

# THE IHS PRIMARY CARE PROVIDER

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



October 1999

Volume 24, Number 10

## Age- and Sex-Adjusted Comparison of Wisconsin Native American Mortality with General Wisconsin Population, By Cause of Death 1986-1995

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### Abstract

**Introduction:** The purpose of this study is to compare Native American (NA) mortality in Wisconsin with total Wisconsin mortality, by age, sex, area of residence, and cause of death.

**Methods:** Adjusting for age and sex, standardized mortality ratios (SMRs) were calculated for Wisconsin Native Americans for 1986-1995, using the 1990 total Wisconsin population as a reference and death certificate data to count and categorize deaths.

**Results:** Statistically significant high NASMRs were found for total deaths (SMR = 1.28,  $p < .005$ ), diabetes mellitus (SMR = 2.87,  $p < .005$ ), heart disease (SMR = 1.16,  $p < .005$ ), cirrhosis (SMR = 3.89,  $p < .005$ ), kidney disease (SMR = 2.72,  $p < .005$ ), motor vehicle accidents (SMR = 2.26,  $p < .005$ ), other accidents (SMR = 1.83,  $p < .005$ ), and homicide (SMR = 1.89,  $p < .005$ ). Significantly low NASMRs were found for total cancer (SMR = 0.89,  $p < .025$ ), breast cancer (SMR = 0.51,  $p < .005$ ), and lymphoma (SMR = 0.53,  $p < .025$ ). There was substantial concordance between male and female SMRs. NA SMRs were above 1 for all five year age groups below 75. There was substantial variation in NA SMR by county. Comparisons with national data are discussed.

**Conclusion:** Wisconsin's NAs exhibit higher than expected death rates for several causes of death, several age groups, and both genders.

### Introduction

Current emphasis on environmental justice by several Federal agencies necessitates the evaluation of health status of minority populations. This paper analyzes the mortality experience of Wisconsin Native Americans (NA) as part of an on-going overall evaluation of their health status by the Medical College of Wisconsin. To date, most of this work has focused on chemical contamination of Great Lakes and Wisconsin inland lake fish' and the possible effects on the NA who eat them.<sup>2,3,4</sup>

Native Americans residing in the U.S. in general have been reported to have higher (compared to U.S. all races) death rates from many causes, including tuberculosis, alcoholism, accidents, diabetes mellitus, homicide, pneumonia/influenza, and suicide, according to the U.S. Public Health Service.<sup>5</sup> That report notes an

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age-adjusted overall death rate among U.S. NA that was 12% higher than the general U.S. population in 1989-91.

There are significant regional differences in mortality rates among NAs. The 1989-91 period was characterized by a 35% greater age-adjusted NA death rate for the Minnesota-Wisconsin-Michigan region than for all Indian Health Service Areas in the U.S.<sup>6</sup> This report will explore in greater detail age- and sex-adjusted death risks among Wisconsin NA, compared to the Wisconsin total population, by disease category, geographic area, sex, and age.

## Methods

**Disease Categories.** All major disease categories listed in Table 2.5 of the Wisconsin Vital Statistics report,<sup>7</sup> which were characterized by 200 or more deaths per year and by five or more NA deaths per year, except for Other arterial disease, All defined conditions, All other diseases, and All other external causes, were evaluated in this analysis. In addition, two major disease categories, Circulatory Disease and Accidents and Adverse Effects, were evaluated with respect to their subcategories instead of as a whole (except that Atherosclerosis was not included), and Malignant Neoplasms was evaluated with respect to each of its subcategories in addition to being evaluated as a whole. Table 1 lists each of the disease categories that were evaluated, along with the respective ICD-9 codes.

**Table 1. Major causes of mortality in Wisconsin, 1984-1993**

Disease	ICD-9 Code	Deaths per Year (1984-93)
Malignant Neoplasms	140-208	9,830
Gastrointestinal	150-159	2,505
Respiratory & Intrathoracic	160-165	2,373
Breast	174-175	878
Genital Organs	179-187	1,198
Urinary Organs	188-189	467
Other Lymphomas & Hematop.	200-203	603
Diabetes Mellitus	250	909
Circulatory Disease:		
Heart	391-398, 402, 404-429	15,205
Cerebrovascular Disease	430-438	3,342
Pneumonia & Influenza	480-487	1,604
COPD	490-496	1,546
Chronic Liver Disease & Cirrhosis	571	387
Nephritis & Nephrosis	580-589	402
Congenital Anomalies	740-759	248
Condition of Perinatal Period	760-779	250
Accidents & Adverse Effects:		
Motor Vehicle	810-825	792
Other	800-807, 826-949	841
Suicide	950-959	609
Homicide & Legal Intervention	960-978	192

