

Kidney Disease in the Hispanic Population: Facing the Growing Challenge

Julio E. Benabe, MD and Elena V. Rios, MD, MSPH
San Juan, Puerto Rico and Washington, DC

The incidence of kidney disease in the United States is rising at a steady, alarming pace. The growth rate has been particularly rapid for end-stage renal disease (ESRD), which has been reported to double every 10 years. Of even greater concern is the emergence of striking racial disparities in the prevalence, morbidity, and mortality of kidney disease, and in the provision of optimal care to prevent or slow progression of the disease. Hispanics, who are among the fastest-growing racial groups in the United States, are twice as likely to develop kidney failure as non-Hispanic whites, largely due to the increased prevalence of diabetes mellitus in the Hispanic population. However, Hispanic patients are less likely than the general U.S. population to be screened for risk factors for kidney disease or receive optimal treatment after diagnosis.

Several actions are required to redress these racial inequalities. Improved cultural sensitivity on the part of physicians is fundamentally important, as are patient education programs targeted specifically at the diverse Hispanic groups. In addition, local initiatives should be supported on a wider scale by healthcare policymakers to encourage improved medical care within Hispanic communities and thereby reduce the burden of kidney disease on American society as a whole.

Key words: end-stage renal disease (ESRD) ■ Hispanics ■ risk factors ■ culture ■ healthcare policies

The prevention and treatment of kidney disease pose an ever-increasing healthcare challenge in the United States. Currently, over six million Americans have significant reductions in kidney function, and nearly 400,000 require dialysis or a kidney transplant to stay alive.¹⁻³ Kidney disease is escalating, and the incidence of end-stage renal disease (ESRD) has been increasing at a rate of up to 9% per year.⁴ Forecasts indicate that by the year 2010 there will be over 650,000 patients with ESRD in the United States.⁵

While the rate of kidney disease is rising throughout the adult U.S. population, it is expanding faster in certain ethnic groups—in particular, African-American and Hispanic populations—than in whites. Hispanics are twice as likely to develop kidney failure as non-Hispanic whites.^{1,6}

Not only is kidney disease becoming more common among Hispanic groups, but the Hispanic population itself is growing disproportionately quickly. The 2000 U.S. Census reported that there are 35 million Hispanics/latinos in the United States.⁷ Hispanics already form the largest minority group in the United States, and Mexican Americans represent the largest subgroup, with a population of 21 million, followed by Puerto Ricans and Cubans.⁸ The U.S. Census has revealed that the Hispanic population grew from 10.3% in 1995 to 12.5% in 2000, making it among the fastest-growing of racial and ethnic groups.⁷ This rapid growth means that Hispanic patients with ESRD are likely to represent an ever-increasing proportion of the total population with ESRD. Despite the availability of effective interventions, healthcare services are failing to tackle the problem. Marked deficiencies are emerging in the provision of care to Hispanics at risk of kidney disease or its progression. Hispanic patients with kidney disease face an almost inevitable decline into chronic renal insufficiency and, ultimately, ESRD.

This review examines the issues contributing to racial disparities, including the risk factors that render Hispanics susceptible to kidney disease, and the complex interaction of cultural, social, and econom-

© 2004. From the Medical Service, San Juan Veterans Affairs Medical Center and RCMI Clinical Research Center, San Juan, Puerto Rico (Benabe) and the National Hispanic Medical Association, Washington, DC (Rios). Send correspondence and reprint requests for *J Natl Med Assoc.* 2004;96:789-798 to: Elena V. Rios, President, National Hispanic Medical Association, 1411 K St. NW, Suite 1100, Washington, DC 20005; phone: (202) 628-5895; fax: (202) 628-5898; e-mail: erios@nhmamd.org

ic factors that appear to prevent this population from receiving adequate healthcare. Strategies to resolve the situation are proposed, including steps that policymakers and healthcare providers should take to improve outcomes for Hispanics and other minority groups at risk for kidney disease. Such measures will also ease healthcare costs. Recent forecasts predict that, unless aggressive preventive action is taken, expenditure in the Medicare kidney failure program will double over the next 10 years, exceeding US\$28 billion by 2010.¹⁵

DIFFERENCES IN RISK FACTORS

Risk factors that can lead to chronic kidney disease and ESRD occur commonly throughout the adult U.S. population. These include diabetes mellitus, hypertension, obesity, elevated cholesterol lev-

els, a family history of chronic kidney disease, smoking, substance abuse, age, male gender, and being of nonwhite race.

Diabetes Mellitus

In the United States, diabetes mellitus (both type-1 and type-2) is the most commonly attributed cause of ESRD, accounting for over one-third of incident cases (Figure 1).⁶

The prevalence of type-2 diabetes is two-to-five times higher in Hispanics than in non-Hispanic whites.⁹⁻¹² In addition, peak age-specific incidence of diabetes among Hispanics occurs in patients aged 50–59 years, a decade earlier than in non-Hispanic whites, suggesting that risk factors may operate at earlier ages in this minority population.¹¹

