

Reducing the Burden of Chronic Kidney Disease Among American Indians

Andrew S. Narva

American Indians (AIs) and Alaska Natives (ANs) have experienced a dramatic rise in type 2 diabetes and associated complications, including chronic kidney disease (CKD) over the past half century. At the end of 2005, the national prevalence of end-stage renal disease (ESRD) in AIs/ANs was 2.5 times greater than that for white Americans, with rates significantly higher among communities of the southwest United States. Evidence of CKD among AIs/ANs with diabetes includes abnormal protein excretion in 30% and estimated glomerular filtration rate (eGFR) <60 mL/min/m² in 17%. In order to address the growing burden of CKD, the Indian Health Service established the Kidney Disease Program to improve the screening of and the management of diabetics with CKD. Routine reporting of eGFR, yearly monitoring of protein excretion, utilization of renin-angiotensin system (RAS) antagonists, and aggressive control of blood pressure were implemented in association with enhanced patient and provider education. By 2006, 82% of hypertensive diabetics were receiving a RAS antagonist. Implementation of these efforts has been associated with a 31% decrease in ESRD incidence among AIs/ANs with diabetes. This program of improvements in CKD care implemented by a federal agency serving a high-risk population with limited resources may be a useful model for others.

© 2008 by the National Kidney Foundation, Inc.

Index Words: Chronic kidney disease; American Indians; Diabetes; Chronic care model; Indian Health Service

The American Indian (AI) and Alaska Native (AN) population of the United States was estimated to be 3.3 million people in 2007, a 65% increase from the 1990 population of 2 million.¹ The AI/AN population includes members of over 560 federally recognized tribes, representing diverse cultural traditions and lifestyles. Approximately 43% of AIs/ANs live in rural areas, mostly on reservations in the western United States, and 57% live in urban areas. Tribes function as sovereign nations and relate to the US federal government on a government-to-government basis. The Navajo Nation is the largest tribe, with 250,000 members, and a reservation in northern Arizona, western New Mexico, and southern Utah, which covers more than 26,000 square miles. The AI/AN population is relatively young, with a median age of 28.0

years (*v* 35.3 years for the United States including all races), has larger families, and a poverty rate twice that of the US population. Although life expectancy increased from 63.6 years in 1972 to 1974 to 74.5 years in 1999 to 2001,² there remains a significant gap when compared with life expectancy for whites.

During the past few decades, the disease burden among AIs/ANs has shifted from acute infectious diseases to chronic illnesses, particularly type 2 diabetes and its complications. In 2001 to 2003, the 5 leading causes of death were heart disease, malignant neoplasms, injuries, diabetes, and cerebrovascular disease.¹ Diabetes, virtually unknown among AIs/ANs before World War II, is a problem of epidemic proportions among the native people of North America. Diabetes prevalence among AI/AN is 2.2 times higher than the rate among US non-Hispanic whites. Over 16% of all AIs/ANs aged 20 years and older are diabetic. In some tribes (eg, Pima and Zuni), 30% to 50% of the adult population is diabetic. Incidence rates continue to rise among all age groups, but this rise is most alarming in adolescents and young adults. From 1994 to 2004, diabetes prevalence among AI/AN aged 15 to 19 years increased 68%. Diabetes mortality among AIs/ANs was 3 times higher in 2004 than in the US population.³

From the National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD.

Address correspondence to Andrew S. Narva, MD, National Kidney Disease Education Program, DKUH, NIDDK, NIH, Two Democracy Plaza, Room 645,6707 Democracy Blvd, MSC 5458, Bethesda, MD 20892-5458. E-mail: narvaa@nidk.nih.gov

© 2008 by the National Kidney Foundation, Inc.

1548-5595/08/1502-0012\$34.00/0

doi:10.1053/j.ackd.2008.01.011

Burden of Renal Disease

End-Stage Renal Disease

AIs and ANs experience high rates of end-stage renal disease (ESRD). At the end of 2005, 6,480 people identified as AI/AN were being treated for ESRD, reflecting a prevalence rate 2.3 times greater than that of white Americans.⁴ The incidence rate for ESRD was 1.9 times the white rate. The epidemic of diabetes among AIs/ANs, which began in the middle of the 20th century, appears to be driving the increase in ESRD. More than two thirds of AIs/ANs who initiated treatment for ESRD in 2005 developed kidney failure as a result of diabetes, virtually all (95%) type 2. The incidence rate for ESRD due to diabetes among AIs/ANs is 3 times higher than the US rate for whites. In addition to those whose primary renal diagnosis is diabetic nephropathy, many persons with ESRD due to nondiabetic kidney disease subsequently develop diabetes. Consistent with the early onset of type 2 diabetes among native people, the mean age of onset of ESRD for AIs/ANs is 57 years, 8 years younger than for whites (65 years).

The rates cited earlier describe the burden of ESRD among all persons in the United States identified by their treatment facility as AI/AN. These national rates mask significant regional variation as well as differences among the approximately 561 tribes that make up the AI community. The burden of kidney failure is much higher among AIs/ANs of the Southwest who receive their care from the Indian Health Service (IHS) than it is among the US population or the national AI/AN population. ESRD Network #15, which collects data from the Southwest (Arizona, New Mexico, Colorado, Utah, Wyoming, and Nevada), includes more than 30% (33% in 2005) of the prevalent AI/AN cases identified in the US Renal Data System (USRDS) database and a plurality of the AIs/ANs with ESRD living on reservations, primarily in Arizona and New Mexico.⁵ In 2001, when the overall US rate of treated ESRD was 3.2 times greater among AIs/ANs than among whites, in the Southwest, the AI rate was 6.5 times greater than the US white rate. Among Southwest AIs, over 80% of prev-

alent ESRD is caused by diabetes. At the end of the year 2005, 541 members of the Navajo Nation were treated in reservation dialysis units, more than any other tribe.

Some communities of the Southwest have extraordinarily high rates of kidney failure. In Zuni Pueblo, a community of 10,000 in western New Mexico, the prevalence of ESRD among individuals over 20 years old is 13-fold higher than the composite US population.⁶ Approximately 2% (100 persons) of the adults (21 years and older) in the Zuni population have treated ESRD. With rates this high, virtually every family has an affected member.

Chronic Kidney Disease

Several studies have shown increased rates of early kidney disease among AIs/ANs, both in diabetics and nondiabetics. The Strong Heart Study, a longitudinal study to measure risk factors for cardiovascular disease among AIs from 3 geographic sites (Arizona, North and South Dakota, and Oklahoma) has shown high rates of abnormal albumin excretion (20.1%-48.3%) in all tribes studied.⁷ Although prevalence of diabetes was 53% in the study population, persons without diabetes also had high rates (10%-20%) of abnormal albuminuria. Among both diabetics and nondiabetics, abnormal albumin excretion was associated with increased blood quantum (degree of Indian heritage), suggesting a genetic basis for susceptibility to renal injury. The Zuni Kidney Project, a population-based, cross-sectional survey of the Pueblo of Zuni, has described an increased burden of CKD in the Zuni community that is greater than 2.5 times higher than the composite US population. The burden of stage 5 CKD was 8 times greater than among the US population.⁶

Indian Health Service Response to the Burden of CKD

Most AIs/ANs people living on reservations and some who live in urban centers receive their health care through the IHS, an agency of the US Public Health Service. The IHS is the principal federal health care provider and health advocate for Indian people. Its mission is to raise the health status of AIs/ANs to

Download English Version:

<https://daneshyari.com/en/article/3846752>

Download Persian Version:

<https://daneshyari.com/article/3846752>

[Daneshyari.com](https://daneshyari.com)