**Calculation of Age- and Sex-Adjusted Expected Death Rates.** The total Wisconsin population was used as the comparison population. Annual death rates were calculated for 38 age-sex

groups from 1986 through 1995, using the number of total deaths for each disease category specified in the ten Wisconsin Vital Statistics reports corresponding to those years and the 1990 Wisconsin census.<sup>8</sup> The 19 age groups were 0 (prior to first birthday), 1-4, 5-9, 10-14, etc., continuing in 5-year increments, with 85+ as the last category. Expected death rates for the Native American (NA) population were then calculated by applying the Wisconsin death rate for each of the 38 age-sex groups to the respective population, according to 1990 census, and then adding the number of expected deaths in each of those 38 groups.

**Test for Statistical Significance.** A chi square statistic was computed using the formula  $\chi^2 = (O-E)/E$ , where O = observed NA deaths, and E = age-sex-adjusted expected NA deaths. The other three cells of the 2x2 table (NA non-deaths, Wisconsin deaths, Wisconsin non-deaths) were ignored because these numbers are so large compared to NA deaths that their contribution to the chi square statistic is negligible.

## Results

There were 2,158 total deaths among age- and sex-adjusted Wisconsin NA in 1986-95, compared to 1,714 expected deaths (ratio = 1.26,  $p < .001$ ). The very young age composition of Wisconsin's NA population is indicated by the fact that without age adjustment, there would have been more than twice as many expected NA deaths during this same time period.

**Table 2. Native American deaths and age-adjusted expected deaths by disease and sex, Wisconsin, 1986-1995**

Disease	MALE			FEMALE			TOTAL
	NA Deaths	Expected Deaths	Ratio	NA Deaths	Expected Deaths	Ratio	
Cancer (all)	200	222	0.90	169	193	0.87	0.89+
CA-GI	63	55	1.14	42	42	1.00	1.08
CA-Respiratory	61	67	0.91	37	37	1.00	0.94
CA-Breast				20	39	0.51+	0.51+
CA-Genital	20	27	0.74	24	21	1.12	0.91
CA-Urinary	9	12	0.72	10	6	1.67	1.03
Lymphoma	6	14	0.42+	8	12	0.66	0.53+
Diabetes	35	18	1.99*	72	20	3.67*	2.87*
Heart Disease	360	294	1.23*	239	225	1.06	1.16
Stroke	61	49	1.23	55	61	0.91	1.05
Pneumonia-infl.	30	27	1.07	33	26	1.25	1.16
COPD	44	37	1.18	28	24	1.19	1.19
Cirrhosis	42	12	3.56*	30	7	4.47*	3.89*
Kidney Disease	17	8	2.14*	23	7	3.41*	2.72*
Congenital	17	13	1.28	13	10	1.25	1.31
Perinatal	14	16	0.88	3	12	0.26+	0.69
Accident-other	68	35	1.95*	21	15	1.42	1.83*
Accident-MV	95	41	2.29*	43	20	2.20*	2.26*
Suicide	41	35	1.18	11	8	1.31	1.20
Homicide	26	958	1.28*	920	756	1.22*	1.26*
TOTAL	1226						

\* = Significantly > 1 (p < .05)      + = Significantly < 1 (p < .05)

Table 2 reveals great variation in the ratio of NA observed to expected deaths (hereafter referred to as NA standardized mortality ratio or NASMR), and that there was much concor-

dance between NASMRs in males (M) and females (F). Significantly high NASMRs were found for diabetes mellitus (total [T],M,F), heart disease (T,M), cirrhosis (T,M,F), kidney disease (T,M,F), motor vehicle accidents (T,M,F), other accidents (T,M), homicide (T,M), and all deaths (T,M,F). Significantly low NASMRs were found for cancer (T), breast cancer (T,F), and lymphoma (T,M). In all of these cases, the male and female NASMR were on the same side of 1, and they were generally quite close. There were no instances where the NASMR was significantly different than 1 for one sex and on the other side of 1 for the other sex.

