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Rates of Kidney Transplantation From Living and Deceased Donors for Blacks and Whites in the United States, 1998 to 2011.

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The sensitivity analysis that included individuals with diabetes mellitus as secondary prevention did not alter the patterns seen in Figure, A), but there was a decrease in primary prevention use to 30.3% (95% CI, 26.4%-34.4%) in 2011 to 2012.

Discussion | One-third of community-dwelling very elderly individuals without vascular disease reported a statin prescription despite a lack of randomized clinical trials to support their use.^{1,2} Despite a lack of clear recommendation for statin use in the primary prevention of the very elderly within the Adult Treatment Panel III guideline,⁶ there was a large increase in use that coincided with its release. The primary limitation of our study is the change in the classification of vascular disease, which likely increased the sensitivity and decreased the specificity of vascular disease. Hence, the classification of primary prevention likely became more conservative. Although the medical community has embraced the use of statins for primary prevention in the very elderly, caution should be exercised given the potential dangers of expanding marginally effective treatments to untested populations.

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Rates of Kidney Transplantation From Living and Deceased Donors for Blacks and Whites in the United States, 1998 to 2011

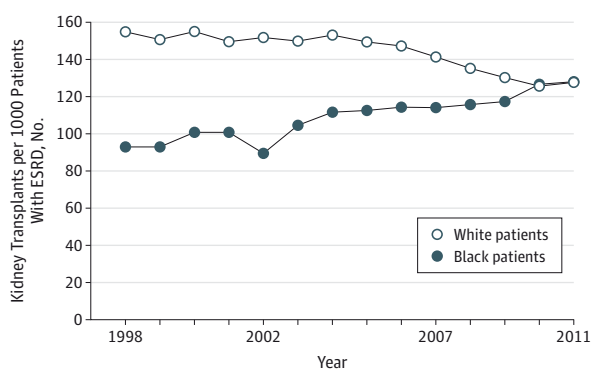
Kidney transplantation, the treatment standard for patients with end-stage renal disease (ESRD), is associated with prolonged survival, improved quality of life, reduced morbidity, and lower health care costs compared with dialysis.¹ Racial disparities in kidney transplantation are well documented; studies show that black patients are less likely than white patients to be referred for transplant evaluation, registered for transplantation, progress through the waiting list, and ultimately receive a transplant.² The effects of ongoing efforts to eliminate these disparities are uncertain.³ We used data from the United Network of Organ Sharing (UNOS) registry to examine current patterns of racial disparities in kidney transplantation. To focus on the decision to refer patients for transplantation, we used patients with ESRD as the denominator, not patients on the transplant waiting list.

Methods | To identify transplant recipients and living donors, we queried the UNOS data registry (1998 to 2011). We obtained data on the incidence of ESRD, stratified by race, from the United States Renal Data System and calculated temporal trends in kidney transplantation (per 1000 patients with ESRD) for all transplant recipients and separately for those with deceased and living donors. We adjusted the trends for age, sex, ESRD cause, and geographic region using the direct-iterative adjustment method⁴ and reported the adjusted trends using the estimated annual percent change methodology.

Results | Between 1998 and 2011, 184 303 patients, 13.5% of the 1 355 671 patients with ESRD in the United States Renal Data System, underwent kidney transplantation. Of these patients, 37.1% (n = 68 381) underwent living donor transplantation. **Figure 1** shows that the incidence of kidney transplantation in black patients increased at an annual rate of 2.84% from 93 per 1000 patients with ESRD in 1998 to 128 per 1000 in 2011 (95% CI, +2.32% to +3.41%; *P* < .001). Thus, by 2010, the incidence of kidney transplantation for black and white patients was equivalent.

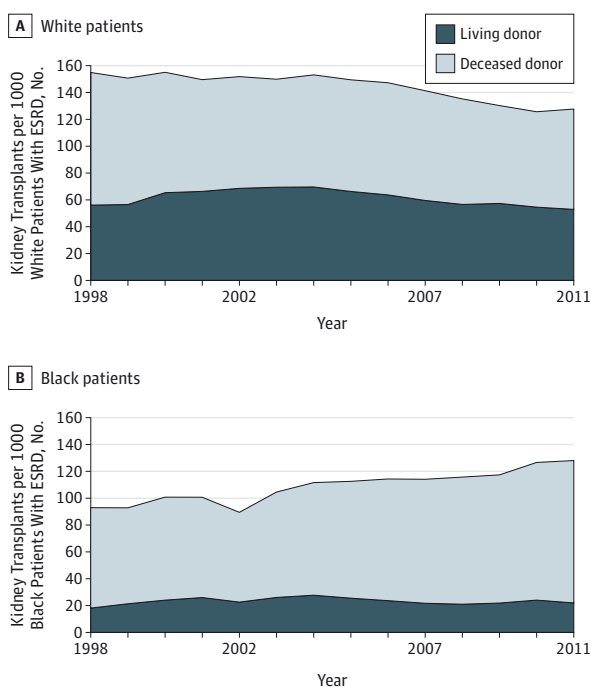
In whites, the rate of transplantation from deceased donors declined between 1998 and 2011 (estimated annual percent change, -1.66%; 95% CI, -2.11% to -1.20%; *P* < .001), while the rate of transplantation from living donors was unchanged (estimated annual percent change -1.05%; 95% CI, -2.33% to +0.24%; *P* = .14) (**Figure 2A**). For black patients, the rate of kidney transplantation from deceased donors increased (estimated annual percent change, +3.49%; 95% CI, +2.81% to +4.29%; *P* < .001), while the rate of transplantation from living donors was unchanged (estimated annual percent change, +0.14%; 95% CI, -1.73% to +2.01%; *P* = .88) (**Figure 2B**). Over the study period, the percentages of kidney transplants from living donors were 43.2% for white patients and 22.2% for black patients. Of live kidney donations, 15.5% were from black donors; the rate remained stable (estimated annual percent change, -0.78%; 95% CI, -2.53% to +1.21%; *P* = .45).

