

THE IHS PRIMARY CARE PROVIDER



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Update on the JCAHO's Measurement Mandate

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The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has announced the ORYX initiative, which requires all hospitals that seek JCAHO accreditation to use a JCAHO-approved performance measurement system to provide data about patient outcomes and other indicators of patient care. In the June 1997 article, *JCAHO's Measurement Mandate*,¹ describing this initiative, it was stated that there were 60 JCAHO-approved measurement systems for healthcare organizations to choose from.

The ORYX initiative continues to maintain a high profile for healthcare organizations as evidenced by the fact that, as of June 27, 1997, 161 additional measurement systems had been submitted to the JCAHO for approval. The Phoenix Project - Indian Health Service Indicator Measurement System, containing 25 indicators (11 inpatient and 14 for ambulatory care), was one of these. These systems are currently under review, and JCAHO will make final decisions in November 1997.

In the original ORYX initiative, hospitals were required to select two clinical performance measures, and could **not** select both indicators from the ambulatory care set. The latest information from the Joint Commission is as follows:

In response to concerns expressed by very small hospitals about their capacity to meet the Joint Commission's new performance measurement requirements outlined in the ORYX initiative and about the value of comparisons generated, the Joint Commission's Board of Commissioners has amended

the requirements to help these hospitals implement comparative performance measurement activities.

In general, the plan, which includes input from the Joint Commission's Work Group on Accreditation Issues for Small and Rural Hospitals, calls for the following:

- Hospitals with an average daily census of 30 or fewer patients (calculated from data derived during the last year) [are] to be permitted to determine and report to acceptable measurement systems (i.e., those listed by the Joint Commission as meeting the initial screening requirements) indicator data points on a quarterly, rather than monthly, basis.
- Even smaller hospitals, those with an average daily census of less than 10, but an ambulatory care population of greater than 150 visits per month, would be able to select two ambulatory care measures in lieu of a required inpatient measure.

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- Hospitals with an average daily census of less than 10 and an ambulatory care population of less than 150 would be temporarily excused from the ORYX requirements.
- Finally, proposed incremental measurement requirements over time will be adjusted for very small hospitals to the extent necessary to maintain statistically valid data point determinations on a quarterly basis.

Potentially affected hospitals will be notified of these revised requirements through a letter in the near future.

The Joint Commission has indicated that laboratories and ambulatory care facilities will be required to select an indicator measurement system by the end of 1998. Additional indicators meeting laboratory requirements will be added to the Phoenix Project - Indian Health Service Indicator Measurement System and submitted to JCAHO for approval in the next year. New indicators will be added to the system annually.

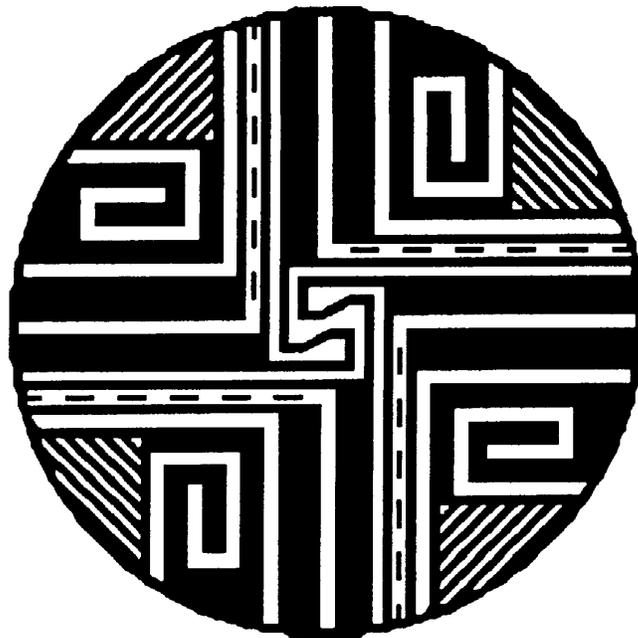
If the Phoenix Project - Indian Health Service Indicator Measurement System is approved by the JCAHO, it will be

available throughout the Indian health system. Use of the Phoenix Project system instead of any of the others approved by the Joint Commission can save participating Indian health facilities a subscription fee of \$5,000 to \$11,000 annually. In addition, Indian health facilities will be spared the expense and inconvenience of hiring additional full time employees to perform duplicate data entry into another vendor's software.

A program will be designed for training appropriate personnel about using the Phoenix Project - Indian Health Service Indicator Measurement System. As a result of this training, we anticipate improved documentation on PCC and inpatient records providing complete, quality data on the patient's medical record; enhanced accuracy and timeliness of data entry, thereby improving our databases; decreased reporting errors, thus improving the timeliness of billing and revenue collections; and accurate and timely Health Summary Sheets, ultimately improving the provision of patient care.

Reference

1. Warren A, File W, Ramsey P, Hathcoat RL, Lehman L. JCAHO's measurement mandate. *The IHS Primary Care Provider*. 1997;22(6):93-95. □



The IHS Scholarship Program

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Introduction

The Indian Health Care Improvement Act (IHCIA, Public Law [P.L.] 94-437) was enacted on September 30, 1976. The original purpose of Title I¹ (Indian Health Manpower) of this Act was “to augment the inadequate number of health professionals serving Indians and remove the multiple barriers to the entrance of health professionals into the Service and private practice among Indians.” After several reauthorizations and amendments,² the purpose of Title I was modified. Today, the expressed purpose of Title I is “to increase the number of Indians entering the health professions and to assure an adequate supply of [Indian] health professionals to the Service, Indian tribes, tribal organizations, and urban Indian organizations involved in the provision of health care to Indian people.”³ The amendment (P.L. 102-573, Indian Health Care Amendments of 1992) to Title I (Purpose) of the IHCIA changed the focus to Indian tribes, tribal organizations, and urban Indian organizations, which is a more global purpose than the one expressed in 1976. Moreover, the purpose of Title I today complements Section 2 (Findings) of the IHCIA and the Indian Health Service (IHS) goal: to raise the health status of

Indians “to the highest possible level and to encourage the maximum participation of Indians in the planning and management of those services.”⁴

Appropriations for Title I programs are made under the Indian Health Professions line item of the Department of Interior appropriations bill. Indian Health Professions appropriations have been earmarked for a myriad of programs⁵ providing an elaborate network of activities designed to support Health Professions education, recruitment, training, manpower, and a tribal matching scholarship program. The principal beneficiaries of these programs and activities are Indian health programs: IHS; tribal programs contracted under the Indian Self Determination Act (ISDA), P.L. 93-638, and the “Buy Indian” Act (25 U.S.C. 47); and urban Indian programs assisted under Title V of the IHCIA.

