2	(4.0)	32	(64.0)	14	(28.0)
Child abuse	10	4	(40.0)	10	(100.0)	4	(40.0)
Rape	5	1	(20.0)	4	(80.0)	3	(60.0)
Unknown	36	1	(2.8)	16	(44.4)	3	(8.3)
Total	236	18	(7.6)	150	(63.6)	81	(34.3)

\*As noted in medical chart.

In more than half the cases, the victim and/or assailant had reportedly been using alcohol or drugs. As injury severity increased, so did alcohol involvement. The amount of documented substance involvement is likely an underestimation because (1) a suspicion of substance use may not have been noted in the medical chart; and (2) in the majority of incidents, little or no assailant information was recorded.

The association between alcohol and assaultive violence is well-known. Alcohol probably contributes to assaults by removing inhibitions that may otherwise prevent violence.<sup>2</sup> Studies have shown that alcohol is involved in at least half of all homicides,<sup>5</sup> and more than half of all domestic violence incidents.<sup>10</sup> Researchers have estimated that 80% of American Indian homicides are alcohol-related.<sup>11</sup> One study of urban trauma hospitalizations found that 93% of American Indians admitted for stab wounds tested positive for a blood alcohol concentration (BAC) exceeding 0.1%.<sup>7</sup> A BAC of 0.1% is the threshold for legal determination of intoxication in many states.

As expected, most assaults occurred during the evening hours on Saturday and Sunday. Other studies have shown higher rates of homicides on weekends.<sup>5</sup> Such temporal data should be useful in targeting interventions to times of high assault activity. For example, interventions could include weekend saturation patrols and DUI (driving under the influence) checks, and increasing awareness and planning alternative community activities especially during weekends and during potential high assault months.

Much information about victims and especially assailants was missing from the records at PSHC, EMS, and to a lesser extent, the LEC. For example, the relationship of the assailant to the victim was not documented in 40% of cases, the assailant's gender was not noted in 48% of cases, and the location of the assault was not documented in 32% of cases. Other studies have found similar poor or missing data in

hospital records regarding assault circumstances.<sup>9,12</sup> Complete and accurate data are vital for designing effective injury prevention intervention strategies. To determine the circumstances of assault incidents, improved documentation is needed in medical records. This may be approached through a combination of staff training and policy development and implementation.

Treatment and prevention in assault cases, especially child abuse, rape, and domestic violence, are typically handled by social services and mental health professionals. Linking data between health care providers, social services programs, and police should be helpful in identifying high-risk persons and developing intervention programs. For example, effective substance abuse rehabilitation can reduce substance abuse and also decrease criminal activity.<sup>5</sup> The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requires accredited facilities to implement policies and procedures and staff training for identification, treatment, and referral of all victims of abuse, such as domestic violence, child abuse, and rape.<sup>13</sup> The low rates of documented referrals to social services indicate that improvements are needed in referring and tracking assault victims and high-risk individuals. In addition, tribes should be encouraged to adopt and enforce law enforcement codes that address this issue.

The costs of injury are high, making prevention a top priority. These costs include the financial burden to the medical care system, loss of economic productivity through disability and death, and psychological and physical pain and suffering in victims, family, and friends. This study focused on the health care costs issue. We could not gain access to cost data where private insurance or AHCCCS\* paid part or all of

\* The Arizona Health Care Cost Containment System (AHCCCS) is Arizona's alternative to Medicaid.

the health care costs. Although the average cost data that we obtained are underestimates, it is clear that assaults are a drain on the IHS and medical care budget. Assuming the average costs of hospitalization (\$8,023) and outpatient treatment (\$1,236), a conservative estimate of the cost of assault-related injuries on the HIR for 1992-1994 is \$325,090. If just one assault-related hospitalization could be prevented, the resulting financial savings could be used, for example, to provide diphtheria, tetanus and pertussis (DTP), polio, and hepatitis A immunizations to 385 children, and influenza immunizations to 385 elderly persons.

The predominance of minor injuries affects this study because the circumstances of minor injuries may differ from those of severe injuries.<sup>14</sup> This is confirmed by the differences shown between outpatient and hospitalized cases in such factors as substance involvement, victim gender, victim/assailant relationship, assault type, and weapon. Ideally, all injuries should be characterized and monitored. However, to most effectively reduce the total cost of injuries, given limited staff and resources, priority should be given to characterizing and preventing the most severe injuries. If resources allow, and where interest is shown for particular types of injuries such as domestic violence, these injuries may be studied in greater detail.

### Study Limitations

The total number of assault cases identified in this study is an underestimate because the ambulatory visit database did not capture visits prior to December 1, 1993. Underreporting of assault incidents by victims may also underestimate the total numbers of assaults in this community. Incompleteness of patient records limits the amount of information that could be collected for many of the incidents. Inability to access costs and records for those victims with private insurance and AHCCCS limited the calculation of cost estimates.

### Conclusions

Assaultive violence is a complex problem rooted in social and economic factors.<sup>15</sup> To begin solving the problem will require a comprehensive, systematic, multi-disciplinary, community-based approach. This will first require raising community awareness of assaultive violence and studying the parameters mentioned in this narrative that make up the types of assaultive violence existing in the community. After this, a community-based approach involving coalitions, partnerships, and training will be needed. Focusing prevention and intervention efforts first on fights and domestic violence will address the leading causes of assault injuries in males and females, respectively.

Concurrent improvement is required in the tracking of assault victims and high-risk individuals by health providers and law enforcement, and their referral to social services and other programs. Improved documentation of the circumstances of assault incidents in medical records is essential for the design of effective injury prevention intervention strategies.

### Acknowledgements

We are grateful to the Hualapai Tribal Council for their support of this project; the Peach Springs Health Center, Peach Springs Emergency Medical Service, and the Bureau of Indian Affairs Law Enforcement Center for their assistance in records retrieval; Alan Dellapenna, Acting Director of the Division of Environmental Services, IHS Phoenix Area, and Michael Welch, IHS District Environmental Health Specialist, for assistance in data collection, interpretation, and technical consultation; and Jon Peabody, IHS District Sanitarian, and L.J. David Wallace, Centers for Disease Control and Prevention, for manuscript review.

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**Circulation:** The Provider (ISSN 1063-4398) is distributed to more than 6,000 health care providers working for the IHS and tribal health programs, to medical schools throughout the country, and to health professionals working with or interested in American Indian and Alaska Native health care. If you would like to receive a copy, send your name, address, professional title, and place of employment to the address listed below.

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