# Underserved Areas and Pediatric Resident Characteristics: Is There Reason for Optimism?

Danielle Laraque-Arena, MD, FAAP; Mary Pat Frintner, MSPH; William L. Cull, PhD

From the State University of New York, Upstate Medical University, Syracuse, NY (Dr Laraque-Arena); and Department of Research, American Academy of Pediatrics, Elk Grove Village, Ill (Ms Frintner and Dr Cull)
The authors declare that they have no conflict of interest.
Address correspondence to Danielle Laraque-Arena, MD, FAAP, 766 Irving Avenue Weiskotten Hall, First Floor Room 1158 Syracuse, New York 13210 (e-mail: laraqued@upstate.edu).

## ABSTRACT

**OBJECTIVE:** To examine whether resident characteristics and experiences are related to practice in underserved areas.

**METHODS:** Cross-sectional survey of a national random sample of pediatric residents (n = 1000) and additional sample of minority residents (n = 223) who were graduating in 2009 was conducted. Using weighted logistic regression, we examined relationships between resident characteristics (background, values, residency experiences, and practice goals) and reported 1) expectation to practice in underserved area and 2) postresidency position in underserved area.

**RESULTS:** Response rate was 57%. Forty-one percent of the residents reported that they had an expectation of practicing in an underserved area. Of those who had already accepted postresidency positions, 38% reported positions in underserved areas. Service obligation in exchange for loans/scholarships and primary care/academic pediatrics practice goals were the strongest predictors of expectation of practicing in underserved areas (respectively, adjusted odds ratio 4.74, 95% confidence interval 1.87–12.01; adjusted odds ratio 3.48, 95% confidence interval 1.99–6.10). Other significant predictors include hospitalist practice goals, primary care practice goals, importance of racial/ethnic diversity of patient population in residency selection, early plan (before medical school) to care for underserved families, mother with a graduate or medical degree, and higher score on the Universalism value scale. Service obligation and primary care/academic pediatrics practice goal were also the strongest predictors for taking a postresidency job in underserved area.

**CONCLUSIONS:** Trainee characteristics such as service obligations, values of humanism, and desire to serve underserved populations offer the hope that policies and public funding can be directed to support physicians with these characteristics to redress the maldistribution of physicians caring for children.

**KEYWORDS:** diversity; pediatric residents; underserved areas; underserved populations

ACADEMIC PEDIATRICS 2016;16:401–410

## WHAT'S NEW

The maldistribution of the physician workforce exists and is associated with the intractable problem of unmet needs of underserved communities. Service obligation and a practice goal of primary care/academic pediatrics were the strongest predictors for taking a postresidency job in an underserved area.

HEALTH CARE FOR the millions of Americans where services are often sparse remains a long-standing and serious problem.[1] The Health Resources and Services Administration (HRSA), the charge of which is increasing access to basic health care for those who are medically underserved, targets several groups including those who lack health insurance and those living in rural and poor urban neighborhoods.[1] Addressing the health care needs of underserved pediatric populations as defined by HRSA requires a focused analysis of the factors responsible for the distribution of the pediatric workforce.[2,3] Current approaches to address the problem of physician maldistribution in general have included expanding medical school admission classes[4] and recruitment strategies to attract physicians to underserved areas through financial incentives and educational innovations.[5–10] Research on the effects of scholarships, grants, and loan repayment programs indicates that program participants are more likely to work in underserved areas in the long run.[11] Physician characteristics, such as belonging to a minority group, disadvantaged socioeconomic backgrounds, and growing up in a rural area are also related with later practice in underserved areas.[12–14]

Recent efforts in medical school and residency programs to address the needs of underserved populations have included experiences in primary care, with underserved patients, and in community health centers.[5,15] While a national study found that pediatric residents felt prepared to care for underserved populations,[16] little research is available on resident desire to work in underserved areas. The American Academy of Pediatrics (AAP) policy statement on the pediatric workforce[2] concluded that the current supply of primary care pediatricians is not

sufficient to address the needs of children living in underserved areas. Thus, specific research is needed to better understand the factors affecting the distribution of pediatricians, the largest group of child physicians.