Title 1, Sections 103 and 104

The IHCIA originally comprised seven titles, including Title I.⁶ In 1976, eligibility for the *Health Professions Preparatory Scholarship Program for Indians* (Section 103 of Title

1 The amendments to Title I, particularly in P.L. 102-573, the Indian Health Care Amendments of 1992, which amended the Title I purpose, define and clarify it. First, the name of the title is changed to “Indian Health Professions” from the original name of “Indian Health Manpower.” Indian Health Professions is a more precise term than Indian Health Manpower, as well as more politically correct. The term Indian Health Professions also reflects the amendment to Section 4(n) (“Health Profession”) of the IHCIA, which defines only health professions as eligible for the programs in Title I (allied health professions also meet the Section 4(n) definition of health profession). Finally, Section 101 (Purpose) of Title I was amended to include the broader purpose of increasing the number of Indian health professionals to serve in Indian health programs, IHS programs, tribal programs, urban Indian programs, and Indian organizations, rather than to just augment the number of Indian health professionals in merely IHS and private practice.

2 The IHCIA was reauthorized in 1980 (P.L. 96-537), 1988 (P.L. 100-713), and in 1992 (P.L. 102-573). The IHCIA was amended twice more in 1988 (P.L. 100-579 and P.L. 100-690) and once in 1990 (P.L. 101-630).

3 Section 101 (Purpose) of the IHCIA, as amended.

4 In his opening statement before the Indian Affairs Committee of the United States Senate on the President’s proposed budget for FY 1997, Michael H. Trujillo, MD, MPH, Assistant Surgeon General, and Director of the IHS stated that “[t]he goal of Indian Health Service is to raise the health status of American Indians and Alaska Natives to the highest possible level.” This statement is consistent with Section 2(b) of the IHCIA which provides, as follows:

A major national goal of the United States is to provide the quantity and quality of health services which will permit the health status of Indians to be raised to the highest possible level and to encourage the maximum participation of Indians in the planning and management of those services.

5 Congress added to Title I, after 1976, Section 108 (Indian Health Service Loan Repayment Program); Section 110 (Tribal Recruitment and Retention Program); Section 112 (Quentin N. Burdick American Indians Into Nursing Program); Section 114 (INMED Program, which has been the vehicle for the INMED Replication Program at the University of North Dakota); Section 120 (Matching Grants to Tribes For Scholarship Programs); and Section 217 (Quentin N. Burdick Indians Into Psychology Program).

6 Title I was originally comprised of six sections: Section 101 (Purpose), Section 102 (Health Professions Recruitment Program for Indians), Section 103 (Health Professions Preparatory Scholarship Program for Indians), Section 104 (Health Professions Scholarship Program), Section 105 (Indian Health Service Extern Programs), and Section 106 (Continuing Education Allowances).

I) was limited to Indians.⁷ While both Indians and non-Indians were eligible for the *Health Professions Scholarship Program* (Section 104), Indians received priority in consideration for these scholarships.

Currently, eligibility for Section 103 is limited to state- and federally-recognized Indians who can prove Indian lineage to at least their grandparents or parents. Eligibility for Section 104 is limited to enrollees in federally-recognized tribes.

The Health Professions Preparatory Scholarship Program for Indians (authorized by Section 103) is a grant program for Indians who have completed high school and have demonstrated the ability to complete pre-health professions study. Section 103⁸ offers scholarships for compensatory preprofessional education, or curricula leading to acceptance into a health professions degree program, other than medicine or dentistry. Scholarships for students in compensatory preprofessional curricula include the preparatory categories of pre-nursing, pre-medical technology, pre-physical therapy, pre-pharmacy, pre-social work, and pre-dietetics. The duration of a compensatory preprofessional scholarship is for a maximum of two academic years.⁹

There is also an undergraduate education scholarship offered under the authority of Section 103(b)(2) for pre-medicine and pre-dentistry. It is for a maximum of four academic years.

Funding under Section 103 for full and part-time students includes tuition, fees, other reasonable costs (books, travel, etc.) and a 10-month stipend, which is currently \$828 per month for full-time students and is pro-rated for part-time students. There is no active duty service obligation for Section 103 scholarship recipients.

The scholarship recipients who are funded under Section 103 ideally continue their education by matriculating into Section 104 (Indian Health Professions Scholarship). Section 104 scholarships are for Indians who have been accepted into a health professions degree program. There are more than 20

different health professional education degrees funded under the Section 104 authority. The Section 103 and Section 104 respective curricula and degree programs are listed in an annual Federal Register notice,¹⁰ which also announces the availability of funds and the eligibility requirements. Under Section 104, scholarship recipients are funded for a maximum of 4 years for full-time students, and for a maximum of 8 years for part-time students. Funding is for 12 months and includes tuition, fees, other reasonable costs, and a stipend (which is the same as that received by the Section 103 scholarship recipients).

All Section 104 scholarship students must perform a service obligation equal to a minimum of 2 years and a maximum of 4 years (a 2-year service obligation for 1 and 2 years of funding, a 3-year service obligation for 3 years of funding, and a 4-year service obligation for 4 years of funding). Part-time Section 104 scholarship recipients serve the same minimum 2-year obligation with up to a 4 year obligation based on full years of funding.¹¹

Section 104(b)(3)(A)(I)-(iv) provides that scholarship recipients must serve their obligation in one of four options: IHS, a tribal program contracting or compacting under the ISDA, urban Indian programs assisted under Title V of the IHCA, or in private practice in a health professional shortage area¹² serving a substantial number of Indians. Moreover, Section 104(b)(3)(B) provides that scholarship recipients may serve their obligation at a program that is (1) located on the reservation of the tribe in which the scholarship recipient is enrolled, or (2) serves the tribe in which the recipient is enrolled. This allows scholarship recipients the option of serving their tribe and tribal members, assuming it is consistent with Section 104(b)(3)(A)(I)-(iv).

A total of 839 Section 103 and Section 104 scholarship

7 Section 4(c) defines Indians as state- or federally-recognized, including those who can prove lineage to the second generation (grandparents).

8 Section 103(b) provides that scholarship grants made under the authority of Section 103 shall be for (1) compensatory preprofessional education and (2) pregraduate education.

9 The pre-professional disciplines announced currently for Compensatory Preprofessional studies (e.g., pre-nursing, pre-medical technology, pre-physical therapy, pre-pharmacy, and pre-dietetics) don't result in a baccalaureate degree. Therefore, these Section 103 scholarships are for the first year or two of a baccalaureate degree program, and the curriculum must be concentrated primarily in the sciences, which are required before one can enter nursing, medical technology, physical therapy, pharmacy, and dietetics.

10 In the 1982 *Federal Register* notice (47 FR 15912) announcing the availability of scholarship funds, there were six health professions listed: Clinical Laboratory Technology, Radiology Technology, Optometry, Nursing, Medicine, and Dentistry. Today, there are more than 30 compensatory preprofessional education, pregraduate education, and health professions listed in the *Federal Register* notice.

11 Part-time students must be enrolled either 50% or 75% of the full-time enrollment at their respective college or university. For up to 2 full years of funding, or any fraction thereof, they must serve a 2-year service obligation. For more than 2 years and any fraction thereof up to 3 full years of funding, they must serve a 3-year obligation. For more than 3 years and any fraction thereof up to 4 full years of funding, they must serve a 4-year obligation.