Table 3 demonstrates the contribution that seven (7) selected diseases make to the 444 excess deaths (observed minus expected) among NA during 1986-95. These seven diseases account for 365 of the 444 total excess deaths. It may be relevant that each of these diseases could be considered either diabetes related (diabetes, heart disease, kidney disease) or alcohol related (chronic liver disease, motor vehicle and other accidents, homicide).

**Table 3. Major relative causes of death among Wisconsin Native Americans, 1986-1995**

Cause	#Deaths	Expected #Deaths	Risk Ratio	Excess Deaths
Motor Vehicle Accidents	138	61	2.26	77
Diabetes	107	37	2.87	70
Chronic Liver Disease	72	19	3.89	53
Heart Disease	602	519	1.16	83
Other Accidents	91	50	1.83	41
Kidney Disease	40	15	2.72	25
Homicide	34	18	1.89	16
Subtotal	365			
All Deaths	2158	1714	1.26	444

Table 4 shows a comparison of the 1986-95 data with similar data from 1984-93. Although the NASMRs for each disease changed slightly (some increased and some decreased), all of those which were significantly above or below 1 in 1984-93 remained so in 1986-95, and vice versa.

Table 5 shows the same information for Menominee and Ashland counties. The striking fact about these two counties is the much higher NASMRs for total deaths (1.92 and 1.91, compared to 1.26 for 1986-95) and for almost each specific cause of death as well, as compared with Wisconsin Native Americans in general. The difference in cancer death rates is particularly striking. Whereas Wisconsin Native Americans as a group had significantly fewer cancer deaths than expected for both time periods, Menominee and Ashland counties had greater numbers of cancer deaths than expected in the 1984-93 time period

(NASMR = 1.29 and 1.34, respectively) and in the 1986-95 time period (1.51 and 1.52, respectively;  $p < .05$ ).

**Table 4. Native American deaths and age-adjusted expected deaths by disease, Wisconsin, 1984-93 and 1986-95**

Disease	84-93			86-95		
	NA Deaths	Expected Deaths	Ratio	NA Deaths	Expected Deaths	Ratio
Cancer	340	408	0.84+	369	415	0.89+
CA-GI	104	97	1.07	105	97	1.08
CA-Respiratory	91	101	0.90	98	104	0.94
CA-Breast	19	39	0.49+	20	39	0.51+
CA-Genital	35	46	0.75	44	48	0.91
CA-Urinary	19	18	1.07	19	18	1.03
Lymphoma	11	25	0.44+	14	26	0.53+
Diabetes	101	35	2.93*	107	38	2.87*
Heart Disease	590	534	1.11*	599	519	1.16*
Stroke	103	110	0.94	116	110	1.05
Pneumonia-Influ.	55	52	1.06	63	53	1.16
COPD	58	57	1.03	72	61	1.19
Cirrhosis	78	19	4.18*	72	19	3.89*
Kidney Disease	34	14	2.45*	40	15	2.72*
Congenital	31	24	1.31	30	23	1.31
Perinatal	21	29	0.79	17	28	0.69
Accident-Other	88	49	1.84*	89	50	1.83*
Accident-MV	131	63	2.08*	138	61	2.26*
Suicide	45	43	1.04	52	43	1.20
Homicide	32	16	2.03*	34	18	1.89*
Total	2038	1699	1.21*	2146	1714	1.26*

\* = Significantly > 1 ( $p < .05$ )      + = Significantly < 1 ( $p < .05$ )

**Table 5. Native American deaths and age-adjusted expected deaths by disease, Menominee and Ashland Counties, 1984-93 and 1986-95**

Disease	84-93						86-95					
	Menominee			Bad River (Ashland)			Menominee			Bad River (Ashland)		
	NA Deaths	Exp. Deaths	Ratio	NA Deaths	Exp. Deaths	Ratio	NA Deaths	Exp. Deaths	Ratio	NA Deaths	Exp. Deaths	Ratio
Cancer	46	36	1.29	19	14	1.34	52	34	1.51*	22	14	1.52*
Diabetes	20	3	6.50*	10	1	8.99*	20	3	6.07*	12	1	10.08*
Heart Disease	81	50	1.63*	25	18	1.41	69	48	1.44*	23	17	1.33
Stroke	13	10	1.26	5	3	1.48	11	10	1.07	5	3	1.48
Cirrhosis	17	2	10.90*	5	1	7.30*	11	2	7.28*	5	1	8.45*
Accident Other	17	4	3.90*	8	2	4.55*	16	4	3.61*	7	2	3.91*
Accident MV	27	5	5.26*	3	2	1.51	27	5	5.42*	6	2	3.12*
Homicide	9	1	6.86*	1	1	1.64	6	1	4.14*	1	1	1.48
TOTAL	314	153	2.05*	102	59	1.73*	297	154	1.92*	113	59	1.91*