The purpose of this study was to examine relationships among pediatric residents' personal backgrounds and values, residency experiences, and clinical practice goals; and having an expectation of practicing in an underserved area and taking a postresidency position in an underserved area. The first outcome is an estimate of the intention of residents to work in underserved areas, whereas the second outcome is the actual location of the postresidency position.

## METHODS

We analyzed data from the AAP 2009 Annual Survey of Graduating Residents (GRS), which was sent to a national random sample of 1000 pediatric residents and an oversample of 223 minority pediatric residents who were graduating in 2009 (total possible respondents, 1223). The oversample, previously described,[16] included residents whose race or ethnicity was known to be black, American Indian, Hispanic, or race other than white or Asian. The random sample was selected from an AAP database, which includes all residents from all US pediatric programs (n = 2672). We sent the survey to residents up to 8 times, alternating between mail and e-mail, during and after their last months of training (May–October 2009). The AAP institutional review board approved the survey as exempt.

### SURVEY CONTENT AND MEASURES

The AAP GRS is an annual cross-sectional survey to assess training experiences, practice goals, and job search experiences. The 2009 survey included additional questions on background characteristics, values, training, attitudes and experiences in cross-cultural care.[16] The new questions were based on literature review and derived from the Association of American Medical Colleges (AAMC) Medical School Graduation Questionnaires, and other surveys.[17–24] Before being questioned about underserved populations and areas, residents were provided the following definition for underserved populations: "groups of persons who face economic, racial, cultural or linguistic barriers to health care"—a slightly modified version of the HRSA definition.[25]

### OUTCOMES

We examined 2 main outcomes: expectation of practicing in underserved area ("Career Intentions: Do you plan to practice in an underserved area?") and postresidency position taken in underserved area ("New Job: Is your new position located in an underserved area?"). Response options for both questions were yes, no, and uncertain, which were dichotomized as yes and no/uncertain.

### PREDICTORS

We examined several predictors categorized into 4 domains: personal background, personal values, residency experiences, and clinical practice goals. Educational debt

was categorized by quartiles because a proportion of residents do not have any debt[26] and the distribution of debt is not normal. We used a modified version of the Universalism value scale from the Schwartz values questionnaire, which was developed to study individual differences in values and has been validated.[23,24] We used the questions designed to assess motivation to enhance and protect all people, which might be related to care of indigent patients.[23] Residents rated how important several values are as guiding principles in their life (from 1 = not important at all to 7 = very important): equality (equal opportunity for all); social justice (correcting injustice, care for the weak): knowledge (a mature understanding of life); broadminded (tolerant of different ideas and beliefs); protecting the environment (preserving nature); and nonviolence (a focus on peaceful resolution of conflict).[23] The Universalism value scale was computed by averaging the ratings of the 6 values. We conducted a test of internal consistency of the 7-item modified Universalism value scale using Cronbach's alpha.

Residents reported on their perception of the percentage of patients that they cared for during residency for groups categorized by the following: race/ethnicity, low income, and limited English proficiency. Responses were dichotomized as high and low on the basis of the mean percentage. We also asked residents about the location of their new position: urban, inner city; urban, not inner city; small town or city; suburban; rural; or outside the United States. Additional descriptive data on the characteristics, training, and attitudes of the respondents have been previously reported.[16]

### ANALYSIS

Responses from the random and additional minority samples were combined. We applied weights to all analyses to adjust for the differential selection probability (eg, random sample selection; additional minority sample selection) and to adjust for nonresponse (eg, differences in response for the random sample and the minority sample), which we previously described.[16] All analyses use weighted data, except unweighted numbers are provided in .

We examined relationships between the predictor and 2 outcome variables (career intentions: expectation of practicing in an underserved area; and new job: postresidency position taken in underserved area). Predictor variables were chosen because they provide a demographic profile of residents or because we hypothesized that they would be related to the outcome variables. For bivariate analyses, we used chi-square tests for categorical predictor variables and single-item logistic regression for continuous predictor variables (age and Universalism value scale). We also used chi-square tests to examine the following relationships: postresidency position taken in underserved area and specific area of the new position; and the 2 outcome variables (expectation of practicing in underserved area and postresidency position taken in underserved area). We analyzed the relationship between the 2 outcome variables separately for each of the clinical practice goals