12 The Health Resources and Services Administration (HRSA), an operating division in the Department of Health and Human Services, determines what are health professional shortage areas (HPSA) based on criteria in Section 332 of the Public Health Service Act (42 U.S.C. 201 et seq.). Section 332 defines HPSA as (1) urban and rural geographic areas, (2) population groups, and (3) facilities with shortages of health professionals.

recipients participated in the 1995-1996 academic year. See Figure 1 for a breakdown of how the funding has been divided between Section 103 and Section 104 students over the period from 1978 through 1996. Figure 2 shows the number of new students by year from 1978 through 1996, and Figure 3 shows the disciplines of all scholarship students from 1978 through 1996.

Pursuant to Section 105 of the IHCA, Section 104 scholarship recipients are “entitled” to an externship in the IHS (see below for a description of the externship program).

Section 102

The *Health Professions Recruitment Program for Indians*, authorized by Section 102 of the IHCA, as amended, currently provides grant funding to the Lac Courte Oreilles Tribe (Hayward, WI); Eastern Band of Cherokee Tribe (Cherokee, NC); South Central Foundation of Alaska (Anchorage, AK); and the Northwest Portland Area Indian Health Board (Portland, OR). Three universities (the University of California at Berkeley, the University of Hawaii, and the University of Oklahoma) were original recipients of the grant and participated in the Section 102 program from 1978 until 1995. The university

programs recruited American Indians and Alaska Natives (AI/AN) to study public health. Many of the graduates of these Masters of Public Health (MPH) programs are currently working in Indian health programs. The tribal programs were funded after 1995.¹³

Figure 1. All IHS scholarship recipients, 1978-1996, N = 4,389

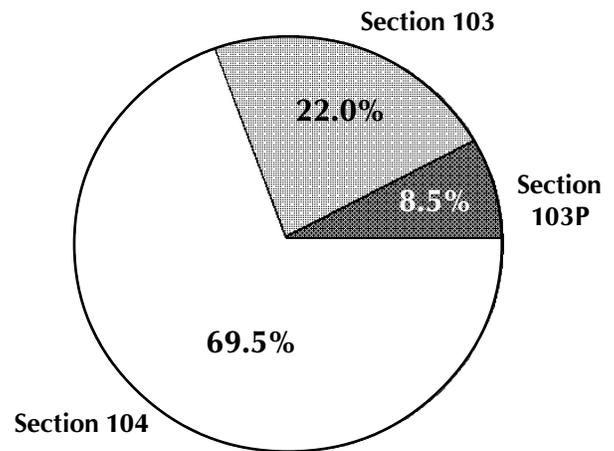
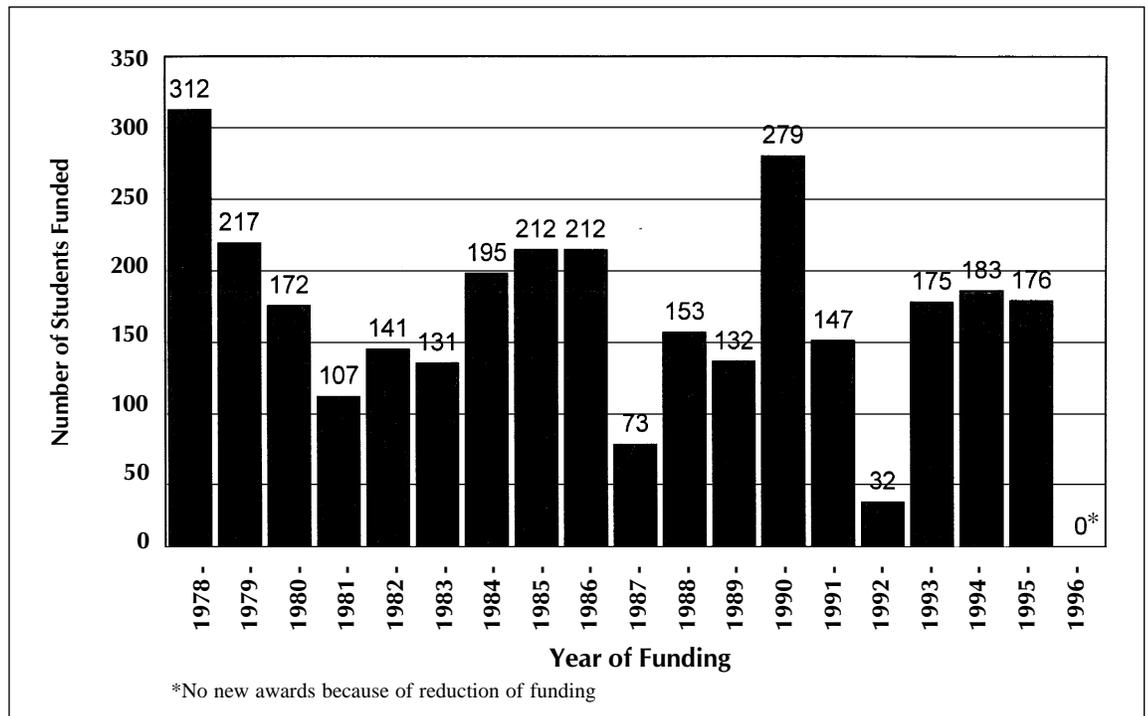


Figure 2. IHS scholarship program, new students funded by year.