Diabetes is particularly common among Mexican

Table 1. Racial Comparison of Clinical Data at Referral and During Follow-Up³⁶

	Nonwhites (n=155)	Whites (n=61)	P
Mean age (years)	52 ± 1.1	51 ± 2.4	0.67
Sex, n (%)			
Women	89 (57)	28 (46)	0.13
Men	66 (43)	33 (54)	
Cause of kidney failure, n (%)			
Diabetes mellitus	70 (45)	23 (38)	0.36
Hypertension	49 (32)	14 (23)	
Systolic blood pressure (mmHg)	156 ± 4.9	153 ± 4.4	0.47
Mean body weight (lb)	168 ± 7.7	161 ± 5.2	0.24
Blood urea nitrogen concentration (mg/dL)	58 ± 5.4	54 ± 3.7	0.35
Serum creatinine concentration (mg/dL)	4.3 ± 0.38	3 ± 0.24	0.001
Serum albumin concentration (g/dL)	3.6 ± 0.09	3.7 ± 0.09	0.28
Hematocrit (%)	31.7 ± 1.3	34.7 ± 0.9	0.001
Interval from referral to dialysis (months)	13 ± 0.8	43.5 ± 4.8	0.001
Number of clinic visits*	19 ± 2	33 ± 3.1	0.001
Frequency of clinic visits*	0.87 ± 0.08	0.85 ± 0.06	0.63

*Total number of clinic visits and frequency of clinic visits from referral to initiation of dialysis.
Adapted from Ifudu et al. 1999.

Americans and Puerto-Rican Americans, whereas Cuban Americans have only a slightly higher risk than non-Hispanic whites.¹³ Furthermore, Mexican Americans are likely to suffer more severe complications of diabetes than the general U.S. population.¹⁴ The San Antonio Heart Study showed that Mexican Americans with diabetes are six times more likely to develop ESRD requiring dialysis than non-Hispanic white diabetics.¹⁵

It is unclear why Mexican Hispanics are so susceptible to diabetes, but the reason is likely to be related to risk factors that commonly cluster with diabetes, including obesity, hypertension, and a genetic predisposition. Socioeconomic factors have also been implicated, but the published literature has so far failed to confirm this possibility. Mexican Americans of low socioeconomic status have a higher prevalence of type-2 diabetes than Mexican Americans with a higher socioeconomic status.¹⁶ Analysis of data from the San Antonio Heart Study showed that, contrary to expectations, low socioeconomic status was not associated with greater levels of hyperglycemia.¹⁶

Whatever the reasons for the propensity of the Hispanic population to develop diabetes, the problem is likely to grow. The number of Hispanics with diabetes is increasing, as is the mortality rate associated with diabetes in Hispanics.^{17,18}

Hypertension

Hypertension represents a major threat to the Hispanic population, despite the finding that Hispanics do not have higher rates of hypertension than the general U.S. population.^{19,21}

A study in Texas that focused on individuals aged over 75 years showed that the incidence of hypertensive ESRD was two-and-a-half times higher in Mexican Americans than in non-Hispanic whites, which is a surprising finding given the rate of hypertension in the Hispanic population.¹⁵ This suggests that when hypertension does occur in this population, it is less likely to be controlled than in the general U.S. population.²² The undertreatment of hypertension in Mexican Americans may reflect the attitude of Hispanics who tend to consider hypertension to be a normal part of aging that is untreatable, whereas non-Hispanic whites have a less fatalistic view of hypertension as a preventable condition.²³ As a result, Hispanics are less likely than non-Hispanic whites to have their blood pressure checked.

Their lack of concern about blood pressure has been demonstrated by research showing that only approximately half of hypertensive Hispanics know that they have high blood pressure, and only approximately one-quarter of these individuals have their blood pressure under control.^{24,25} Such patients are no doubt vulnerable to the effects of hypertension and,

by the time hypertension is treated, the kidneys may already be irreversibly damaged.

Obesity

Obesity is generally more common among Hispanics than the general white population of the United States.^{21,26} Obesity is closely linked with type-2 diabetes and, as is the case for diabetes, the prevalence of obesity is higher among Mexican Americans than among Cuban Americans or Puerto-Rican Americans.²⁶ Mexican Americans of low socioeconomic status are particularly prone to obesity, especially central obesity, which is itself a risk factor for diabetes.^{14,27}

Other Factors

The Hispanic population may have a genetic predisposition to kidney disease. Mexican Americans, who are most at risk for kidney disease, share a common genetic background with Native-American Indians, themselves a high-risk group for diabetes and ESRD.^{14,28,29} A retrospective analysis of children living in the Chicago area by Moore et al. showed that, although the progression of kidney disease to ESRD was more common in Hispanics and African Americans, there was no significant difference in the principal etiologies leading to ESRD.³⁰ In Hispanic children, 44% and 47% of cases of ESRD were urologic or due to primary glomerular disease, respectively, and only 9% were hereditary.

Another factor to consider is that a “thrifty genotype” may predispose Hispanics to obesity and diabetes. Many Hispanic Americans are descendants of Native-American hunter-gatherers, who evolved to store fat more easily in times of plentiful food to increase survival in times of famine. In modern westernized societies, individuals with unrestricted access to food who do not exercise regularly will gain weight. The thrifty gene compounds this problem as it stimulates increased insulin production. This overproduction results in impairment of insulin action and the onset of type-2 diabetes mellitus.

In other racial groups, such as Aborigines, early infections in children—particularly impetigo due to streptococcal infection—may contribute to glomerular hematuria, proteinuria, and persistent glomerulonephritis in children. This represents a possible risk for chronic glomerulonephritis and subsequent ESRD in adult life.³¹

The importance of other risk factors, such as cigarette smoking, for ESRD in the Hispanic population requires further investigation, but risk may be linked to socioeconomic status. Almost three times as many Hispanic as non-Hispanic families are below the poverty level, and financial problems are compounded by the generally larger families in this predominantly Catholic community.⁸

While pancreas plus kidney transplants provide the best therapeutic option for kidney failure in type-1 diabetes, it is important to note that, in the United States, more than 95% of new diabetics with kidney disease have type-2 diabetes. More concerted efforts to educate patients on control of diabetes through medical care, diet, and exercise may be an important strategy to adopt with all newly diagnosed diabetics.

