The Diversity Snowball Effect: The Quest to Increase Diversity in Emergency Medicine: A Case Study of Highland's Emergency Medicine Residency Program

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Blacks, Hispanics/Latinos, American Indians, Pacific Islanders, Alaska Natives, and Native Hawaiians make up 33% of the US population. These same groups are underrepresented in medicine. In 2013, the physician workforce was 4.1% black, 4.4% Hispanic/Latino, 0.4% American Indian or Alaska Native, 11.7% Asian, and 48.9% white. Only 9.9% of emergency physicians identify as underrepresented minority (4.5% black, 4.8% Hispanic/Latino, and 0.6% American Indian/Alaska Native). Efforts to increase the number of underrepresented minority physicians are important because previous studies show improved outcomes when the patient and physician share the same racial/ethnic background. Starting in 2006, the faculty at the Highland EM Residency Program in Oakland, CA, began a diversification initiative to increase the number of underrepresented minority residents. The goal was to closely mirror the US population and match 30% underrepresented minorities with each incoming class. After the initiative, there was a 2-fold increase in the number of underrepresented minority residents (from 12% to 27%). This article is a review of the strategies used to diversify the Highland EM Residency Program. Most components can be applied across emergency medicine programs to increase the number of underrepresented minority residents and potentially improve health outcomes for diverse populations. [Ann Emerg Med. 2019;73:639-647.]

Please see page 640 for the Editor's Capsule Summary of this article.

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INTRODUCTION

In 2017, the US Census reported the racial/ethnic breakdown of the population as 60.7% white, 18.1% Hispanic/Latino, 13.4% black, 5.8% Asian, 1.3% American Indian or Alaska Native, 0.2% Native Hawaiian or Pacific Islander, and 2.7% mixed race.[1] Although Blacks, Hispanics/Latinos, American Indians, Pacific Islanders, Alaska Natives, and Native Hawaiians make up 33% of the US population, they are underrepresented minorities in medicine.[1-6] In 2013, the physician workforce was 4.1% black, 4.4% Hispanic/Latino, and 0.4% American Indian or Alaska Native; only 9.9% of emergency physicians identified as underrepresented minority (4.5% black, 4.8% Hispanic/Latino, and 0.6% American Indian/Alaska Native).[7] These statistics illustrate an opportunity to increase the number of underrepresented minority physicians in emergency medicine. Previous studies show improved outcomes and patient satisfaction when patients' and physicians' racial/ethnic background are concordant.[8] A more diverse emergency medicine workforce that mirrors the racial/ethnic makeup of the United States may improve health disparities in vulnerable populations.[8-10]

BACKGROUND

The percentage of underrepresented minority residents in emergency medicine in 2017 was 13%.[11,12] Compared with emergency medicine, obstetrics and gynecology, family medicine, pediatrics, general surgery, and internal medicine have a better representation of underrepresented minority physicians (23.4%, 21.1%, 19.9%, 18.6%, and 17.3%, respectively).[5,13] In 2009, the Council of Emergency Medicine Residency Directors put forward 8 key recruitment strategies designed to increase diversity in emergency medicine and address the low number of underrepresented minorities in emergency medicine.[14] A recent follow-up study demonstrated that less than 50% of emergency medicine programs have adopted the council's recommendations, and those that did implemented 2 or fewer of the strategies.[15] This is a review of novel strategies implemented in the Highland EM Residency Program to

Editor's Capsule Summary

What is already known on this topic

Diversity among physicians has multiple beneficial effects for both patients and physicians. Less than 10% of emergency physicians self-identify as underrepresented minorities. The lack of a pipeline (eg, the lack of underrepresented minorities in emergency medicine residencies) is a commonly cited reason for the lack of underrepresented minority emergency medicine attending physicians.

What question this study addressed

This article describes one residency's efforts to increase the proportion of residents who self-identify as underrepresented minority.

What this study adds to our knowledge

By development of new elements to the residency recruitment process (eg, no United States Medical Licensing Examination filter for the Electronic Residency Application Service, increased weight to the interviewers' "gestalt score," development of attending and resident buy-in, development of a dedicated diversity committee and applicant week), the proportion of residents who were underrepresented minorities increased from 12% (preinitiative) to 27% (postinitiative).