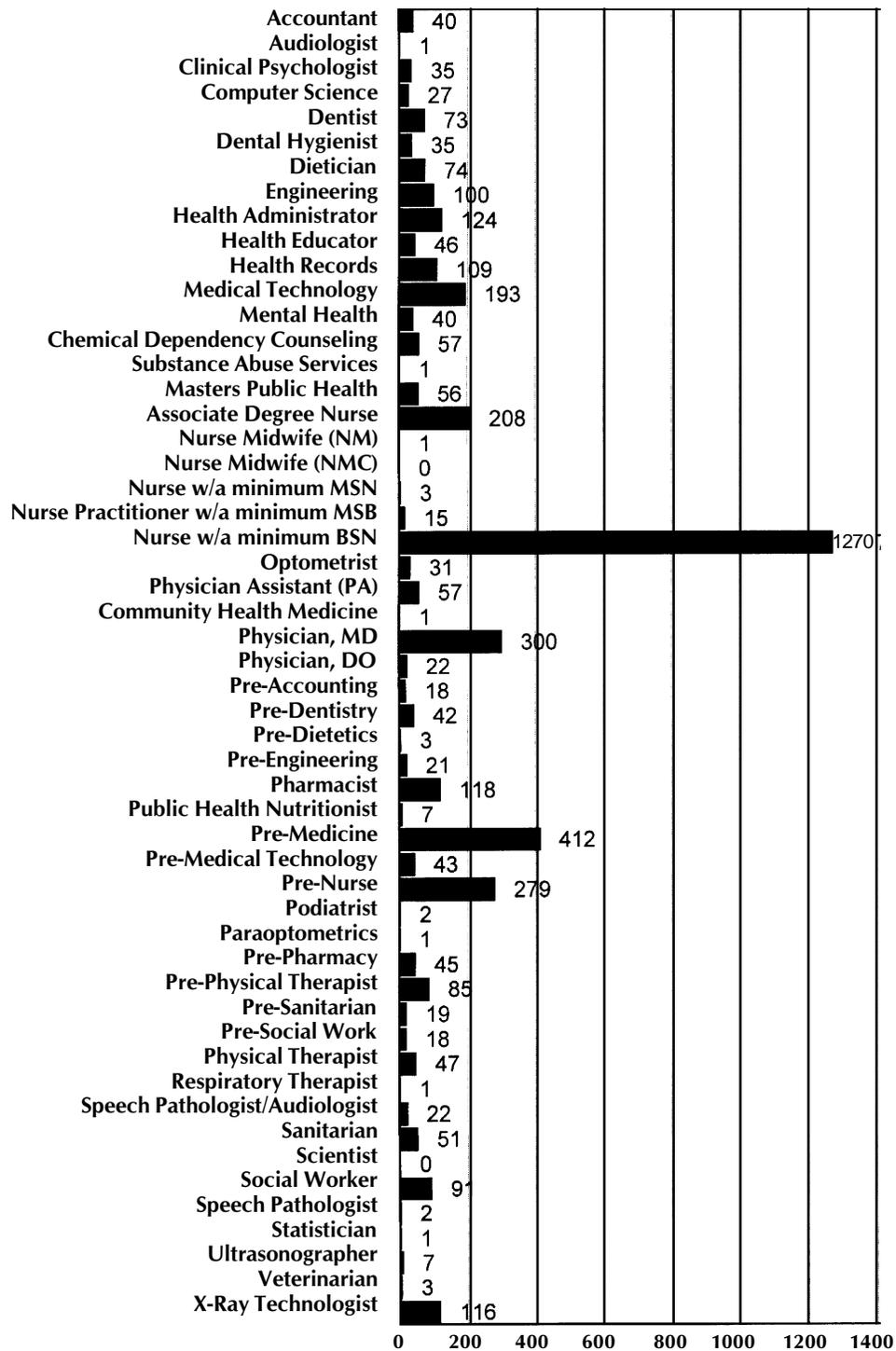


¹³ The tribal programs funded under Section 102 are identifying Indians for health professions educational training, assisting them to enroll in courses of study in such health professions, and if they are not qualified to enroll in health professions education study and training, to undertake such postsecondary education or training as may qualify them for enrollment. These tribal programs are also publicizing existing sources of financial aid available to Indians enrolled in health professions courses of study.

Section 105

IHS Extern Programs (Section 105) entitles Section 104 scholarship recipients to an externship in the IHS during a non-academic period of time prior to graduation for up to 120 days during any calendar year. Other individuals “enrolled in a course of study” are also eligible for the externship in the IHS.

Figure 3. All IHS scholarship recipients by discipline, 1978-1996.



The externship allows students to experience working in the Indian health system. The students are reimbursed travel costs to and from their work sites, receive a salary, and accrue leave. Both Commissioned Corps and Civil Service federal employment systems are available to the externs who participate under the Section 105 authority. Approximately 240 students on average participate annually in the extern program.

Section 106

Funds were appropriated, only once, in fiscal year 1978, for *Continuing Education Allowances* (authorized under Section 106 of the IHCA) under the Indian Health Professions appropriation line item. Under Section 106, the IHS is authorized to encourage health professionals to join or continue in the IHS by providing them allowances to enable them to take leave of their “duty stations for professional consultation and refresher training courses.” Although up to \$1 million is authorized for “postdoctoral training programs for health professionals” under Section 106, no funds have been appropriated for this activity under the Indian Health Professions line item since 1978.

Section 108

The *Indian Health Service Loan Repayment Program* (IHSLRP) is authorized under Section 108 of the IHCA. It was established “to assure an adequate supply of trained health professionals necessary to maintain accreditation of, and provide health care services to Indians through, Indian health programs . . .” Contracts are awarded to IHSLRP participants based on the site in which they are employed. Sites are ranked among Indian health programs, based on the criteria of need or vacancy. Preference goes to Indian applicants and applicants recruited through the efforts of tribal (ISDA), “Buy Indian,” or urban Indian (Title V of the IHCA) programs. Section 108(k) also provides that the IHS shall ensure that “Indian health programs administered by an Indian tribe or tribal or health organization receive consideration on an equal basis with programs administered directly by the” IHS.

Contracts must be signed by the IHSLRP participant for a minimum of 2 years.¹⁴ In the IHSLRP contract, the IHS agrees to pay participants up to \$30,000 per year toward the payment of health professions educational loans accrued during their health profession education and/or training.¹⁵ The federal government considers the loan repayment contract award as

taxable income. Therefore, in addition to the loan repayment award of up to \$30,000, the IHSLRP participant receives an additional 31% of such contract award for tax liability, which is sent directly to the Internal Revenue Service on behalf of the IHSLRP participant.¹⁶ IHSLRP participants agree in the contract to, among other things, work for a minimum of 2 years in their assigned Indian health program. The IHSLRP made 252 contract awards in fiscal year 1995.

Section 110

Under Section 110 (the *Tribal Recruitment and Retention Program*), Indian tribes and tribal and Indian organizations are awarded grants on a competitive basis to “recruit, place, and retain health professionals to meet the staffing needs of Indian health programs.” The current recipients of the Section 110 grants are the following: Lac Coutre Oreilles Tribe; Northwest Portland Area Indian Health Board; Sisseton Wahpeton Tribe (Sisseton, SD); Southeast Alaska Regional Health Center (Juneau, AK); Five Sandoval Indian Pueblos, Inc., Bernalillo, NM; Consolidated Tribal Health at Ukiah, California; and the Fort Mohave Tribe (Parker, AZ).

Section 112

The *Quentin N. Burdick American Indians Into Nursing Program* is authorized by Section 112 of the IHCA. Under Section 112, private schools of nursing, tribally-controlled community colleges and tribally-controlled postsecondary vocational institutions, and nurse midwife and nurse practitioner programs are funded for the purpose of increasing the number of nurses, nurse midwives, and nurse practitioners who deliver health care services to Indians. The following institutions are funded under the authority of Section 112: the State University of New York at Buffalo; the University of Wisconsin at Eau Claire; Arizona State University in Tempe, AZ; Salish Kootenai College in Pablo, MT; Oglala-Lakota Community College in Kyle, SD; and the Recruitment of American Indians Into Nursing Program at the University of North Dakota at Grand Forks.

Section 114

Section 114 (*Indians Into Medicine Program*, INMED) authorizes the IHS to provide that at least three colleges and universities expand the “Native American health careers recruitment program known as the ‘Indians into Medicine Program.’” Although the primary emphasis of the INMED Program is the training and support of physicians, the overall emphasis of the INMED Program is training and support of

14 Section 108(f)(1)(B)(II)(iii) mandates a minimum 2-year contract for IHSLRP participants.

15 Section 108(g)(1)(A)-(C) provides that government and commercial loans regarding undergraduate or graduate (or both) health professional education are eligible for loan repayment, if the loans were made for tuition expenses, all other reasonable educational expenses, including fees, books, and laboratory expenses, and reasonable living expenses.