DIFFERENCES IN TREATMENT

Available treatments to prevent kidney disease or slow the progression of the disease have improved greatly over the past decade. Intensive blood glucose control and blood pressure control, use of angiotensin-converting enzyme (ACE) inhibitors, early referral to a renal team, preparation for dialysis, and dietary protein reduction can all markedly improve the outlook for those at risk for ESRD.³²⁻³⁴

Despite being increasingly recognized as high-risk groups for ESRD, minority populations, such as

Hispanics, do not receive the same standard of care as their white non-Hispanic counterparts. For Hispanics, there is less provision of renal replacement therapy, limited referral for home dialysis, underprescription of dialysis, increased use of synthetic grafts rather than fistulas as permanent angioaccess, and delayed placement on the waiting list for kidney transplantation.³⁵

Racial disparities in healthcare provisions have been demonstrated by several reports in the literature. A retrospective analysis of 220 patients showed that, even among those with medical insurance, delayed referral to a hospital nephrologist was almost six times more likely to occur in nonwhite patients (i.e., African Americans and Hispanics) than in white patients with chronic kidney disease (Table 1).³⁶ Delayed referral greatly limits opportunities for such patients to receive interventions that slow the progression of kidney failure and/or manage complications of the condition. Late referral is also associated

Table 2. Factors Associated with Late Initiation of Dialysis (Glomerular Filtration Rate of <5 mL/min/1.73 m²) in the United States³⁸

	Univariate		Multivariate	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Age (years)				
40-64	0.64	0.61, 0.67	0.93	0.88, 0.98
≥65	0.40	0.38, 0.42	0.69	0.64, 0.73
Female	1.55	1.50, 1.60	1.70	1.65, 1.76
Race				
African American	1.38	1.33, 1.43	1.01	0.97, 1.06
Hispanic	1.51	1.44, 1.59	1.47	1.38, 1.56
Asian	2.05	1.86, 2.26	1.66	1.49, 1.85
Other	2.03	1.87, 2.20	1.88	1.72, 2.05
Diabetes as cause of ESRD	0.47	0.46, 0.49	0.44	0.42, 0.45
Insurance status				
Medicare only	0.78	0.74, 0.82	1.03	0.97, 1.09
Medicaid only	1.21	1.15, 1.27	0.94	0.88, 1.00
Medicare and Medicaid	0.77	0.73, 0.82	0.88	0.82, 0.94
VA and other	0.78	0.75, 0.81	0.98	0.93, 1.03
None	2.08	1.96, 2.20	1.55	1.46, 1.66
Employment				
Unemployed	0.88	0.84, 0.92	0.83	0.79, 0.88
Retired, disabled, or medical leave of absence	0.50	0.48, 0.51	0.76	0.73, 0.80

CI: confidence interval; VA: Veterans Affairs.
Adapted from Kausz et al. 2000.

with longer hospital stays, increased expense, and a higher mortality rate.³²

A cross-sectional analysis of patients starting dialysis in the United States between 1995 and 1997 showed that, compared with whites, Hispanics were more likely to start dialysis late (multivariate odds ratio 1.47), as indicated by their glomerular filtration rate (Table 2).^{37,38}

Similar inequalities are also apparent in the kidney transplant service. Transplantation is the treatment of choice for patients with ESRD, being associated with better patient survival than dialysis.^{39,40} Hispanic patients with ESRD are less likely to be referred for transplantation and so can remain on dialysis for longer than the general white population. This was demonstrated by Kasiske et al. using univariate and multivariate analyses of 41,596 patients from all 238 United Network for Organ Sharing (UNOS) kidney transplant centers in the United States between 1994 and 1996.⁴¹ They found that patients from ethnic minorities, along with those who were less educated and less financially secure, were less likely than their white counterparts to be listed for transplantation before initiation of dialysis. Compared with white non-Hispanic patients, Hispanics had an odds ratio for early transplant registration of 0.59. Similar results were found even when the cohort was controlled for possible bias for general access to healthcare and referral for transplantation.

For patients with type-1 diabetes, simultaneous pancreas-kidney (SPK) transplantation has become established as an excellent alternative to kidney transplants and can prevent or possibly even reverse

diabetic complications.⁴²⁻⁴⁴ In a retrospective analysis carried out from 1988 to 1996, Isaacs et al. found striking racial differences in the rates of access to SPK transplants in all 562,814 patients with diabetes-related ESRD (Tables 3 and 4).⁴⁵ Although racial minorities represented 30% of type-1 diabetics with ESRD, they received only 8% of all SPK transplants in the United States. Whites were 35 times more likely to receive a SPK transplant than Hispanics, and three-and-a-half times more likely to have a kidney transplant than Hispanics.

This situation appears to be part of a general picture. Data from the Healthcare Cost and Utilization Project State Inpatient Database for California, Florida, and New York (covering half of the Hispanic population in the country) revealed that Hispanics were less likely than non-Hispanic whites to receive major therapeutic procedures for more than one-third of the 63 conditions examined.⁴⁶ Hispanics were more likely to be hospitalized for a preventable condition compared with white patients, even after controlling for differences in healthcare needs, socioeconomic status, insurance coverage, and the availability of primary care.⁴⁷

Possible reasons for these inequalities include inadequate patient education on the available treatment options; and financial, cultural, religious, and spiritual issues,^{37,48} combined with a lack of physician awareness of the effect of racial disparities on the presentation and management of illness.³⁷

ACCESS TO MEDICAL CARE

Economic factors contribute to a large proportion

Table 3. Racial Differences in the Waiting List and Transplantation Rates in the United States⁴⁵

Racial Group	Waiting List for Kidney Alone (%) (n=46,799)	Total Kidney-Alone Transplant (%) (n=87,824)	Waiting List for SPK (%) (n=1,839)	Total SPK Transplants (%) (n=3,298)
Hispanics	11.6	1.1	3.6	0.1
Whites	46.3	72.1	83.5	91.9
African Americans	34.9	21.4	11.3	5.4
Asian Americans	5.3	2.8	1.0	0.1
Native Americans	1.4	1.1	0.5	0.1
Other	0.5	2.2	0.6	2.3

Note: Waiting list rate indicates total number of patients on waiting list at March 1, 1999, and transplantation rate indicates total number of patients who underwent transplantation from 1988 to 1996. Values indicate the percentage of patients. Overall P=0.001 by Chi-square analysis.