\* = Significantly > 1 ( $p < .05$ )

**Figure 1. Expected vs actual deaths by age**

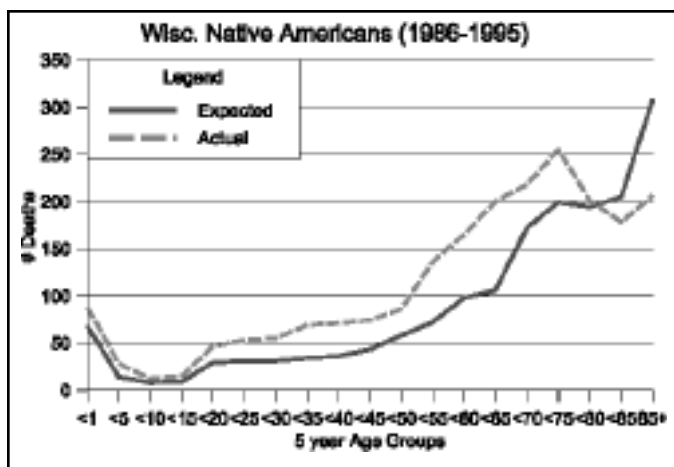


Figure 1 shows NASMRs by age groups. From infancy to age 64, NASMRs were consistently above 1, ranging from 1.29 to 2.03. After age 65, NASMR decreased sharply and continuously, going below 1 for the first time after age 80, and down to 0.67 in the 85+ age group.

### Discussion

The high ratios of observed to expected deaths for Native Americans were widely distributed. By disease, they generally applied to both genders to a roughly equivalent degree. They applied to every 5-year age category below the age of 75. There were numerous NASMRs that were significantly greater than 1 in many counties for many causes of death.

Comparison of ratios of NA to all-race death rates in other parts of the U.S. may help to put some of these data into a wider perspective. Where NASMRs (for a cause of death) are significantly above 1 in Wisconsin, a similar finding for that cause for the U.S. in general could be indicative of genetic influences or lifestyle or environmental factors that apply to U.S. NAs in general. On the other hand, where NASMRs are significantly above 1 in Wisconsin but not elsewhere, environmental effects specific to Wisconsin would be suggested. Table 6 shows such comparisons for all those that were reported by the Indian Health Service in 1994.<sup>5</sup>

Particularly because cancer NASMRs were low for Wisconsin Native Americans in general, the comparatively high cancer NASMRs for Menominee and Ashland counties is all the more striking. This suggests the possibility of environmental causes, and therefore this issue should be the subject of further inquiry and continued surveillance.

Of the seven causes of death described in Table 3 of this report as accounting for the great majority of excess deaths in NAs, six of which were included in the above Indian Health Service report, five of them (diabetes, chronic liver disease, motor vehicle accidents, other accidents and homicide) were also reported by the IHS as having very high observed to expected death ratios (1.5 to 3.5). In fact, these five diseases were each characterized by rates that were among the six highest in the IHS

report. The only disease that accounted for a large number of excess deaths in Wisconsin, but not in the IHS report, was heart disease, but the ratios were not too dissimilar (1.16 vs. 0.9). In both comparisons, cancer was significantly less than 1.

