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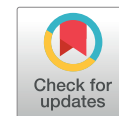
EDITORIAL

Insights Into Addressing Structural Barriers and Building Specialty Diversity Through a Successful Pipeline Pathway Program

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Unique opportunities to effect change to achieve health equity are being presented to the body of medical educators, health care institutions, and specialty associations. Acting on these opportunities entails taking definitive action to address the barriers to achieving health equity nationwide. More specifically, achieving this aspirational goal will require several courageous steps by the medical community, which include, in part (1) acknowledgment of the historical constructs of racism that belie the foundation of health care; (2) analyses of demographic data of the physician workforce and separately that of patients who are overrepresented in health care disparities; and (3) critical review and subsequent revision of current policies and infrastructure that may serve as barriers to diverse populations of aspiring physicians at the program, institutional, and association levels. This is a reverse ideation approach that encourages the decision makers and policymakers in medical education (ie, deans, chairs, program directors, and hospital system leaders) to become actively engaged in addressing the aforementioned opportunity, which is necessary for meaningful and sustainable change if we are to address the opportunity at hand.

Narrowing focus, the benefits of having a diversified physician workforce are well documented. From documented improved patient satisfaction and outcomes secondary to increased trust and communication between the

physician and patient,¹ to having increased numbers of physicians willing to serve underserved populations,² to improved cultural understanding among colleagues from diverse backgrounds at the medical school and training levels that extend to physicians exhibiting more cultural competence and humility in patient care,³ the merits of a diversified physician workforce are significant.

The challenge of increasing diversity in the physician workforce is longstanding, but it has only now provoked broad attention, amid disparate mortality rates due to COVID-19 and simultaneous racial unrest nationally in the first half of 2020. With inquiries emerging regarding effective processes and programs that have proven track records in affecting the composition of the physician workforce based on race and ethnicity, and with some intersection with gender, it behooves those in medical education—especially those in specialties that are the least diverse, such as radiation oncology—to explore such efforts and the characteristics that may lead toward successful diversification efforts. The relative absence of Black trainees and faculty in radiation oncology as demonstrated in the recent analysis “I Can’t Breathe: The Continued Disproportionate Exclusion of Black Physicians in the United States Radiation Oncology Workforce,” by Deville et al,⁴ is prime for such effort.

One such program that has worked to increase diversity of the physician workforce at the graduate

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medical education level is Nth Dimensions, a 501c3 nonprofit organization that I had the pleasure of founding more than 16 years ago. The mission of Nth Dimensions is to address health disparities by increasing the number of women and underrepresented in medicine (URiM) physicians in the most competitive medical and surgical specialties, with initial program efforts focused in orthopedic surgery. Between 2015 and 2019, Nth Dimensions experienced an average 93% match rate of its Nth Dimensions scholars, who are women and URiMs in orthopedics.⁵ In addition, women students who participated in Nth Dimensions programs were 45 times more likely to apply to orthopedic residency positions, and URiM scholars were 15 times more likely to apply to orthopedic surgery positions.

With intention, Nth Dimensions has integrated key elements of early exposure, specialty immersion experiences, and ongoing professional development with strategic mentoring in its curriculum for medical students and residents. The *early exposure* components of the curriculum introduce high school, undergraduate, and first-year medical students to specialty fields by having women and URiM physicians deliver clinical lectures and then lead simulated bioskills workshops via simulated surgeries and procedures. Targeting learners either before or during their first year in medical school exposes students who may not have been exposed to competitive specialties or role models in those specialties, or whose medical schools may not have some competitive specialties in their institutions. Interested students would thereby have adequate time to build competitive applications for the specialty to include expectations for academic, research, and standardized test performance, as well as time to build mentoring relationships within the specialty.

The *immersion* aspect of the Nth Dimensions curriculum is its flagship program, the Nth Dimensions Summer Internship Program (NDSI), which selects promising students through a rigorous application process to shadow a board-certified physician in their chosen specialty to gain clinical exposure and research experience during the 6- to 8-week window between their first and second years in medical school. The goals are to provide hands-on clinical exposure for the students in all settings and to encourage rapport between students and their assigned preceptor and for the students to participate in a research project suitable for future presentation or publication. At the completion of the NDSI, the Nth Scholars present their research at a national meeting, which enables these rising second-year students to enter their second year in medical school with 3 competitive components on their curriculum vitae. Finally, Nth Scholars receive scholarship support to participate in a 9-month Step 1 Board preparatory program.

Once students have taken their US Medical Licensing Examination Step 1 examinations, Nth Dimensions

provides *ongoing professional development* opportunities, both remotely and in person. Monthly webinars cover relevant topics, including developing a research portfolio, residency interviewing skills, and how to excel on sub-internships. For their and fourth-year students, professional development and mentoring sessions are held at the annual specialty association meetings in which students engage with mentors and network with program directors and chairs from programs nationwide.

This is the longitudinal approach that Nth Dimensions has used during the past 16 years with the ultimate result of having developed more than 100 candidates for orthopedic surgery residency programs who successfully matched and are now residents, fellows, or board-certified orthopedic surgeons. With the overall percentage of women in orthopedic residency programs having increased from 6% in 1996 to >14% in 2010 and the aggregated percentage of Blacks and Latinos approximating 7% each during the same period (unpublished data), continued efforts focused on strategically increasing these numbers of diverse candidates are essential. Additional outcomes reveal that Nth Scholars not choosing orthopedics successfully matched in other procedure- or surgically based specialties,⁶ confirming that this developmental, strategic model of increasing the pipeline of competitive women and URiM candidates can be extrapolated to other competitive fields in medicine.

With a proposed model for addressing the pipeline of diverse candidates who are prepared and developed, specialty associations, sponsoring institutions, and training programs are encouraged to partner with physician pathway programs to expand the pathway in other disparately affected specialties, such as radiation oncology. In addition, examining the demographic composition of the physician workforce across specialties can serve as the starting point for taking definitive action toward achieving health equity. Certainly, this is just one of many challenges that the institution of medicine faces; however, now is indeed the time to actively engage meaningful programs; invest in training our faculty and leaders on racism, bias, and cultural humility; allocate necessary resources; and revise institutional policies that may uphold structural racism, sexism, and other forms of discrimination, which can serve as barriers to the successful matriculation of diverse learners.

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