Adapted from Isaacs et al. 2000.

of the disparities seen between Hispanics and the general U.S. population in the management of ESRD and its risk factors. In particular, lack of health insurance represents a major barrier to healthcare. Data from the Health and Retirement Survey revealed extremely low levels of insurance coverage among Hispanics, especially Mexican Americans.⁴⁹ In a study of patients with ESRD across the United States between 1995 and 1999, 13% of Hispanic Mexicans and 9% of other Hispanics did not have medical coverage, compared with 7% of non-Hispanics.⁵⁰

Patients who are without medical insurance are not only less likely to seek medical care^{51,52} but may also be less frequently referred for procedures and other services than those who are insured.⁵³ In a survey assessing quality of care, it was shown that 43% of Hispanics compared with 20% of whites were without a regular doctor, and this resulted in a dependency on safety-net facilities. In fact, 7% of the Hispanic community have no regular source of healthcare, or use the emergency room as their regular source of care.⁵⁴ Moreover, insurance policies often provide insufficient funding for expensive treatments—a factor that is further aggravated by the higher proportion of financially disadvantaged patients in the Hispanic community, compared with whites. Hispanics are not a homogeneous population. For example, Puerto-Rican Americans are almost two times more likely than Mexican Americans and over four times more likely than Cuban Americans to be covered by Medicare. Cuban Americans are most often privately insured and, of the three main Hispanic subgroups, Puerto-Rican Americans are most likely to attend at least one physician visit and show the highest level of service use.^{55,56}

Hispanics are less satisfied than the general white

population with physician visits.^{57,58} In one study, it was reported that both the quality of examinations and the reassurance and support offered by doctors to Hispanics were significantly poorer than for the general white population. Differences in satisfaction ratings arose from actual differences in experiences rather than measurement bias.⁵⁸

Hispanics, especially those with lower incomes, face many barriers in access to all types of healthcare, especially highly specialized procedures, such as transplants. Another explanation for the relatively low transplant rate among Hispanic diabetic patients may be that problems with citizenship status may preclude some patients from being listed in the UNOS registry. Other possible barriers to transplantation may include high mobility, especially among migrant and immigrant families. All of these factors may also impact negatively on Hispanics' access to dialysis or transplant procedures.

CULTURAL DIFFERENCES

Problems of access to care are compounded by a lack of physician understanding of cultural and socioeconomic issues relating to the Hispanic population. This lack of awareness leads to inadequate efforts by physicians to overcome cultural or religious barriers to essential medical care.³⁷

Even basic concepts regarding illness differ among racial groups. Among the general American population, good health is seen as a universal right. Among some Hispanics, illness may be viewed as an imbalance of the body due to fate, heredity, bad luck, wrongdoing, or other factors.⁵⁹

In many Hispanic groups, decisions about healthcare may be made by older female relatives, and home remedies tried before visiting a physician.⁸

Table 4. Risk Ratios for Transplantation in the United States⁴⁵

Racial Comparisons	Risk Ratio* for SPK Transplant	95% CI	Risk Ratio† for Kidney Transplant	95% CI
Whites vs Hispanics	34.86	12.63–109.17	3.44	3.21–3.68
Whites vs African Americans	5.84	5.00–6.83	1.60	1.57–1.63
Whites vs Asian Americans	17.49	6.32–54.91	1.01	0.97–1.06
Whites vs Native Americans	21.51	7.78–67.48	1.48	1.38–1.58

CI: confidence interval.

*For total ESRD caused by type-1 diabetes mellitus.

†For total ESRD.

Adapted from Isaacs et al. 2000.

Patients who have chronic conditions that cannot be cured may feel that the western physician does not know how to treat them, and so they may turn to a folk healer.

Religion also plays a major role, with ritual practices, such as visiting shrines and praying, being included in the treatment process. Mexican Americans may seek professional medical care only when self-treatment and folk-healing practices have failed.⁶⁰

Communication Barriers

Ways of communicating that are normal for the general U.S. population, such as plain-speaking, openness, and direct gaze, are not employed by Hispanics.⁵⁹ Directness and bluntness are considered rude by Hispanics, who instead value diplomacy, tact, and respect for others. The use of first names represents overfamiliarity, and personal matters are not generally discussed with strangers.

Language is a critical barrier, and patients are often unable or unwilling to communicate to their physician that they do not understand or speak English well enough to explain their symptoms or understand their diagnoses. Regardless of language skills, Hispanics are more likely to report difficulties in communicating with and understanding their doctor than the rest of the population: 33% of Hispanics report having communication difficulties with their physician, a figure that rises to 43% in Spanish-speaking Hispanics, compared with just 16% of whites.⁵⁴ Among insured, elderly adults, Spanish-speaking Hispanic patients are significantly less likely to visit a physician than non-Hispanic white patients.⁶¹ Spanish-speaking Hispanics are also less likely than English-speaking Hispanics to have a usual source of healthcare and are consequently less likely to see a physician or have their blood pressure checked.⁶²

DIRECTIONS FOR IMPROVEMENT

Education

Healthcare Providers. Healthcare providers, including primary care physicians, have an essential role to play in encouraging more Hispanic patients to be screened and treated for kidney disease and its risk factors. Physicians also have a responsibility to improve their referral of patients with kidney disease for appropriate treatment, such as dialysis, without delay.