How this is relevant to clinical practice

Efforts to increase diversity among residents will likely improve diversity among practicing emergency physicians.

increase the number of underrepresented minority emergency medicine residents.

HIGHLAND HOSPITAL

Highland Hospital is part of the Alameda Health System and is located in Oakland, CA. It is a Level 1 trauma center and has served as a safety net for the community of Oakland since 1927. Oakland is the largest city in the East Bay region of the San Francisco Bay Area, with greater than 400,000 inhabitants. Since 2010, Oakland has consistently ranked in the top 3 of the most diverse cities in the United States. The current racial/ethnic makeup of patients at Highland Hospital is 37% Hispanic/Latino, 29% black, 14% white, 12% Asian, and 8% other. Highland Hospital has a tradition of focusing on the care of vulnerable populations. In 2012, the Center for Social Emergency Medicine was started at Highland to address health disparities in at-risk patient populations.

HIGHLAND EM RESIDENCY PROGRAM

The Highland EM Residency Program was established in 1980 and is one of the oldest emergency medicine residencies in the country. It is a 4-year program that currently supports 46 residents, 2 ultrasonographic fellows, and 18 full-time faculty (3 underrepresented minority, 3 Asian, and 12 white). Before the diversity initiative, there were 174 graduating residents from 1990 to 2009, of whom 76% were white, 11% Asian, 6% black, 5% Hispanic/Latino, and 0.6% American Indian; underrepresented minority residents constituted 12% of the residency (Figures 1 and 2).

HIGHLAND RESIDENT RANKING PROCESS

All applications received by the Electronic Residency Application Service are reviewed by the residency program director and the associate program director. The program director and associate program director select applicants for interview according to their successfully passing the United States Medical Licensing Examination (USMLE), as well as their academic performance in medical school, interests outside of academia, dedication to community service, willingness to work with vulnerable populations, and leadership roles. Interviews are conducted at Highland by faculty, fellows, and postgraduate year 3 to 4 residents.

After interviews, a list of approximately 70 candidates is created for ranking. The list makes up less than 10% of the initial pool of applicants and is composed of candidates who are considered to have the attributes necessary to thrive in our program. All faculty and residents are encouraged to participate in the ranking of candidates. Despite the significant time commitment required, approximately 70% of faculty and residents participate each year. Individuals who participate must commit to read all candidate files and generate a score for each file. Candidates are scored on letters of recommendation/standardized letters of evaluation, dean's letter, and overall gestalt. The gestalt score is highly dependent on qualities the scorer deems important for success as an emergency physician, such as a demonstrated commitment to working with diverse communities. Faculty and resident scores for candidates are treated with equal weight. Score sheets are collected and tabulated by administrative assistants, and a preliminary rank list is generated. Participating faculty and residents meet as a group to finalize the rank list. At this meeting, each candidate in a "matchable spot" is appraised by the group. Some candidates may move up on the rank list if there is a majority vote by