**Table 6. Comparison of age-adjusted ratio of Native Americans to total population mortality rates, Wisconsin vs. the U.S. for selected diseases**

Disease	Age-Sex-Adjusted Ratio of WINA Mortality Rate to Wisconsin Mortality Rate (1986-1995)	Age-Adjusted Ratio of U.S. NA Mortality Rate to U.S. Mortality Rate (1989-1991)
Malignant Neopl.	0.89+	0.7
Diabetes Mellitus	2.87*	2.5
Heart Disease	1.16*	0.9
Cerebrovascular Dis.	1.05	0.9
Pneumonia/Influenza	1.16	1.5
COPD	1.19	0.7
Chronic Liver Dis.	3.89*	3.5
Other Accidents	1.83*	2.7
Motor Vehicle Acc.	2.26*	2.6
Suicide	1.20	1.4
Homicide	1.89*	1.5
All Causes	1.26*	1.1

\* = Significantly > 1 (p<.05)      + = Significantly < 1 (p<.05)

The Wisconsin and U.S. comparisons are not strictly comparable, for a number of reasons. There were slight differences in the age adjustment procedure; there was no sex adjustment in the U.S. comparison; and the time frame was slightly different in the two reports. These different methodologies should not have made much difference in ratios, since the methodological differences were minor and sex distribution is similar in Wisconsin and the rest of the U.S.

In general, the similarities in the U.S. and Wisconsin ratios are much more striking than the differences, but what differences there are may reflect true regional differences. Causes of death that have high Wisconsin NASMRs and which also are above the U.S. ratio include heart disease (1.16 vs. 0.9), chronic liver disease (4.18 vs. 3.5), diabetes (2.93 vs. 2.5), and homicide (2.03 vs. 1.5). Malignant neoplasm, although characterized by low ratios in both comparisons, was higher in Wisconsin than in the U.S. (0.89 vs. 0.7).

It may be significant that all seven causes of death listed in Table 3 as accounting for almost all NA excess deaths in Wisconsin may be either diabetes related or alcohol related. Diabetes itself has a very high NASMR (2.93). Because of the high prevalence of diabetes in NAs, it is likely that they would be at high risk for death from heart disease<sup>1</sup> and kidney disease.<sup>12</sup> It is likely that many deaths from myocardial infarction with diabetes as an underlying factor or from diabetic nephropathy would be coded as myocardial infarction or kidney disease, respectively, as the underlying cause of death, rather than as diabetes.

Alcohol could account for the excess hepatic deaths, accidental deaths, and homicide deaths. However, with respect to

the hepatic deaths, NAs in Northern Wisconsin are known to consume a great deal of fish that are contaminated with PCBs.<sup>4</sup> PCBs have been shown to be associated with liver disease in human occupational<sup>13,14</sup> and animal<sup>15</sup> studies, and one unpublished study has shown an association between blood levels of PCBs and liver disease in Wisconsin Native Americans who consume a great deal of fish from Lake Superior.<sup>16</sup>

It is also possible that some of the excess heart disease deaths could be due to fish consumption, as suggested by a study that showed an association between fish consumption, hair mercury levels, and myocardial infarction.<sup>17</sup> This would be consistent with the high levels of mercury in Lake Superior Walleye<sup>4</sup> and the association of hair mercury level with Walleye consumption in Wisconsin Native Americans.<sup>16</sup>

It must be stressed that an NASMR for a cause of death of 1 or less than 1 does not rule out the possibility that the cause of death may have an NASMR of significantly greater than one for some NA subpopulations, or that there are some NA subpopulations that are exposed to environmental causes for that cause of death. For example, the cancer NASMR in Wisconsin is only 0.89, but it is much larger than expected on the basis of national data (Table 6), and some Wisconsin Native American populations have been shown in recent years to have very high cancer death rates.<sup>18,19</sup>

The low NASMRs above the age of 80, despite the consistently high NASMRs below age 65, may seem surprising, but it is similar to national data.<sup>6</sup> It could be that NAs are exposed to a variety of environmental influences that selectively result in the death of the genetically more susceptible persons (i.e., those who are more susceptible to death in general) at the younger ages, leaving only the healthiest NAs by age 75, by which time the adverse environmental influences may have ceased.

There has been much discussion of cigarette smoking as a cause of excess mortality among Native Americans. Yet, this analysis fails to support the view that smoking differentially contributes to NA deaths in Wisconsin, as compared to other races. The two causes of death that are most strongly associated with cigarette smoking, respiratory cancer and COPD, are not at all elevated in Wisconsin NAs compared to other races. There were 98 respiratory cancer deaths and 72 COPD deaths among NAs in this study, compared to 104 and 61 expected deaths, respectively, from these diseases. However, this does not negate the fact that cigarette smoking is a common cause of serious morbidity and mortality in Wisconsin NAs, just as it is for other races. Nor does it rule out the possibility that increases in smoking behavior among NAs may in the future result in high NASMRs for smoking-related diseases, including not only lung cancer and COPD, but other cancers and heart disease as well.