In order to achieve the necessary improvements, healthcare providers need to become more culturally competent, providing care that will strengthen links with their Hispanic patients and improve the doctor-patient relationship.⁶³ Physicians should become knowledgeable about Hispanic customs, beliefs, and language. They should incorporate cultural beliefs

into the plans of care, bearing in mind that the Hispanic population is a heterogeneous group of several different cultures.⁶⁴ It is important that physicians and other healthcare providers are aware that Hispanic patients may be skeptical about western medical practices and that they may come to the doctor only when their own traditional methods of treatment have failed.⁶⁰

To offer assistance to physicians working with Hispanic populations, the National Hispanic Medical Association published its draft guidelines for the Hispanic Cultural Competence Curriculum Summer 2002 on its website (www.nhmamd.org). Evidence suggests that Hispanic and African-American physicians tend to care for minority group patients.⁶⁵ Affirmative action policies aimed at increasing the number of physicians from minority groups could have a positive impact on the delivery of care to the Hispanic population.

Patients. Education programs and materials specifically targeted at Hispanics are urgently needed to raise awareness of kidney disease and its risk factors. Education for the Hispanic population needs to change people's behavior with the aim of increasing the uptake of screening, treatment, and organ transplantation, as well as organ donation.

Such programs should complement other educational initiatives that already exist for the wider population. These initiatives include the National Kidney Foundation's Early Education Program, which is a screening program that aims to identify populations at higher risk of kidney disease, and the Minority Organ and Tissue Transplant Education Program, which aims to encourage healthier lifestyles to prevent kidney disease and kidney failure and to increase organ donation among racial and ethnic minorities.¹

Effective public education should be carried out at national, community, and family levels and can be achieved through the use of patient involvement and responsibility, national and local spokespersons and role models, mass media (television, radio, newspapers, and magazines, especially in Spanish), and outreach groups.

Community education projects require the involvement of Hispanics in planning and implementing the education program⁸ and should take into account the characteristics of the local Hispanic community, as different Hispanic subgroups have their own customs and healthcare needs. At an individual and family level, education programs should take advantage of the potential support for treatment that the family may provide.

Policies. Education programs require the support of national and state initiatives that target resources for providing access to kidney disease prevention and care, thus eliminating racial and ethnic dispari-

ties. Policies that address the healthcare needs of the uninsured population are likely to benefit the Hispanic community.⁶⁶

Successful policies will depend on better representation of minority groups on the panels making policy and financial decisions about healthcare. Organizations and community groups representing various racial sectors need to collaborate closely to coordinate efforts that address racial disparities. Further information is needed on the magnitude of and reasons for differences in access to and use of healthcare. Access to healthcare should be increased through the promotion of culturally and linguistically appropriate standards set forth by the U.S. Department of Health and Human Services.⁶⁷

Research

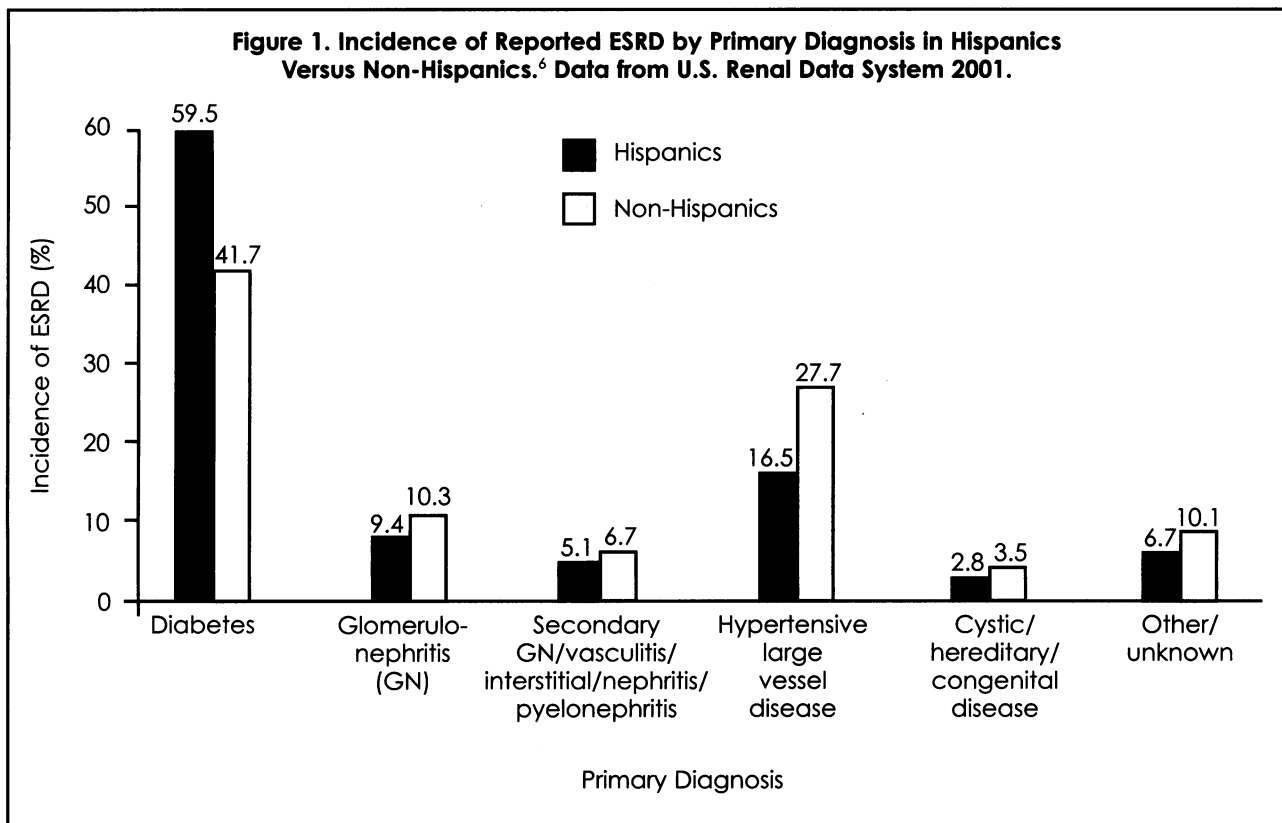
Improvements in clinical research that could benefit Hispanic patients include greater representation of minority groups in clinical research trials, possibly through locating trials in centers that are geographically placed to favor the enrollment of minority groups. In the reporting of trials, more attention should be devoted to data specific to Hispanics and other minority patients participating in the trials, so that differences between groups can be identified. This will also help improve the design of the most appropriate trials in the future. In addition, training of more Hispanic researchers and improved funding of research are needed.