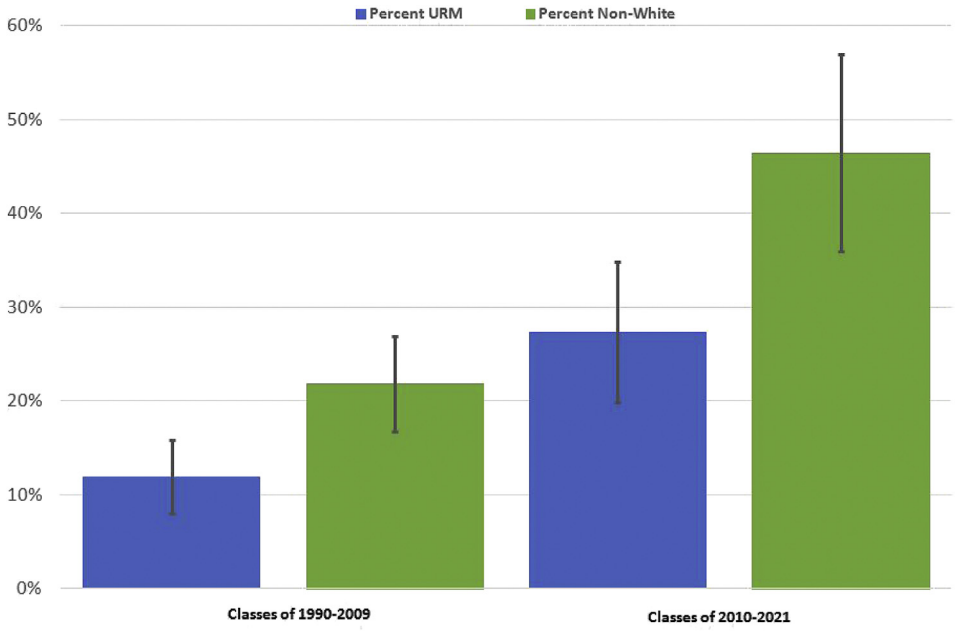

Figure 1. Percentage of underrepresented minorities (black, Hispanic/Latino, and American Indian) and nonwhite (black, Asian, Hispanic/Latino, American Indian, and Middle Eastern) residents before and after the Highland diversification initiative. *URM*, Underrepresented minority.

the group. In this manner, small adjustments are made during the rank meeting before the list is finalized.

HIGHLAND DIVERSIFICATION INITIATIVE

In 2006, the emergency medicine faculty at Highland began an initiative to increase the number of underrepresented minorities in the residency, with a goal to match 30% of underrepresented minorities with each incoming class to mirror the US population. A committee was formed to focus on identifying and recruiting qualified underrepresented minority candidates. Additionally, the residency adopted a more holistic review of applicants that balanced their academic success with personal experience and attributes. A holistic review of residents mirrors what the Association of American Medical Colleges strongly advocates for applicants to medical school.[16] This practice leads to increased diversity without sacrificing academic metrics.[17] The primary components of the Highland diversification initiative are outlined below. Any positive effects on diversity are

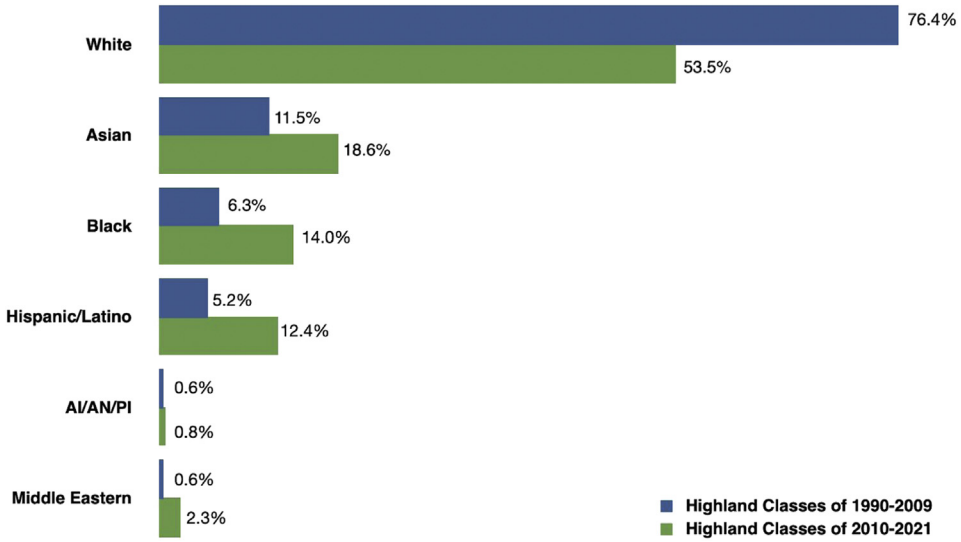

Figure 2. Race/ethnicity of highland emergency medicine residents before and after the Highland diversification initiative. *AI/AN/PI*, American Indian, Alaska Native, and Pacific Islander.

reflected with the graduating class of 2010, who matched into the program in 2006.

No USMLE Filter

The program director and associate program director do not use filters or cutoffs based on the USMLE score when screening applicants. Consistent with current evidence, in our experience, an applicant's score on the USMLE Step 1 does not predict clinical performance as a resident.[18] An applicant who fails the USMLE, however, is unlikely to be granted an interview. USMLE scores are visible in the files of applicants during the interview and ranking stages, but are not formally considered.