16 Up to \$30,000 per year for an individual IHSLRP contract, and 31% for tax liability associated with it, are established as policy in the annual *Federal Register* notice required by the Department of Health and Human Services.

health professionals. Because of limited funding, there are, however, only two INMED Programs funded under this authority: one is at the University of North Dakota at Grand Forks and the other is at the University of Minnesota at Duluth. Both of these programs provide a number of activities, including outreach and recruitment for health professions to Indian communities; a program advisory board comprised of tribal and community members served by the program; summer preparatory programs for Indian students who need enrichment in the subjects of math and science; and tutoring, counseling, and support to students enrolled in the health career program at the respective universities funded under the authority of Section 114.

Section 120

Section 120 (*Matching Grants to Tribes For Scholarship Programs*) provides that Indian tribes and tribal organizations shall be funded under this authority for the “purpose of assisting such tribes and tribal organizations in educating Indians to serve as health professionals in Indian communities.” For the purpose of selecting an individual for a scholarship under this program, the tribes are limited to funding students in the same categories as those funded in the IHS Section 103 and Section 104 scholarship programs. Funding for this authorization is made available “for any fiscal year” not to “exceed 5% of amounts available for such fiscal year for Indian Health Scholarships under Section 104.”¹⁷ The funding level will be at or near \$400,000, which is the total funding of all the tribal participants in this program. Costs for providing any health professions scholarship under the Section 120 authority are paid 80% from the grant and 20% from the Indian tribe or tribal organization in “non-Federal contributions.” The following tribes and Alaska Native corporations participate in the Matching Grants to Tribes For Scholarship Programs: Eastern Band of Cherokee Indians, Norton Sound Health Corporation (Nome, AK), Seminole Tribe of Hollywood Florida, Colville Confederated Tribes (Nespelem, WA), Lac Courte Oreilles Tribe, and the Tohono O’odham Nation (Sells, AZ).

Section 217

In FY 1996, Congress earmarked¹⁸ \$200,000 for the Indians into Psychology programs. Section 217¹⁹ (*American Indi-*

ans Into Psychology Program) of the IHCA authorizes that the IHS “may provide grants to at least three colleges and universities for the purpose of developing and maintaining American Indian psychology recruitment programs.” Section 217 mandates that one of the grants be to the ‘Quentin N. Burdick American Indians Into Psychology Program’ at the University of North Dakota (UND) at Grand Forks. The IHS funded the Quentin N. Burdick American Indians Into Psychology Program with the \$200,000 in earmarked funds, because it is mandated to provide one of the three grants to the program at UND, and there are not sufficient funds for another program.

At a minimum, the Quentin N. Burdick American Indians Into Psychology Program shall provide outreach and recruitment for health professionals to Indian communities that will be served by the program; incorporate a program advisory board comprised of representatives from the tribes and communities served by the program; provide a summer enrichment program to expose American Indian students to the varied fields of psychology; provide stipends to undergraduate and graduate students to pursue a career in psychology; utilize existing university tutoring, counseling, and student support services; and employ qualified Indians in the program.

Conclusion

The total number of programs funded under the Indian Health Professions line item has increased from 6 to 10 in Title I and Title II of the IHCA. Since 1978, the amount of funding for both the individual programs, and for the overall Indian Health Professions, has increased, with some of these programs, and the Indian Health Professions line item itself, having doubled and, in some cases, more than quadrupled in terms of appropriations.²⁰

By appropriating funds annually, Congress has demonstrated its continuing support of increasing the number of Indians entering the health care professions and assuring an adequate supply of these professionals to the IHS, tribal organizations, and urban Indian health care programs. As a result of this continued support, well over 4000 individuals have received benefits from these programs, and, in 1996, appropriations were five times greater than in 1978. □

17 The Section 120 scholarships provided to individuals by the tribes, although subject to the same categories of health and allied health professions funded under Section 103 and Section 104, are in addition to any Section 103 and Section 104 Scholarships and for the sole benefit of the tribe.

18 House of Representatives Report 104-402 (December 12, 1995) Conference Report: Department of Health and Human Services, Indian Health Service (page 61).

19 This is one exception to the Indian Health Professions authorizing legislation, where Section 217 is part of Title II (Health Services of the IHCA), rather than Title I (Indian Health Manpower).

20 The Section 108 Loan Repayment Program has grown from \$2 million in 1988 to the current level of almost \$12 million. The Scholarship Program has grown, as well, although not at the rate of the Loan Repayment Program.

News from the Field

Keams Canyon Service Unit

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A Program Justification Document (PJD), prepared in July 1993, proposed to replace the 33,067 square foot Keams Canyon hospital, built in 1961, with an ambulatory health care facility more than three times that size. The Keams Canyon hospital, designated as a service unit within the Indian Health Service (IHS) Phoenix Area, is a 17-bed Joint Commission on Accreditation of Healthcare Organizations (JCAHO)-accredited facility that provides a limited range of medical, surgical follow-up, pediatric, and obstetric services. Only a portion of the inpatient needs of the service population are met by the current facility. Patients needing secondary and tertiary services are referred to other IHS facilities or to private facilities where care is supported with Contract Health Services (CHS) resources. Specialty services are provided by visiting specialists from the Phoenix Indian Medical Center (PIMC) or contract health care providers.

The proposed new health care delivery facility, to be named the Hopi Health Care Center, will expand the currently existing ambulatory care, dental, community health, and tribally-contracted and/or funded services. Also, additional services will be provided to assure a comprehensive ambulatory and preventive health care delivery system for all residents of the service area. The enhanced facility will positively impact the health status of the Indian people living within the service area. It will provide an infirmary with four sub-acute care beds, a birthing center, a dialysis treatment center, and a full range of ambulatory care. In addition, the Hopi Health Department and

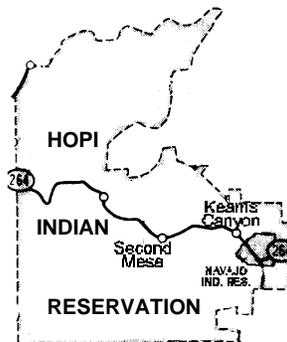
ancillary programs will be housed in the new facility.

After numerous meetings with the Indian Health Service, the Hopi Tribe took a leadership role under the Indian Self-Determination Act (P.L. 93-638) in the planning (PJD), design, and eventual construction, under a "Construction Management" contract concept. While the clinic at Jeddito will remain open, the new facility will replace the existing Second Mesa Health Center, dental clinic, and the Keams Canyon hospital facility, and will be centrally located between Keams Canyon and Second Mesa.