Future trials need to include the assessment of community-based efforts to change outreach, enrollment, screening, and treatment patterns, along with estimates of the economic impact of inappropriate treatment of kidney disease in Hispanic groups. Compilation of data illustrating the impact of economic consequences, health outcomes, and quality-of-life issues on racial disparities in healthcare provisions may hasten policy changes that are needed to improve outcomes for such patient groups.

Ongoing studies are underway that may improve understanding of the molecular basis of kidney disease in Hispanics and other minority populations. The Family Investigation of Nephropathy and Diabetes study aims to identify genes that influence susceptibility to and severity of diabetic nephropathy in several U.S. racial populations, including Hispanics.¹ The Prospective Cohort Study of Chronic Renal Insufficiency is designed to provide detailed information on risk factors for progression to ESRD and cardiovascular disease in patients with chronic kidney disease, particularly with respect to genetic, environmental, and healthcare factors.¹ Patients from minority groups will be included in this study.

CONCLUSION

Unless effective preventive measures are taken to tackle the problem, the higher incidence of ESRD in the Hispanic population, coupled with the rapid



growth of this population, signal an ever-increasing burden on healthcare systems as well as on individual patients. Preventive steps include a carefully planned, determined drive to control risk factors, with achievable targets for better glycemic control and better hypertension control. Culturally sensitive steps are needed to redress the balance between Hispanic patients and the general U.S. population regarding access to and uptake of medical care. Effective strategies are needed to achieve better patient education and physician awareness of racial disparities. Appropriate policy changes at a national, state, and local level would create an environment that is more effective in meeting the specific healthcare needs of the Hispanic community in the chronic and costly disease area of ESRD.

ACKNOWLEDGEMENTS

Dr. Benabe is supported by grant #5 P20 RR11126-07 from NCR, NIH.