Increased Weight of Gestalt Score

Before 2006, the Highland applicant score sheet allocated 25 points each to letters of recommendation/standardized letters of evaluation, dean's letter, USMLE score, and gestalt, for a total of 100 possible points. Thus, a student's academic standing superseded most other attributes when the rank list was configured. Beginning with the 2010 graduating class, the points were modified. The points attributed to the USMLE were eliminated and the available points for gestalt increased to 45, outweighing the individual points for letters of recommendation/standardized letters of evaluation (30) and dean's letter (25). The gestalt score allows consideration of additional experience and attributes that are in line with Highland's commitment to vulnerable populations, such as leadership and volunteer experience with disadvantaged communities, languages spoken, and socioeconomic hardship. The score is in line with a holistic review of the applicant and mission-based admissions advocated by the Association of American Medical Colleges.[19] There is a risk of implicit bias when a gestalt score is used. Unconscious stereotypes may affect the gestalt score either positively or negatively. Although we do not use the tool at Highland, the Association of American Medical Colleges' Experiences-Attributes-Metrics model can more clearly define the elements in the gestalt score.[19]

Diversity Committee

The Highland EM Residency Diversity Committee was established to identify, recruit, and match qualified underrepresented minority candidates. Initially, the committee was chaired by the program director, associate program director, and 2 underrepresented minority faculty, and was open to any interested emergency medicine faculty. At the start, at least 3 or 4 other emergency medicine faculty participated, including the department chair. As the committee evolved, all emergency medicine underrepresented minority residents, and more recently all emergency medicine residents regardless of race/ethnicity, were encouraged to participate. Committee meetings are held approximately 3 times before the residency rank meeting and are attended by approximately 15 residents and faculty. The committee reviews and ranks the applications of all self-identified underrepresented minority candidates who are granted an interview. Underrepresented minority applicants are screened with the same academic criteria as non-underrepresented minority applicants, with an emphasis on students who are first-generation college attendees and those who demonstrate a strong commitment to at-risk populations. The committee decides on a few underrepresented minority residents with a demonstrated commitment to minority communities to champion at the residency rank meeting. Before the rank meeting, the diversity committee reviews the preliminary residency rank list to determine whether there is a robust representation of underrepresented minority applicants in a matchable spot. A diverse preliminary rank list, however, does not always equal a diverse class because highly competitive underrepresented minority candidates are recruited by multiple programs or the candidate may have geographic ties elsewhere. In the early years of the initiative, the committee made small adjustments to the preliminary rank list to increase the odds of matching a diverse class. Candidates at this stage are often separated by less than one tenth of a point. As the diversity of the program increased, the number of highly qualified underrepresented minority candidates on the preliminary rank list increased and adjustments by the diversity committee largely subsided. The process is fully transparent to all faculty and residents who participate in the ranking of candidates. Since 2012, we have made an effort to include sexual orientation and other racial/ethnic backgrounds that are not considered underrepresented minorities in medicine, but that reflect the diversity of our patient population.

Attending and Resident Buy-in

Complete buy-in by Highland faculty and residents took time. In the early iteration of the diversity committee, the program director, associate program director, department chair, and a few other faculty were making decisions that affected the overall rank list. The process was viewed as undemocratic and lacking transparency. Some faculty and residents thought the initiative was biased against students who were not underrepresented minorities, and there was some concern that focusing on race/ethnicity might dilute the academic aptitude of the residency.[20,21] To promote transparency and inclusion, the diversity committee opened to all faculty and residents. The committee lobbied faculty and residents to consider additional attributes that benefit our diverse patient population. The committee argued that

selecting students with the highest academic marks was not the most important attribute in matching students to our program because academic performance alone did not always predict a resident's success during residency. Members persuaded others that patients benefit when they are cared for by residents of the same culture and language, and with a shared commitment to their community. Reaching a consensus was not easy, and there were difficult and awkward discussions during the initial rank meetings. With time, the program agreed to a more holistic approach in the ranking of emergency medicine candidates. This agreement was possible because a diverse residency brought forth many benefits without an adverse effect on academic success.

Diversity Applicant Week

Diversity week occurs during interview season, as do the bulk of interviews with underrepresented minority applicants. When possible, at least one interview takes place with an underrepresented minority faculty member or resident. The annual diversity recruitment dinner is the highlight of the week. Underrepresented minorities applying to residency at Highland in emergency medicine, internal medicine, and surgery are invited to attend. The event is also attended by current faculty, underrepresented minority alumni, residents, and members of the Highland Hospital Executive Team, including the chief executive officer and chief medical officer. The event is a display of the hospitalwide commitment to resident diversity. Funding for the event is provided by the Highland resident's local union. Current and previous underrepresented minority residents say the experience was key in helping them choose Highland emergency medicine for residency.