The Hopi Reservation is located in northern Arizona, approximately 295 miles from the Phoenix metropolitan area. It is completely surrounded by the Navajo Reservation, which itself spans across portions of Arizona, New Mexico and Utah. Hopi villages are situated on three mesas, which rise 400 to 600 feet above the desert plain of the Colorado River Plateau (see map). The First Mesa Consolidated Villages and the Hopi Tribe have set aside approximately 168 acres of land for the Hopi Health Care Center. The campus will include space for staff quarters (apartments and houses) and for possible future expansion of the health facility to include inpatient services as they may later be justified and financially supported.

The new facility is included in President Clinton's proposed fiscal year (FY) 1998 budget, and has, thus far, survived Congressional review. The Hopi tribe has initiated an aggressive lobbying campaign with Congress for their support of

funding of this construction project. Should Congress allocate funding, it is anticipated that the new facility will open sometime in FY 2000. □



The leading cause of death in American Indians and Alaska Natives is cardiovascular disease. The Strong Heart Study is designed to estimate cardiovascular disease mortality and morbidity rates and the prevalence of known and suspected cardiovascular disease risk factors in American Indians.

The editors believe that those providing health care to American Indians have a need to know about this study and its findings. In the January 1997 issue of The Provider, we published an annotated bibliography of the first nine articles published as a result of the Strong Heart Study. The following abstracts of the next seven articles published from the study were modified to include some of the results; they have been reviewed by Barbara V. Howard (for the Strong Heart Study Investigators) for accuracy.

Lee ET, Go OT. Socioeconomic status and cardiovascular health and disease in American Indians: the Strong Heart Study. In: Report of the Conference on Socioeconomic Status and Cardiovascular Health and Disease; November 6-7, 1995; (National Institutes of Health) Washington, DC; 1996.

The Strong Heart Study (SHS) is an epidemiological study of cardiovascular disease and its risk factors among three American Indian populations. These include the Pima/Maricopa of Arizona; the Oglala and Cheyenne River Sioux in South Dakota and the Devil's Lake Sioux in North Dakota; and the Apache, Caddo, Comanche, Delaware, Fort Sill Apache, Kiowa, and Wichita tribes in southwestern Oklahoma. Phase I includes 4,549 eligible participants, ages 45 to 74 at the time of clinic visit. Participants in Arizona and the Dakotas live on reservations, whereas most of those in Oklahoma reside in urban communities. Socioeconomic status (SES) and lifestyle data (education and income) were collected through a personal interview, and biological data such as blood pressure, diabetes, and lipids were obtained through a physical examination and laboratory tests. The detailed protocol has been published elsewhere.¹

This report describes the significant pathways that have been observed to link SES factors and cardiovascular disease (CVD). Education, income, and other SES variables were analyzed in relation to blood pressure, hypertension, lipids, body mass index (BMI), overweight, diabetes, albuminuria, cigarette smoking, alcohol consumption, physical activity,

marital status, sufficient income to pay bills, distance to nearest clinic and hospital, ability to speak native language, and degree of American Indian blood. All analyses were stratified by gender and region.

The prevalence of self-reported stroke decreased with higher education except in Arizona women. Stroke prevalence also decreased with higher income among men and women in Arizona and Oklahoma. No stroke was reported for participants in Oklahoma or for Arizona men with \$25,000 or more income. For women in all three regions combined, coronary heart disease prevalence (as diagnosed through EKG examination and verified by medical charts) decreased with increased education and with increased income.

Among men, participants with more than 12 years of education had the lowest prevalence of self-reported stroke and current smoking, but they also had a higher BMI. Among women, a much stronger association between education and CVD risk factors was observed. Participants in the highest education group had the lowest prevalence of stroke. A downward trend with higher education was observed for CHD, hypertension, systolic blood pressure, and BMI. A reverse trend was observed with prevalence of current drinking.

In men with higher income, there was an increasing trend in total cholesterol, LDL cholesterol, and body mass index, and a decreasing trend in HDL cholesterol. Among women, the highest income group had the lowest prevalence of hypertension, and a downward trend existed between higher income and obesity. Women with higher income seemed to be leaner and had a better HDL lipid profile than men.

The results indicate that, in general, better education is associated with cardiovascular health, and that higher income benefits women more than men.

Howard BV. Risk factors for cardiovascular disease in individuals with diabetes: the Strong Heart Study. *Acta Diabetol.* 1996;33:180-184.

Coronary heart disease (CHD) is the leading cause of death among individuals with diabetes. However, information on CHD and its association with known risk factors in populations with high rates of diabetes is limited. The purpose of the Strong Heart Study is to quantify CHD and its risk factors among three geographically diverse groups of American Indians who have a high prevalence of diabetes. The study group consisted of 4,549 adults between 45 and 74 years of age in 13 Indian communities in Arizona, Oklahoma, and South and North Dakota.

Rates of diabetes ranged from 33% to 72% in men and women in the three centers. The prevalence rates of definite

1. Lee ET, Welty TK, Fabsitz R, et al. The Strong Heart Study, a study of cardiovascular disease in American Indians: designs and methods. *Am J Epidemiol.* 1990;136:1141-1155.

myocardial infarction (MI) and definite CHD were higher in men than in women in all three centers ($P < 0.0001$) and higher in those with diabetes ($P = 0.002$ and $P = 0.0003$ in women and men, respectively). Diabetes was associated with a relatively greater increase in prevalence of MI (PR=3.8 vs 1.9) and CHD (PR=4.6 vs 1.8) in women than in men. Logistic regression analysis indicated that the prevalence of all CHD among American Indians is significantly related to age, diabetes, hypertension, albuminuria, percent body fat, smoking, high concentrations of plasma insulin, and low concentrations of high-density lipoprotein (HDL) cholesterol. The results of this analysis, coupled with the prevalence rates for risk factors, indicate that diabetes is a major contributor to CHD in American Indian populations, and that the variables associated with diabetes such as high blood pressure, hyperinsulinemia, albuminuria, and low HDL are also important. If the prevalence of diabetes continues to increase in these populations, the frequencies of these other risk factors are also likely to increase, because blood pressure, albuminuria, and prevalence of low HDL are all higher in those with diabetes.

Howard BV. Blood pressure in 13 American Indian communities: the Strong Heart Study. *Public Health Rep.* 1996;3(Suppl 2):47-48.

Using National Heart, Lung, and Blood Institute (NHLBI) protocols, researchers measured blood pressure in 4,549 American Indians ages 45 to 74 from 13 communities. The prevalence of hypertension ranged from more than 27% in participants ages 45 to 54 to 56% in participants ages 65 to 74. More than 70% were aware of the diagnosis, more than 50% were receiving treatment, and 30% controlled their hypertension with medication. Blood pressure was significantly related to glucose intolerance, age, and alcohol consumption (especially binge drinking). There was little relation between blood pressure and plasma insulin, or obesity. Systolic blood pressure levels were positively related to percentage of American Indian blood.

Despite the high prevalence of diabetes and obesity, blood pressure levels are relatively low in these American Indian communities. Hypertension is mild, and much of it diagnosed and controlled.

Kataoka S, Robbins DC, Cowan LD, et al. Apolipoprotein E polymorphism in American Indians and its relation to plasma lipoproteins and diabetes. *Arterioscler Thromb Vasc Biol.* Aug 1996;16(8):918-925.