Miscoding of the underlying cause of death on death certificates is a well known and common phenomenon, which is likely to have large effects on analyses such as these. However, this should not greatly influence the relationship between NA and other deaths by disease category unless there is a systematic bias operating that results in differential miscoding by race. We do not know if such a systematic bias does in fact exist. If it does, it would influence death rate comparisons by disease category, but

not for total deaths.

Miscoding of race, on the other hand, could also result in inaccurate comparisons for total deaths. Underreporting of Indian race on death certificates has in fact been demonstrated in several areas in the U.S., and the complete extent of this underreporting is not known.<sup>5</sup> To the extent that such underreporting exists in Wisconsin, that would mean that the reported NASMRs would be underestimates of the true NASMRs. Thus, the numerous reported NASMRs that are significantly greater than 1 would take on even more significance.

Another source of underestimation of the NASMRs in this report is the fact that the reference population used here to compare with the NA population was the total Wisconsin population, which included the NA population. However, this would have only a minor influence, since the NA population of Wisconsin accounts for less than 1% of the total. The inclusion of blacks (which account for 5.0% of Wisconsin's total population) in the reference population would be expected to decrease the NASMR compared to what it would be if the reference population was all white, since blacks in general have much greater mortality rates than whites.<sup>9</sup>

The census information, which supplied the denominator for all death rate calculations, could also be a source of some error, since a 10-year period was covered in the report. However, the 1990 census that was used is near to the mid-point of that 10-year period. From 1980 through 1990, the NA Wisconsin population increased by 32%, while the white Wisconsin population increased by 2.4%.<sup>7,10</sup> The large increase in NA population could be a source of some error if the increase prior to, versus after 1990 was much different.

In summary, Wisconsin Native Americans have relatively high age-adjusted death rates for many causes of death. This paper describes those findings but sheds little light on their causes. Targeted analytical epidemiological research will be required to follow up on these findings and identify those causes.

## Acknowledgments

This project was funded in part by a contract from Great Lakes Inter-Tribal Council, Rhinelander, Wisconsin, and was done in cooperation with the Bad River Band of Lake Superior Chippewa Indians in Odanah, Wisconsin and the Menominee Indian Tribe of Wisconsin in Keshena, Wisconsin. The Authors wish to thank these Native American organizations for their assistance in completing this project. □

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# The Center for Native American Health: a Unique Collaboration in Indian Health

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For the last several years, Indian health care has been rapidly evolving. In addition to the changes in the organization of the Indian Health Service, more tribes are choosing to manage their own health programs, and more Indian communities are becoming involved in activities to improve the health of their people. In addition, universities and academic medical centers are becoming more involved in Indian health issues and activities.

As more tribes and urban programs begin to take a more active role in developing and expanding their health programs, they are seeking resources and assistance from a variety of new sources. The Center for Native American Health (CNAH) at the University of Arizona is an example of a unique collaboration in Indian health that assists tribes and urban programs as

they develop health and prevention programs in their communities by finding new resources for Indian health.

## Background

The CNAH was founded in 1995 by Dr. James Galloway, an Indian Health Service cardiologist, after tribal leaders in the Southwest requested more assistance and resources as they developed their own health programs and activities. The CNAH represents a collaboration among the University of Arizona, the Indian Health Service, and the tribes of the Southwest. The mission of the CNAH is to assist tribes to further develop their own capacity to deliver health care, prevent disease, and promote health in an integrated fashion. The vision of the Center for Native American Health is healthy Native Americans through an optimal health care system achieved by integrating traditional, primary, and subspecialty quality health care, health promotion, and disease prevention activities.

## Organization

The CNAH is a unit in the Arizona Prevention Center at the University of Arizona in Tucson. The Director, Dr. Galloway, also directs the Native American Cardiology Program located at the University of Arizona Medical Center. The rest of the staff of the CNAH are mainly faculty and staff at the University of Arizona. From time to time, individuals

from other organizations are detailed to the CNAH to work on specific projects.

The CNAH has grown markedly in the past four years, with new staff and multiple accomplishments. A list of current CNAH staff members is included in Table 1.