> I was lucky to interview on the diversity recruitment dinner day. Meeting so many residents and faculty that cared about diversity and treating the most vulnerable populations made it clear that Highland was the right program for me. It was very important to meet mentors that not only cared about similar issues but also looked like me and understood from a personal level the different paths that individuals from diverse families go through to achieve a career in medicine.—Andrea Dreyfuss, MD, MPH, Highland emergency medicine class of 2018 and 2018 to 2019 ultrasonography fellow

RESULTS

Resident Diversity

Compared with the graduating classes of 1990 to 2009 and before the initiative, the proportion of underrepresented minorities in the graduating classes of 2010 to 2021 significantly increased, from 12% to 27% (95% confidence interval [CI] 6% to 24.1%), as did the overall proportion of nonwhite residents, from 24% to 47% (95% CI 11.7% to 33.1%) (Figure 1, Table 1). After the initiative, there was a significant decrease in the proportion of white residents (76% to 54%; 95% CI –33.1% to –11.7%), a significant increase in black residents (6% to 14%; 95% CI 0.6% to 14.6%) and Hispanic/Latino residents (5% to 12%; 95% CI 0.7% to 13.8%), and an increase in Asian residents (11% to 18%; 95% CI –1.8% to 14.5%). There was no significant change in the proportion of American Indian, Alaska Native, Native Hawaiian, and Pacific Islander residents (Figure 2, Table 1). The proportion of Highland underrepresented minority residents after the diversification initiative was significantly higher than the proportion of US underrepresented minority emergency medicine residents from 2006 to 2017 (27.1% versus 12.0%; 95% CI 7.5% to 22.8%) (Figure 3, Table 2).[22-32]

Academic Performance

Since the initiative, all Highland emergency medicine residents have graduated on time and no resident has received academic probation. The first-time pass rate for the American Board of Emergency Medicine written and oral boards by all Highland emergency medicine residents is 98% (81/83) and 99% (81/82), respectively. The first-time pass rate for the written and oral boards by Highland emergency medicine underrepresented minority residents is 95% (20/21) and 95% (19/20), respectively. One underrepresented minority resident and one white resident did not pass the written emergency medicine boards on the

Table 1. Race/ethnicity of Highland emergency medicine residents before and after the Highland diversification initiative.

Race/ Ethnicity	Before Initiative, Classes of 1990–2009, %	After Initiative, Classes of 2010–2021, %	95% CI
Total URM	12.1	27.1	6.0 to 24.1
Total nonwhite	24.1	46.5	11.7 to 33.1
White	75.9	53.5	–33.1 to –11.7
Asian	11.5	17.8	–1.8 to 14.5
Black	6.3	14.0	0.6 to 14.6
Hispanic/Latino	5.2	12.4	0.7 to 13.8
AI/AN/NH/PI	0.6	0.8	–1.7 to 2.1
Middle Eastern	0.6	2.3	–1.1 to –4.6

AI, American Indian; *AN*, Alaska Native; *NH*, Native Hawaiian; *PI*, Pacific Islander.

