A
s of January 19, 2013, there were 120,796 individuals awaiting an organ transplant in the United States. Despite the success of transplantation, nearly 20 people die each day waiting for an organ. Although the organ shortage affects all ethnic groups, it is more pronounced in minority populations. There have been ongoing efforts to address this discrepancy between organ supply and demand, all with varying results. Our research team has focused on improving donation outcomes among Hispanic Americans. Interventions have included educational programs at high schools, churches, and local community clinics, as well as local media campaigns.

The optimal outcome to assess the efficacy of donation interventions would be an observed increase in actual donation and donation registrations. The goal of this study was to measure how our interventions affected organ donation rates at the primary medical center that provided care for the population studied. Our hypothesis was that the favorable donation interventions would lead to an increase in the consent rate for organ donation during the time of the interventions.

Methods
This study is one of several components of a project intended to increase organ donation rates in Los Angeles County. This
study was approved by the institutional review board of Cedars-Sinai Medical Center. Written and verbal consent was obtained for the appropriate interventions, ie, high schools and churches, respectively, before the conduction of their respective surveys.

The Target Neighborhoods

Four Southern California neighborhoods with high percentages of Hispanic Americans in close proximity to a major metropolitan level I trauma center that provides most of the neighborhoods' care were identified using United States Census data. The target neighborhoods were identified by zip code. Three of the neighborhoods were study communities where the interventions were implemented and 1 served as the control community, with no interventions. All target neighborhoods were within a 5-mile radius of the Los Angeles County and the University of Southern California Medical Center (LAC + USC), where all of the donation data were obtained.

Interventions

The interventions included educational programs at high schools, churches, and local community clinics, as well as local media campaigns. Details of the interventions have been described previously. For the community clinic intervention, 4 primary care clinics in the target neighborhoods were identified. Kiosks containing organ donation educational material and donor registry forms were provided at each clinic for 7 weeks. The intervention was designed to allow the kiosks to be unstaffed for 3 weeks, staffed for 1 week, and then unstaffed for the remaining 3 weeks. For the 6 weeks that the kiosks were unstaffed, the educational material and registry forms were available for any participant who was interested. For 1 week, the kiosks were staffed by individuals from the local organ procurement organization, OneLegacy. These individuals were either members of donor families or organ recipients who were available to answer questions regarding organ donation. Forms were available at all times for immediate registration with the California organ donor registry. The number of patient encounters and patients who signed up for the registry were recorded and analyzed.

Donation Outcomes

The records of patients referred to OneLegacy for possible organ donation between 2005 and 2011 were reviewed. Data regarding the numbers of referrals for organ donation, potential donors, actual donors, and family rates of decline or consent were recorded. Demographics including age, sex, and ethnicity of all donors were also recorded.

Statistical Analysis

Polynomial contrasts were used to test the trend of mean age from 2005 through 2011. Linear, quadratic, and cubic contrasts were tested with 1 degree of freedom. When no particular patterns of difference were found among the means, we reported the result of the linear contrast test. The Cochran-Armitage trend test was performed to examine the trend of proportion of male individuals and Hispanic Americans over time, as well as the trend of the consent rate from 2005 through 2011. The consent rate among potential donors was calculated using the number of consented participants divided by the number of potential donors. SAS statistical software (version 9.1; SAS Institute) was used to conduct all analyses.

Results

During the study period, 25,724 people were contacted using the educational interventions at high schools, churches, and local community clinics, as well as local media campaigns. The demographics have been described previously. In addition, there were 1086 referrals, 183 potential donors, and 155 actual donors. Table 1 describes the demographics of all 3 groups. For actual donors, differences in male sex, age, and percentage with Hispanic ethnicity did not change over time (Table 1). Table 2 provides the consent rates of the study population by year. As noted in Table 2 and the Figure, there was a
significant increase in the consent rate during the time period for all donors (P = .02). When analyzed by ethnicity, Hispanic Americans maintained a significant increase in consent rate over time (P = .004), whereas participants who were not Hispanic Americans did not (P = .21).

### Discussion

The aim of this study was to determine if community education interventions that target Hispanic Americans increased the consent rate for organ donation at the hospital that provides most of the care for the target population. We observed a significant increase in the consent rate over time. More important, this increase was owing to a rise in the consent rates among Hispanic Americans, with no change observed among those who were not Hispanic Americans, suggesting a beneficial effect of our education interventions over time.

Our research team has chosen to address the organ shortage among Hispanic Americans for a number of reasons. First, it is well documented that the Hispanic American community is the fastest growing minority population in the United States. The Hispanic American population is projected to more than double in the United States, from 53.3 million in 2012 to 128.8 million in 2060. Nearly 1 in 3 US residents will be Hispanic American by 2060. In California, Hispanic Americans are expected to become the state’s largest ethnic group by 2025 and will account for 41% to 47% of the population.

Second, along with Hispanic Americans population growth, there is a disproportionate rise in transplant need. Hispanic Americans have higher rates of obesity, type 2 diabetes mellitus, and end-stage renal disease compared with the general population. These diseases correlate with an increased need for organ transplantation. Currently, Hispanic Americans represent 16.9% of the US population and account for 18.1% of the candidates on the organ donation waiting list. With the projected increase in the Hispanic American population, this disparity will only increase.

Finally, while there has been a dramatic increase in the number of Hispanic Americans on organ donation waiting lists, the Hispanic American population is 60% less likely to donate organs than white individuals. A large presence on the waiting list, along with a historical lack of intent to donate, makes the Hispanic American community a prime population on which to focus resources and educational efforts.

Our previous interventions have demonstrated a significant increase in the overall knowledge, awareness, and beliefs regarding donation; however, the change in intent to donate was variable. Given this variability, evaluating organ donation consent rate is a more effective outcome measure.

### Table 2. Consent Rate by Year, 2005-2011

<table>
<thead>
<tr>
<th>Participants Who Gave Consent</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All participants</td>
<td>30/50 (60)</td>
<td>19/32 (59)</td>
<td>25/34 (74)</td>
<td>20/34 (59)</td>
<td>24/34 (71)</td>
<td>30/41 (73)</td>
<td>35/43 (81)</td>
<td>.02</td>
</tr>
<tr>
<td>Hispanic</td>
<td>18/32 (56)</td>
<td>12/16 (75)</td>
<td>18/24 (75)</td>
<td>11/18 (61)</td>
<td>19/25 (76)</td>
<td>17/23 (74)</td>
<td>24/29 (83)</td>
<td>.004</td>
</tr>
<tr>
<td>Not Hispanic</td>
<td>12/18 (67)</td>
<td>7/16 (44)</td>
<td>7/10 (70)</td>
<td>9/16 (56)</td>
<td>5/9 (56)</td>
<td>13/18 (72)</td>
<td>11/14 (79)</td>
<td>.21</td>
</tr>
</tbody>
</table>
Conclusions

We provide strong evidence that an aggressive, targeted outreach effort increases consent rates for organ donation. During the study period, a significant increase in consent rate was observed among the targeted Hispanic American population and was not evident in the population that was not Hispanic. Continued, similar efforts addressing the ongoing organ shortage crisis are warranted.

REFERENCES