Apo E, with its three common alleles, $\epsilon 2$, $\epsilon 3$, and $\epsilon 4$, regulates the metabolism of lipoproteins. Apo E is an important genetic factor in the development of cardiovascular disease, which is the leading cause of death among American Indians. The Strong Heart Study investigated the occurrence

of the apo E alleles and the relation between apo E polymorphism and blood lipoproteins and apoproteins in members of 13 American Indian communities in three geographic areas. The frequencies of the $\epsilon 2$ alleles in American Indians are significantly lower than those in white Americans, with the lowest frequencies of $\epsilon 2$ in American Indians who reside in Arizona. Levels of LDL cholesterol and apo B were highest in those with $\epsilon 4$ and lowest in those with $\epsilon 2$. Concentrations of HDL cholesterol and apo A-I, however, tended to be lowest in $\epsilon 4$ and highest in $\epsilon 2$. Concentrations of total and VLDL triglycerides were lowest in the $\epsilon 3$ group and higher in groups $\epsilon 2$ and $\epsilon 4$. Differences in concentrations of LDL cholesterol, HDL cholesterol, apo B, and apo A-I with apo E polymorphism were greater in women than in men, and differences in total and VLDL triglyceride concentrations by apo E phenotype were greater in men. Relations of total and VLDL triglycerides with apo E phenotype were stronger in women after menopause.

In addition, difference in nearly all lipid and apoprotein concentrations between postmenopausal women and premenopausal women were greater if they had $\epsilon 2$. Relations between apo E phenotype and lipoproteins were seen in individuals with diabetes mellitus as well as in nondiabetics. Apo E was significantly related to glucose control in diabetic women; those with $\epsilon 3$ had higher glucose and hemoglobin A_{1c} concentrations. Our findings show that (1) American Indians have low frequencies of apo $\epsilon 2$; (2) apo E phenotype can influence levels of VLDL, LDL, HDL, apo B, and apo A-I; (3) the associations of apo E polymorphisms with lipid parameters differ between men and women; and (4) the associations in women of apo E polymorphisms with lipid parameters are modified by menopausal status.

de Simone G, Devereux RB, Ganau A, et al. Estimation of left ventricular chamber and stroke volume by limited M-mode echocardiography and validation by two-dimensional and doppler echocardiography. *Am J Cardiol.* Oct 1, 1996;78:801-807.

This study has been designed to improve estimation of stroke volume from linear left ventricular (LV) dimensions measured by M-mode echocardiography, in symmetrically contracting ventricles. In experimental studies, the ratio of LV epicardial long/short axes "Z" is about 1.3. The Strong Heart Study measured systolic and diastolic epicardial long and short axes by 2-dimensional echocardiography in 115 adults with widely varying LV short-axis dimensions (LV end-diastolic dimension = 3.95 to 8.3 cm). In a learning series of 23 normotensive and 27 hypertensive subjects, $Z_{diastole}$ was 1.3 ± 0.1 and $Z_{systole} = 1.2 \pm 0.1$, similar to findings in experimental animals. Regression equations were developed by comparing LV volumes by M-mode and 2-dimensional echocardiography.

In a test series (65 subjects), LV volumes were calculated using separate regression equations for end-diastolic volume ($[\text{LV end-diastolic dimension}]^2 \cdot 4.765 - 0.288 \times \text{posterior wall thickness}$) and for end-systolic volume ($[\text{LV end-systolic dimension}]^2 [4.136 - 0.288 \times \text{posterior wall thickness}]$). Because the term $0.288 \times \text{wall thickness}$ was only about 8% of the first term between brackets, the average wall thickness in the learning series was substituted in the Z-volume formulas applied to the test series: end-diastolic volume = $(4.5 \times [\text{LV end-diastolic dimensions}]^2)$ and end-systolic volume = $(3.72 \times [\text{LV end-diastolic dimension}]^2)$. The mean relative error produced with this simplified method was 0.9% in diastole and 1.4% in systole. Compared with Teichholz' M-mode volume method, Z-derived end-diastolic volume in the test series was equally well related to 2-dimensional volumes (both $r = 0.88$), with a better intercept (1.5 vs -23 ml, $p < 0.001$) and a slope closer to the identity line (1.1 vs 1.4). Similar results were found for systolic volumes.

In a second test series of 1,721 American Indian participants in the Strong Heart Study without mitral regurgitations or segmental LV wall motion abnormalities, Doppler-derived LV stroke volume (70 ± 14 ml/beat) was similarly predicted by the Z-derived method ($r = 0.65$, 70 ± 11 ml/beat) and Teichholz formulas ($r = 0.64$, 72 ± 13 ml/beat), but Z-derived volumes had a regression line significantly closer to the identity line ($p < 0.005$). Thus, LV chamber and stroke volumes can be determined from M-mode LV diameters over a wide range of LV sizes and in epidemiologic as well as clinical populations. The performance of this new method appears better than that obtained using the Teichholz formula, with a formula that is easy to handle and makes calculation of LV volumes by pocket calculator possible, even from limited echocardiographic studies.

Oopik AJ, Dorogy M, Devereux RB, et al. Major electrocardiographic abnormalities among American Indians aged 45 to 74 years. *Am J Cardiol.* Dec 15, 1996;78:1400-1405.

As part of the Strong Heart study assessment of prevalent cardiovascular disease in middle-aged to elderly American Indians, the prevalence of major Minnesota code electrocardiographic (ECG) abnormalities was assessed in 4,531 participants aged 45 to 74 years (59% women) in selected tribal communities in Arizona, South and North Dakota and Oklahoma. The overall prevalence of major ECG abnormalities was lowest in Arizona participants, (e.g., definite ECG myocardial infarction in 0.3% vs 1.8% in the other centers), although nearly two-thirds of them had diabetes. One or more major ECG abnormalities occurred in progressively more women (10.4% to 21.2%) and men (13.3% to 32%) (both $p < 0.0001$) from 45- to 54- to 55- to 64- and 65- to 74- year age groups, with the latter prevalence rates exceeding those in

predominately white age peers in the Cardiovascular Health Study.

Diabetes in women, but not in men, and hypertension in both genders showed positive associations with prevalence rates of major ECG abnormalities compatible with coronary artery disease or hypertensive cardiac hypertrophy. Hypercholesterolemia was not associated with ECG abnormalities except for definite myocardial infarction in women. In conclusion, major ECG abnormalities are common in middle-aged to elderly American Indians, consistent with recent documentation of higher cardiovascular mortality in this population than in similar-aged U.S. whites.

Howard BV, Lee ET, Yeh JL, et al. Hypertension in adult American Indians: the Strong Heart Study. *Hypertension.* Aug 1996;28(2):256-264.