REFERENCES

- National Institutes of Health. Strategic Development and Planning Meeting Baseline Report. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2001.
- National Kidney Foundation K/DOQI Working Group. Clinical practice guidelines for chronic renal disease: evaluation, classification, and stratification. *Am J Kidney Dis.* 2002;39:S46-S75.
- Jones CA, McQuillan G, Kusek J, et al. Serum creatinine levels in the U.S. population: Third National Health and Nutrition Examination Survey [erratum in *Am J Kidney Dis.* 2000;35:178]. *Am J Kidney Dis.* 1998;32:992-999.
- Young EW. An improved understanding of the causes of end-stage renal disease. *Semin Nephrol.* 1997;17:170-175.
- Xue JL, Ma JZ, Louis TA, et al. Forecast of the number of patients with end-stage renal disease in the United States to the year 2010. *J Am Soc Nephrol.* 2001;12:2753-2758.
- U.S. Renal Data System. USRDS 2001 Annual Data Report: Atlas of End-Stage Renal Disease in the United States. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 2001.
- U.S. Census Bureau. Census 2000 Profiles of General Demographic Characteristics: National Summary. Atlanta, GA: U.S. Department of Commerce; 2000.
- Westberg J. Patient education for Hispanic Americans. *Patient Educ Couns.* 1989;13:143-160.
- Haffner SM, Fong D, Stern MP, et al. Diabetic retinopathy in Mexican Americans and non-Hispanic whites. *Diabetes.* 1988;37:878-884.
- Romero LJ, Lindeman RD, Liang HC, et al. Prevalence of self-reported illnesses in elderly Hispanic and non-Hispanic whites in New Mexico. *Ethn Dis.* 2001;11:263-272.
- Baxter J, Hamman RF, Lopez TK, et al. Excess incidence of known noninsulin-dependent diabetes mellitus (NIDDM) in Hispanics compared with non-Hispanic whites in the San Luis Valley, CO. *Ethn Dis.* 1993;3:11-21.
- Marshall JA, Hamman RF, Baxter J, et al. Ethnic differences in risk factors associated with the prevalence of noninsulin-dependent diabetes mellitus. The San Luis Valley Diabetes Study. *Am J Epidemiol.* 1993;137:706-718.
- Flegal KM, Ezzati TM, Harris MI, et al. Prevalence of diabetes in Mexican Americans, Cubans, and Puerto Ricans from the Hispanic Health and Nutrition Examination Survey, 1982-1984. *Diabetes Care.* 1991;14:628-638.
- Raymond CA. Diabetes in Mexican-Americans: pressing problem in a growing population. *JAMA.* 1988;259:1772.
- Pugh JA, Stern MP, Haffner SM, et al. Excess incidence of treatment of end-stage renal disease in Mexican Americans. *Am J Epidemiol.* 1988;127:135-144.
- Haffner SM, Hazuda HP, Stern MP, et al. Effects of socioeconomic status on hyperglycemia and retinopathy levels in Mexican Americans with NIDDM. *Diabetes Care.* 1989;12:128-134.
- Carter JS, Wiggins CL, Becker TM, et al. Diabetes mortality among New Mexico's American Indian, Hispanic, and non-Hispanic white populations, 1958-1987. *Diabetes Care.* 1993;16:306-309.
- Zhang J, Markides KS, Lee DJ. Health status of diabetic Mexican Americans: results from the Hispanic HANES. *Ethn Dis.* 1991;1:273-279.
- Pappas G, Gergen PJ, Carroll M. Hypertension prevalence and the status of awareness, treatment, and control in the Hispanic Health and Nutrition Examination Survey (HHANES), 1982-1984. *Am J Public Health.* 1990;80:1431-1436.
- Lorenzo C, Serrano-Rios M, Martinez-Larrad MT, et al. Prevalence of hypertension in Hispanic and non-Hispanic white populations. *Hypertension.* 2002;39:203-208.
- Samet JM, Coultas DB, Howard CA, et al. Diabetes, gallbladder disease, obesity, and hypertension among Hispanics in New Mexico. *Am J Epidemiol.* 1988;128:1302-1311.
- Pugh JA, Tuley MR, Basu S. Survival among Mexican-Americans, non-Hispanic whites, and African Americans with end-stage renal disease: the emergence of a minority pattern of increased incidence and prolonged survival. *Am J Kidney Dis.* 1994; 23:803-807.
- Ontiveros JA, Black SA, Jakobi PL, et al. Ethnic variation in attitudes toward hypertension in adults ages 75 and older. *Prev Med.* 1999;29:443-449.
- Hypertension among Mexican Americans—United States, 1982-1984 and 1988-1991. *Morb Mortal Wkly Rep.* 1995;44:635-639.
- Cangiano JL. Hypertension in Hispanic Americans. *Cleve Clin J Med.* 1994;61:345-350.
- Nichaman MZ, Garcia G. Obesity in Hispanic Americans. *Diabetes Care.* 1991;14:691-694.
- Raymond NR, D'Eramo-Melkus G. Noninsulin-dependent diabetes and obesity in the black and Hispanic population: culturally sensitive management. *Diabetes Educ.* 1993;19:313-317.
- Powers DR, Wallin JD. End-stage renal disease in specific ethnic and racial groups: risk factors and benefits of antihypertensive therapy. *Arch Intern Med.* 1998;158:793-800.
- Gardner Jr LI, Stern MP, Haffner SM, et al. Prevalence of diabetes in Mexican Americans. Relationship to percent of gene pool derived from native American sources. *Diabetes.* 1984;33:86-92.
- Moore ES, Cohn RA, John E, et al. Race is a factor in end-stage renal failure (ESRF) in children. Proceedings of the Joint Meeting of the American Pediatric Society and the Society for Pediatric Research, Washington, DC; 1986.
- Van Buynder PG, Gaggin JA, Martin D, et al. Streptococcal infection and renal disease markers in Australian aboriginal children. *Med J Aust.* 1992;156:537-540.
- Campbell JD, Evigman B, Hosokawa M, et al. The timing of referral of patients with end-stage renal disease. *Dial Transplant.* 1989;18:660-686.
- Ratcliffe PJ, Phillips RE, Oliver DO. Late referral for maintenance dialysis. *BMJ.* 1984;288:441-443.
- The absence of a glycemic threshold for the development of long-term complications: the perspective of the Diabetes Control and Complications Trial. *Diabetes.* 1996;45:1289-1298.
- Reddan DN, Szczech LA, Klassen PS, et al. Racial inequity in America's ESRD program. *Semin Dial.* 2000;13:399-403.
- Ifudu O, Dawood M, Iofel Y, et al. Delayed referral of black, Hispan-