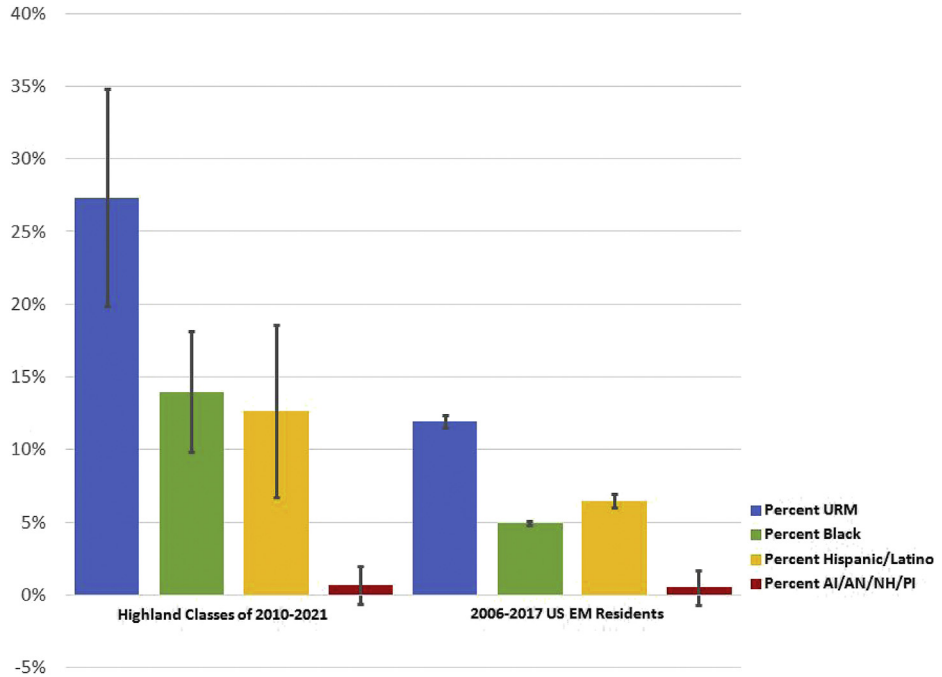

Figure 3. Percentage of underrepresented minority emergency medicine residents at Highland after the diversification initiative compared with 2006 to 2017 US underrepresented minority emergency medicine residents.[22-32]

first attempt; one underrepresented minority resident did not pass the oral boards on the first attempt, and a second underrepresented minority resident did not take the oral boards after not passing the written boards. This compares favorably to the US American Board of Emergency Medicine first-time pass rate in 2015 to 2016 for emergency medicine residency–trained candidates (91% and 97.5%) on the written and oral boards, respectively.[33]

Academic Appointments and Leadership Positions

Since 2010, several graduating underrepresented minority residents have progressed to academic appointments and leadership positions; one Emergency Medicine Foundation grant recipient, 3 fellowship directors, 14 fellowship-trained emergency physicians, 20 academic faculty, 1 medical director, and 2 emergency medical services directors have graduated from the program.

Table 2. 2012 To 2016 US underrepresented minority emergency medicine residents compared with Highland underrepresented minority residents after diversification initiative.[22-32]

Race/ Ethnicity	2006–2017 US Emergency Medicine Residents, %	Highland Emergency Medicine Residents, Classes of 2010–2021, %	Percentage Difference	95% CI
Total URM	12.0	27.1	15.1	7.5 to 22.8
Black	4.9	14.0	9.1	3 to 15
Hispanic/ Latino	6.6	12.4	5.8	0.1 to 11.5
AI/AN/NH/PI	0.5	0.8	0.3	−1.2 to 1.8

Underrepresented Minority Students Applying to the Highland EM Residency Program

During the 2016 to 2017 application cycle, there were 116 black applicants, 122 Hispanic/Latino applicants, and 1 American Indian applicant who applied to US allopathic emergency medicine programs. Of these applicants, 55% of black applicants (64), 70% of Hispanic/Latino applicants (86), and the single American Indian applicant applied to the Highland EM Residency Program. It is not known whether the initiative led to an increase in the number of underrepresented minority students applying to the Highland EM Residency Program because we did not query the Electronic Residency Application Service for previous applications cycles.

LIMITATIONS

This is a review of the initiatives implemented to diversify the Highland EM Residency Program. We did not collect preintervention data on the number of underrepresented minority students applying to the

program before and after the diversification initiative. Such data would be useful to determine whether increased resident diversity makes a program more desirable to underrepresented minority candidates. Although previous studies indicate that patient satisfaction and health outcomes are improved when the physician is of the same race/ethnicity, we did not measure this directly.[34,35] Additionally, although it is our overwhelming perception that Highland faculty and residents benefit from a diverse residency, we did not query them about their experience before and after the initiative. We also did not explore whether underrepresented minority residents thought the environment felt inclusive once they matriculated to the program. Last, the focus of the intervention was to increase the number of underrepresented minorities in the residency, but all races/ethnicities, sexes, and sexual orientations could have been part of our initial effort to diversify the Highland emergency medicine residency.