Figure 1. Incidence of Kidney Transplantation in Black and White Recipients Between 1998 and 2011



The incidence was adjusted for age, sex, end-stage renal disease (ESRD) cause, and geographic region.

Figure 2. Incidence by Donor Status of Kidney Transplantation in Black and White Recipients Between 1998 and 2011



The incidence was adjusted for age, sex, end-stage renal disease (ESRD) cause, and geographic region.

Discussion | In 2003, UNOS changed the allocation policy for kidneys from deceased donors by eliminating priority points for HLA-B matching.³ Because HLA shows clustering within race, and whites represent the majority demographic, most deceased donors are white; thus, kidneys from deceased donors are more likely to have favorable HLA matches with white patients. This policy change has been associated with an attenuation of the racial disparity in deceased donor kidney transplantation from 38% in the 2000-2003 period to 19% from 2006 to 2009.⁵ We found that by 2010, the overall rate of kid-

ney transplantation was the same for blacks and whites; this change was driven wholly by increased rates of transplants from deceased donors.

Kidney transplants from living donors are associated with better outcomes than transplants from deceased donors.⁶ The persistence of lower rates of living donors among blacks limits access to the best possible transplant outcomes. Lower donation rates have been attributed to differences in socioeconomic status, personal attitudes toward transplantation, fear of surgery, and health literacy.^{1,4} The higher prevalence of comorbid conditions among potential black donors, such as hypertension and diabetes, may also preclude organ donation.¹ Approaches to increasing living donor kidney transplantation rates include outreach and educational programs, better patient-physician communication, and counseling of black patients with ESRD and their families. Such measures, if effective, hold potential for expanding the overall donor pool, thus improving care for all patients with ESRD.

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Additional Information: This work is based on United Network for Organ Sharing, Organ Procurement and Transplantation Network data as of June 2013.

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COMMENT & RESPONSE

The Link Between Sauna Bathing and Mortality May Be Noncausal

To the Editor Laukkanen et al¹ found a striking inverse relationship between saunas (mean temperature, 79°C [174°F]) and fatal cardiovascular disease in Finnish men. The hazard of sudden cardiac death was more than 60% lower among men who reported 4 to 7 sauna sessions per week compared with those who reported only 1 session. For deaths from coronary heart disease, cardiovascular disease, and all causes, the corresponding hazard ratios were 40% to 50% lower. If these observed associations are causal, the risk reduction associated with frequent sauna visits would be comparable to or greater than that for traditional prevention strategies, such as lipid-lowering and antihypertensive therapy (risk reduction, 20%-50%).^{2,3}

We would like to highlight 2 noncausal mechanisms potentially contributing to the finding by Laukkanen et al¹: confounding and reverse causation bias. First, there is an extraordinarily pervasive association between socioeconomic circumstances and health, with greater affluence linked to lower risk.⁴ Men who reported 4 to 7 sauna sessions a week probably own a sauna and had the time and resources (ie, wood or electricity) to heat it frequently, which is possibly not the case for men who reported 1 sauna session a week. Adjustment for a composite socioeconomic status variable measured once at baseline might be insufficient to eliminate confounding by this socioeconomic difference.

Second, the authors note heart rate increases up to 100 beats/min during sauna sessions at moderate temperatures and up to 150 beats/min during hotter saunas. Although not an issue for healthy individuals, such a cardiac challenge may feel uncomfortable for participants with poor cardiorespiratory fitness and pre-existing disease. Simple adjustment for disease vs no disease may not entirely solve this problem since reverse causation bias (ie, health status affects the likelihood of

a sauna session) operates within disease groups; the more severe the disease, the greater the fear of cardiac challenge. Consistent with this reasoning, the association between saunas and sudden cardiac death was seen in individuals with diabetes (hazard ratio [HR], 0.27; 95% CI, 0.10-0.68; $P < .05$) but not those without (HR, 0.90; 95% CI, 0.73-1.10; $P > .05$), among hypertensive (HR, 0.66; 95% CI, 0.45-0.96; $P < .05$) but not normotensive individuals (HR, 0.96; 95% CI, 0.75-1.23; $P > .05$), among patients with cardiovascular disease (HR, 0.72; 95% CI, 0.53-0.96; $P < .05$) but not their healthy counterparts (HR, 1.01; 95% CI, 0.76-1.33; $P > .05$) (eFigure 1 in the study by Laukkanen et al¹). A more robust finding at reduced risk of reverse causation bias would be a graded association between number of sauna sessions and mortality in an initially healthy, cardiorespiratory fit population, but this was not observed. We urge caution against the interpretation that saunas are a major cardiovascular prophylactic.

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The Link Between Sauna Bathing and Mortality May Be Noncausal

To the Editor In their recent report, Laukkanen et al¹ summarize a 25-year longitudinal study, indicating that regular sauna bathing (4-7 times per week) is associated with a reduced risk of cardiovascular diseases and all-cause mortality. We would like to suggest that regular sauna bathing is an indicator for a healthy lifestyle. Adopting habits of frequent physical activity, avoiding rich food high in saturated fat, and allowing for more relaxation and leisure time have been proven to be the best measures against many diseases and are also associated with improved health and longevity. Laukkanen et al do not provide data to explain this observation, but other studies suggest that regular sauna bathing lowers blood pressure, improves endothelial function, increases left ventricular ejection