**Table 1. Current staff of the Center for Native American Health**

Name	Position
James Galloway, MD, FACP, FACC	Director
Yvette Roubideaux, MD, MPH	Deputy Director
Nan Carle, PhD	Associate Director for Administration
Mark Veazie, DrPH	Assistant Director of Community Health Practice
Joe Lachowicz, PhD	Assistant Director for Prevention Services
Keith Provan, PhD	Assistant Director for Health Systems
Nicky Teufel-Shone, PhD	Nutrition and Physical Activity
Edie Pacheco, RN	Assistant Director for Clinical Services
Carol Locust, EdD	Traditional Practitioner
Josh Gormally, BA	Assistant Director for Health Careers Pathways
Melissa Navarrette	Administrative Secretary
MPH Interns	University of Arizona

### Program Activities and Direction

The CNAH is directed by an Advisory Council that consists of tribal health directors and urban Indian program directors. Representatives of other Indian health organizations are also members of the Advisory Council. The Advisory Council meets quarterly and has set six priority areas for the activities of the CNAH:

- Prevention
- Public Health/Community Health Practice
- Health Systems Administration
- Clinical Services
- Telemedicine
- Health Careers Pathways

The CNAH is a service organization, and its activities are based on requests and direction from the Advisory Council. Initiation of activities and programs is agreed upon by consensus of the members of the Council, and then CNAH staff develop and implement the requested activities. Examples of current activities are included in Table 2.

The CNAH is a model for collaboration due to its unique structure and service orientation. The CNAH represents a unique collaboration among the Indian Health Service, the University of Arizona, tribes and urban Indian programs. This collaboration uses financial, personnel, and technical resources from both the University and the Indian Health Service to create an organization dedicated to improving the health of Indian people. The CNAH is currently funded through multiple sources, including government agencies, in-kind university resources, grants, foundations and private donations. Consultative services of both university faculty and Indian Health Service personnel are used to respond to the requests of

the tribes and urban Indian organizations.

**Table 2. Examples of current activities of the CNAH**

Priority Area	Activities
1. Prevention	Development of Wellness Centers, Family Activity Center, Teen Pregnancy Prevention; 3rd Annual Prevention Conference to showcase tribal and urban programs 5/99; Diabetes in American Indian Communities Conference 10/99; Workshop on Resources for American Indians with Disabilities 9/99
2. Public Health/Community Health Practice	Technical Assistance and training in epidemiology, Epi-Info, data sources, public health models; Crafting the Future of Indian Health conferences 6/98, 12/99
3. Health Systems Administration	Evaluation of tribal health systems; Roundtable on Managed Behavioral Health Care; leadership and management training development
4. Clinical Services	New subspecialty services in Dermatology, Cardiology, Pulmonology, Psychiatry on reservation and via telemedicine
5. Telemedicine	New telemedicine services and equipment at four sites
6. Health Careers Pathways	Health careers clubs, university field trips, and health professional visits for reservation high school students

### A Model for Collaboration

The service orientation of the staff of the CNAH is unique for a university program, and fortunately, current funding and support of the staff allow for this type of commitment to serve the tribes and urban programs in the Southwest. This commitment to a service orientation is the foundation of the trust that the CNAH has built with the tribes and urban organizations represented on the Advisory Council.

For further information on the CNAH, contact Dr. James Galloway, MD, FACP, FACC, Director, at (520) 626-7909. The Center for Native American Health will also showcase its activities in a collaboration forum at the upcoming Crafting the Future of American Indian and Alaska Native Health into the Next Millennium in San Diego, California, December 9-11, 1999.

Address correspondence to: Yvette Roubideaux, MD, MPH, Deputy Director, Center for Native American Health, P.O. Box 245037, Tucson AZ 85724; phone (520) 626-7199; fax (520) 626-8080; e-mail [yvetter@u.arizona.edu](mailto:yvetter@u.arizona.edu). □

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# Pocket Geriatric Reference Available Free of Charge

## Geriatrics At Your Fingertips, 1998/99 edition

This small (approximately 3 1/2" x 6") 151 page guide to geriatric care, published by the American Geriatrics Society, is packed full of charts and tables. It is a great clinical pocket reference, portable and practical, containing information about medications, common geriatric problems, and geriatric assessment. Free copies are available for all Indian health program providers caring for the elderly. "I've used this handbook in Zuni over the past six months and I've found it to be a very useful and handy reference in my care of elderly patients," says Bruce Finke, MD, Coordinator, IHS Elder Care Initiative.