- ic, and older patients with chronic renal failure. *Am J Kidney Dis.* 1999;33:728-733.
37. Kausz A, Obrador G, Pereira B. Anemia management in patients with chronic renal insufficiency. *Am J Kidney Dis.* 2000;36:S39-S51.
38. Kausz AT, Obrador GT, Arora P, et al. Late initiation of dialysis among women and ethnic minorities in the United States. *J Am Soc Nephrol.* 2000;11:2351-2357.
39. Wolfe RA, Ashby VB, Milford EL, et al. Comparison of mortality in all patients on dialysis, patients on dialysis awaiting transplantation, and recipients of a first cadaveric transplant. *N Engl J Med.* 1999;341:1725-1730.
40. U.S. Renal Data System. USRDS 1999 Annual Report. Bethesda, MD: National Institutes of Health, *National Institute of Diabetes and Digestive and Kidney Diseases*; 1999.
41. Kasiske BL, London W, Ellison MD. Race and socioeconomic factors influencing early placement on the kidney transplant waiting list. *J Am Soc Nephrol.* 1998;9:2142-2147.
42. Navarro X, Sutherland DE, Kennedy WR. Long-term effects of pancreatic transplantation on diabetic neuropathy. *Ann Neurol.* 1997;42:727-736.
43. Fioretto P, Mauer SM, Bilous RW, et al. Effects of pancreas transplantation on glomerular structure in insulin-dependent diabetic patients with their own kidneys. *Lancet.* 1993;342:1193-1196.
44. Tyden G, Bolinder J, Solders G, et al. Improved survival in patients with insulin-dependent diabetes mellitus and end-stage diabetic nephropathy 10 years after combined pancreas and kidney transplantation. *Transplantation.* 1999;67:645-648.
45. Isaacs RB, Lobo PI, Nock SL, et al. Racial disparities in access to simultaneous pancreas-kidney transplantation in the United States. *Am J Kidney Dis.* 2000;36:526-533.
46. Andrews RM, Elixhauser A. Use of major therapeutic procedures: are Hispanics treated differently than non-Hispanic whites? *Ethn Dis.* 2000;10:384-394.
47. Gaskin DJ, Hoffman C. Racial and ethnic differences in preventable hospitalizations across 10 states. *Med Care Res Rev.* 2000;57:85-107.
48. Tull ES, Taylor J, Hatcher AT. Influence of spirituality, religious commitment, and socioeconomic status on diabetes-management behaviors and diabetes complications in a population-based sample of Hispanics and African Americans with type-2 diabetes [abstract]. *Diabetes* 2001;50(suppl 2):A397.
49. Angel RJ, Angel JL. The extent of private and public health insurance coverage among adult Hispanics. *Gerontologist.* 1996;36:332-340.
50. Frazier E, Collins AJ, Chen SC. Trends in the Hispanic ESRD patient population. Available at: http://www.usrds.org/2001pres/html/08U_ASN_01_S_trends_hispanics_files/frame.htm. Accessed June 2002.
51. Horner RD, Oddone EZ, Matchar DB. Theories explaining racial differences in the utilization of diagnostic and therapeutic procedures for cerebrovascular disease. *Milbank Q.* 1995;73:443-462.
52. Freeman HE, Corey CR. Insurance status and access to health services among poor persons. *Health Serv Res.* 1993;28:531-541.
53. Mort EA, Edwards JN, Emmons DW, et al. Physician response to patient insurance status in ambulatory care clinical decision-making. Implications for quality of care. *Med Care.* 1996;34:783-797.
54. Doty MM, Ives BL. Quality of care for Hispanic populations: findings from the Commonwealth Fund 2001 Health Care Quality Survey. Publication #526. New York, NY: The Commonwealth Fund; 2002.
55. Schur CL, Bernstein AB, Berk ML. The importance of distinguishing Hispanic subpopulations in the use of medical care. *Med Care.* 1987;25:627-641.
56. Dietz TL, John R, Roy LC. Exploring intra-ethnic diversity among four groups of Hispanic elderly: patterns and levels of service utilization. *Int J Aging Hum Dev.* 1998;46:247-266.
57. Andersen RM, Giachello AL, Aday LA. Access of Hispanics to healthcare and cuts in services: a state-of-the-art overview. *Public*

Health Rep. 1986;101:238-252.

58. Morales LS, Reise SP, Hays RD. Evaluating the equivalence of health-care ratings by whites and Hispanics. *Med Care.* 2000;38:517-527.
59. da Silva GC. Awareness of Hispanic cultural issues in the healthcare setting. *Child Health Care.* 1984;13:4-10.
60. Gonzalez-Swofford MJ, Gutierrez MG. Ethnomedical beliefs and practices of Mexican Americans. *Nurse Pract.* 1983;8:29-30, 32, 34.
61. Fiscella K, Franks P, Doescher MP, et al. Disparities in healthcare by race, ethnicity, and language among the insured: findings from a national sample. *Med Care.* 2002;40:52-59.
62. Schur CL, Albers LA. Language, sociodemographics, and health-care use of Hispanic adults. *J Health Care Poor Underserved.* 1996;7:140-158.
63. Pousada L. Hispanic-American elders. Implications for healthcare providers. *Clin Geriatr Med.* 1995;11:39-52.
64. Caudle P. Providing culturally sensitive healthcare to Hispanic clients. *Nurse Pract.* 1993;18:40, 43-46, 50-51.
65. Komaromy M, Grumbach K, Drake M, et al. The role of black and Hispanic physicians in providing healthcare for underserved populations. *N Engl J Med.* 1996;334:1305-1310.
66. Wagner TH, Guendelman S. Healthcare utilization among Hispanics: findings from the 1994 Minority Health Survey. *Am J Manage Care.* 2000;6:355-364.
67. Assuring cultural competence in healthcare: recommendations for national standards and outcomes-focused research agenda. *Federal Register.* 2000;65:80865-80879. ■

CAREER OPPORTUNITY

University of Cincinnati

Postdoctoral Fellow (4 Positions)

The University of Cincinnati Medical Center has available four positions for a postdoctoral fellow to perform biomedical research in surgical diseases of the alimentary tract. The training program centers on a supervised laboratory research project directed by a core or adjunct preceptor with oversight by the research focus group co-directors. This position will be funded by a NIH/NIDDK T32 grant.

Minimum qualifications: MD or PhD and two years clinical experience in an ACGME accredited training program. Applicant must display an interest in an academic career in GI surgery or a closely related subspecialty such as surgical oncology.

Positions are available until filled. Send letter of interest (noting control #24UC3228,29,30,31) and resume to:

Wanda French
University of Cincinnati Medical Center
PO Box 670558
Cincinnati OH 45267-0558
or email: wanda.french@uc.edu

The University of Cincinnati is an affirmative action/equal opportunity employer. UC is a smoke-free work environment.