Hypertension is a primary risk factor for cardiovascular disease in the United States. Although cardiovascular disease is the leading cause of death among American Indians, the prevalence of hypertension, its awareness and control, and its association with other cardiovascular disease risk factors and physiological variables have not been well studied in this population. The Strong Heart Study is a longitudinal study of cardiovascular disease and its risk factors in American Indians. Participants (2703 women and 1846 men) were members of 13 tribes in central Arizona, southwestern Oklahoma, and regions of South and North Dakota. At least 1500 individuals between 45 and 74 years of age participated from each center in a baseline clinical examination conducted between July 1989 and January 1992. The examination consisted of a personal interview and physical examination that included an oral glucose tolerance test and three consecutive blood pressure measurements.

This study reports data from the baseline examination on the prevalence of hypertension and correlates of blood pressure. Results indicated that despite the high frequency of diabetes and obesity, prevalence rates of hypertension in Arizona and Oklahoma were similar to those in the US population in the Third National Health and Nutrition Examination Survey (NHANES III), and rates among South/North Dakota participants were significantly lower ($P < .0001$). Blood pressure was higher in individuals with diabetes ($P < .0001$) and was significantly correlated with age ($P < .0001$) and albuminuria ($P < .0001$), but only weakly related to obesity. There was no independent relation between blood pressure and insulin. Blood pressure seems to be less affected by obesity and hyperinsulinemia in American Indians compared with other populations. Nevertheless, hypertension should be aggressively treated and controlled in American Indians because it is a known precursor to morbidity and mortality associated with diabetes and cardiovascular disease. □

DHHS Consumer Health Information Web Sites

With more than 60 central World Wide Web sites on eight different Web domains, the Department of Health and Human Services (DHHS) presents one of the richest and most reliable sources of information on the Internet. DHHS documents on the Web contain information on health and social issues, research-related data, and access to DHHS services, including interactive sites.

For health information especially, the DHHS sites are a unique resource. Consumers and professionals alike can find extensive health information, including data that are produced or supported by DHHS agencies, as well as links to other information from sources that have been found reliable by DHHS experts. It has been estimated that more than 10,000 health-related sites are on the Web. DHHS Web sites and gateways can shorten searches and produce reliable information.

Major DHHS health information Web sites include:

- **HEALTHFINDER** (www.healthfinder.gov): A gateway site to help consumers find health and human services information quickly and easily. HEALTHFINDER provides links to more than 1,250 Web sites, including more than 250 federal sites and 1,000 state, local, not-for-profit, university, and other consumer health resources. Topics are organized in a subject index. With more than 7 million hits in its first two months of operations, HEALTHFINDER is currently rated fifth among consumers' favorite Web sites on the top "Web 100" list.
- **MEDLINE** (www.nlm.nih.gov): The world's most extensive collection of published medical information, coordinated by the National Library of Medicine. Originally designed primarily for health professionals and researchers, MEDLINE is also valuable for students and for those seeking more specific information about health conditions, research and treatment. Free access to MEDLINE was initiated June 26 of this year. "PubMed," a free online service, will provide direct Web links between MEDLINE abstracts and the publishers of full-text articles.
- **NIH HEALTH INFORMATION PAGE** (www.nih.gov/health/): Provides a single access point to the consumer health information resources of the National Institutes of Health (NIH), including the NIH Health Information Index, NIH publications and clearinghouses, and the Combined Health Information Database.

Some other DHHS consumer health information sites of special interest include:

- **CANCERNET** (cancernet.nci.nih.gov): Provides up-to-date, accurate medical information on cancer. Also contains a directory of genetic counselors, physicians, geneticists, and nurses who have expertise in counseling about familial risk and genetic testing for cancer. More cancer information is also available from the National Cancer Institute (<http://rex.nci.nih.gov>).
- **MAMMOGRAPHY** (www.fda.gov/cdrh/faclist.html): Listing of facilities providing mammography that are certified by the Food and Drug Administration as meeting baseline quality standards. The list is searchable by both area or zip code.
- **IMMUNIZATION** (www.cdc.gov/nip/home.htm): Answers frequently-asked questions about childhood immunization, including current recommendations on what shots children need and when.
- **TRAVELERS INFORMATION** (www.cdc.gov/travel/travel.htm): Provides international travelers with current information on disease outbreaks and health issues. Includes information on recommended vaccinations, and links to CDC's Vessel Sanitation Program for sanitation inspections on international cruise ships.
- **TREATMENT FINDINGS** (www.ahcpr.gov): DHHS' Agency for Health Care Policy and Research provides data to help consumers make informed health care decisions about specific health conditions, prescriptions and other treatment issues. The site offers research results on what has been found to work effectively.
- **SUBSTANCE ABUSE** (www.samhsa.gov): Information about substance abuse treatment and prevention. In addition, the National Clearinghouse for Alcohol and Drug Information is found at www.health.org, and background on research is available from the National Institute on Drug Abuse (www.nida.nih.gov) and the National Institute on Alcohol Abuse and Alcoholism (www.niaaa.nih.gov).
- **AGING** (www.nih.gov/nia): Information from the National Institute on Aging regarding a wide range of topics, from specific diseases or health conditions to treatments and research. In addition, specific information from NIA about Alzheimers Disease is available (www.alzheimers.org/adear). Information about ag-

ing services and care is available from DHHS' Administration on Aging (www.aoa.dhhs.gov/elderpage.html), and information about Medicare is available from DHHS' Health Care Financing Administration (www.hcfa.gov).

Key DHHS Web Addresses

- Department of Health and Human Services: www.hhs.gov
- Agency for Health Care Policy and Research (AHCPR): www.ahcpr.gov
- Centers for Disease Control and Prevention (CDC): www.cdc.gov
- Food and Drug Administration (FDA): www.fda.gov
- Health Resources and Services Administration (HRSA): www.hrsa.dhhs.gov
- Indian Health Service (IHS): www.ihs.gov
- National Institutes of Health (NIH): www.nih.gov
- Substance Abuse and Mental Health Services Administration (SAMHSA): www.samhsa.gov
- Administration for Children and Families (ACF):

www.acf.dhhs.gov

- Administration on Aging (AoA): www.aoa.dhhs.gov
- Health Care Financing Administration (HCFA): www.hcfa.gov (Medicare and Medicaid)

Editor's Addendum

Here are some sites that the editors of *The Provider* have found useful:

- Office of Minority Health (www.omhrc.gov): Free literature searches on topics related to minority health issues.
- Native Elder Health (www.uchsc.edu/sm/nehrc): This web site is run by the University of Colorado Health Sciences Center and lists various resources available related to the health of Native American elders.
- The Morbidity and Mortality Weekly Report (MMWR) (www.cdc.gov/epo/mmwr_wk.html): This publication of the Centers for Disease Control and Prevention (CDC) is available for downloading. □

NATIVE AMERICAN MEDICAL LITERATURE □

The following is an updated MEDLINE search on Native American medical literature. This computer search is published regularly as a service to our readers, so that you can be aware of what is being published about the health and health care of American Indians and Alaska Natives.

The Clinical Support Center cannot furnish the articles listed in this section of The Provider. For those of you who may wish to obtain a copy of a specific article, this can be facilitated by giving the librarian nearest you the unique identifying number (UI number), found at the end of each cited article.

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