To receive your complimentary copy, complete the form below and mail or fax it to the IHS Clinical Support Center, Two Renaissance Square, Suite 780, 40 North Central Avenue, Phoenix Arizona 85004; fax (602) 364-7788.

*This handbook is provided to you by the IHS Elder Care Initiative, Division of Clinical and Preventive Programs, and the IHS Clinical Support Center as part of a continuing effort to promote high quality care for AI/AN Elders.*

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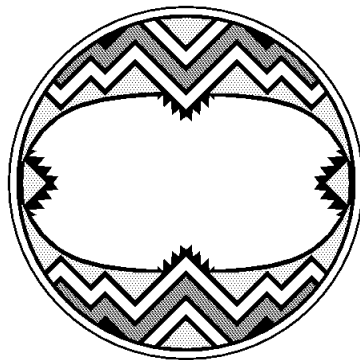
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## WE HAVE MOVED!

The IHS Clinical Support Center moved October 22, 1999 from its previous location to the following new address:

The IHS Clinical Support Center  
Two Renaissance Square, Suite 780  
40 North Central Avenue  
Phoenix, Arizona 85004

The new phone number is (602) 364-7777. The e-mail address for *The Provider* will remain the same, [the.provider@phx.ih.gov](mailto:the.provider@phx.ih.gov). The new fax number is (602) 364-7788.



# Why Should We Advocate for the Oral Health of the Indian Elderly?

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David B. Jones, DDS, MPH, IHS Geriatric Dental Consultant,  
IHS Headquarters, Rockville, MD

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According to the 1990 census, Indian elders make up 11 percent of the Indian population.<sup>1</sup> This number has undoubtedly increased in the past decade with the aging of the American Indian/Alaska Native (AI/AN) population. The fastest growing segment of the U. S. population is the 85+ age group. This may not be true for the AI/AN population, as the median age of American Indians is only 24.2 years, however, it is hard to dispute that AI/AN people are living longer.

In 1991, the IHS Dental Program found that 42 percent of Indian elders age 65 years and older had no remaining teeth or were edentulous. The highest rates of edentulism were found in the Aberdeen Area, with more than one out of every two Indian elders so affected.<sup>2</sup>

If Indian elders are living longer, and if six of every ten elders are maintaining some or all of their teeth, what is happening with their oral health care? In 1995, only three percent of oral health services provided by the IHS Dental Program were directed to the Indian elder population. These

services were provided only to those elders who accessed the dental clinics.

Why should we advocate for the oral health of AI/AN elders? Administrators and clinicians of the IHS and tribal dental programs have a responsibility to increase access to oral health care for the Indian elder population. We must consider the needs of the functionally independent older adult, the frail older adult, and the functionally dependent adult, while, at the same time, meeting the emergent needs of the predominantly young AI/AN population. In future issues of *The IHS Primary Care Provider*, we will discuss strategies for increasing the access and oral treatment of AI/AN elders utilizing targeting and more efficient methods of providing elder dental services.

## References

1. U.S. Department of Health and Human Services, Indian Health Service. Indian Health Focus: Elders. Office of Planning, Evaluation, and Legislation, Division of Program Statistics, Rockville, MD; 1996
2. Niendorff WJ. The Oral Health of Native Americans, a Chart Book of Recent Findings, Trends and Regional Differences. Division of Clinical and Preventive Services, Dental Field Support and Program Development, Albuquerque, NM; 1994.

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## INDIAN AGING CONFERENCE OF INTEREST □

### December 2-4, 1999; Arlington, Virginia

American Society On Aging presents Promoting Independence and Quality of Life for Older Persons: An International Conference on Aging. For more information, contact Shari Wilson, Conference Coordinator, phone (800) 628-2281; e-mail [swilson@buffalo.edu](mailto:swilson@buffalo.edu).



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*The Provider* is published monthly by the Indian Health Service Clinical Support Center (CSC). Telephone: (602) 364-7777; Fax: (602) 364-7788; e-mail: [the.provider@phx.ihs.gov](mailto:the.provider@phx.ihs.gov). Previous issues of *The Provider* (beginning with the February 1994 issue) can be found at the CSC home page, [www.csc.ihs.gov](http://www.csc.ihs.gov).

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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 and nursing 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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