DISCUSSION

Diversity Snowball Effect

Since the initiative, the proportion of underrepresented minority residents in the program more than doubled, likely because of a more holistic approach to the residency application process. We initially focused on increasing the number of underrepresented minorities; however, our efforts led to an improvement in overall resident diversity in what appeared to be a "diversity snowball effect," as stated by a previous underrepresented minority chief resident:

> Diversity begets more diversity. When people see a place that is accepting and fosters an environment where people who they relate to thrive, this becomes a magnet that draws many other high performers. Highland has a critical mass now that is enticing for any person of color or gender wanting to go into emergency medicine.—Nathan Irvin, MD, MS, Johns Hopkins emergency medicine faculty, Highland emergency medicine class of 2011

Benefits of a Diverse Residency

We believe that a diverse residency has led to better understanding between patients and residents of the same race/ethnicity, improved communication between non-English-speaking patients and multilingual residents, and better delivery of culturally sensitive patient care. In addition, the program is invested in social emergency medicine and the social burdens that negatively affect patients. Weekly emergency medicine educational conferences have featured lectures on patient advocacy, homelessness, cultural competence, personal bias, and implicit bias.[36] Panel discussions on patient-police interactions, sex trafficking of inner-city youth, immigration, and asylum have been among the most influential topics presented. A diverse residency brings forth different perspectives, innovative ideas, and a willingness to tackle social determinants of health.[37]

Importance of Mentorship

Many underrepresented minority residents have a desire to mentor underrepresented minority youths interested in medicine. Therefore, opportunities for mentorship can have a significant influence on the relatability of a program to underrepresented minority candidates.[38,39] At Highland, residents mentor underrepresented minority students interested in health careers through Mentoring in Medicine and Science.[40] Residents can serve as preceptors during student shadow shifts in the emergency department and volunteer at networking events and teaching sessions.

Underrepresented minority residents will benefit from support and mentorship by underrepresented minority emergency medicine faculty. At Highland, underrepresented minority emergency medicine faculty meet with underrepresented minority residents periodically throughout the year to discuss current academic progress, future goals, and challenges unique to underrepresented minority physicians. If an underrepresented minority resident is identified by the program director and associate program director to have a personal challenge or need for additional support, underrepresented minority faculty serve as advocates and mobilize additional support from senior underrepresented minority residents. Underrepresented minority residents have a greater chance of reaching their potential when underrepresented minority faculty keep abreast of their success and assist with any barriers.

CONCLUSION

Health care is rapidly changing and communities are becoming increasingly racially and ethnically diverse. Emergency medicine residency programs can work toward training an emergency medicine workforce that mirrors the US population. Emergency medicine benefits from physicians with different perspectives, lived experiences, and skills to address the health needs of diverse communities.[41] A major obstacle to increasing the number of underrepresented minority residents is a low number of underrepresented minority students in medical school.[38,39] Increasing the number of underrepresented minority medical students is best addressed by reaching underrepresented minority youth as early as middle school and providing exposure to medicine, mentorship, academic

support, and guidance.[42] For example, Mentoring in Medicine and Science has affected 2,000 students in the San Francisco Bay Area and directly mentored 400 underrepresented minority high school and college students. Sixty percent of Mentoring in Medicine and Science students are in the health professional pipeline. Twenty-three percent of students (90) who received mentorship through Mentoring in Medicine and Science enrolled in medical school, and 30% are considering emergency medicine as a specialty choice. Programs such as Mentoring in Medicine and Science, started by emergency medicine faculty, can have a real influence on the number of underrepresented minority matriculating into medical school and eventually training in emergency medicine. Additionally, emergency medicine programs can reach out to underrepresented minority medical and premedical students by hosting emergency medicine clinical skills workshops at local, national, and international conferences, such as the Student National Medical Association, Latino Student Medical Association, and Asian Pacific American Medical Student Association.

Traditionally, academic performance in medical school is the primary evaluation tool when applicants are considered for residency, yet there is no convincing evidence this results in better clinicians.[18,43] In the future, we must consider attributes known to improve patient satisfaction and the health outcomes of patients from different racial and ethnic backgrounds. Moreover, residency curricula should include core content on social emergency medicine and health disparities in vulnerable populations. Such efforts send a strong message that emergency medicine is prepared to address the health care needs of a diverse population. In turn, emergency medicine will attract a workforce who seeks to serve that population. As we have experienced, diversification in emergency medicine will not be seamless, but by implementing some of the strategies described, emergency medicine programs can make strides toward increasing physician diversity. Positive results such as improved patient care and new ideas are fostered by physicians of all races and ethnicities working together to serve a diverse US population.[34,38]

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