Title: Outcomes from the Medical Education Development Pipeline Program: Producing a Workforce to Serve Underserved NC

Submission Type: Innovation Highlights in Medical Education

Submitting Author: Julie Byerley, MD, MPH

Submitting Author Institution: University of North Carolina at Chapel Hill

Purpose: Despite efforts to diversify the physician workforce, the number of physicians from underrepresented minorities has been stagnant. North Carolina mirrors national statistics with only 11% of the state’s physician workforce self-identifying as African-American/Black, American Indian or Alaskan Native, and/or Hispanic, compared to 33% of the population in 2016. In 1974, the University of North Carolina at Chapel Hill School of Medicine established the Medical Education Development (MED) program with funding from HRSA to provide an opportunity to edify students from historically black colleges and universities to be better prepared for medical and dental school at predominantly white campuses. This study compared the workforce outcomes of MED and non-MED graduates in the North Carolina physician workforce.

Approach/Methods: Individual-level data on 1,189 MED participants from 1974 to 2006 were merged with 2014 licensure data from the NC Board of Medical Examiners. 418 (35%) of MED participants matched to the licensure data with 316 in active practice in North Carolina and 102 practicing out of state or not in active practice. Practice characteristics of the MED participants in active practice (n=316) in NC in 2014 were compared to non-MED participants (n=22,747), including the percent in primary care (family medicine, general internal medicine, general pediatrics and ob/gyn), providing prenatal care and obstetric deliveries, practicing in rural versus urban areas and practicing in health professional shortage areas (HPSAs). County-level data on the percent Medicaid eligibles, unemployment rate, per capita income and percent of county that was African American or Native American were also compared between the two groups.

Results/Outcomes: MED participants comprised just 1.4% of total physician workforce in NC in 2014 but made up 12.3% of all black physicians and 35.9% of all American Indian/Alaskan Native physicians in the workforce. Compared to non-MED graduates, MED graduates were more likely to be in primary care with 51% of MED graduates in a primary care specialty compared to 30% of non-MED (p<.01) graduates. 11% of MED graduates provided prenatal care and delivered babies (10%) compared to 5% of non-MED graduates for prenatal care (p<.01) and 4% of non-MED graduates for delivering babies (p<.01). 23% of MED graduates practiced in a rural county compared to 13% of non-MED graduates (p<.01) and 8.2% of MED graduates were in whole county health professional shortage areas compared to 1.4% of non-MED graduates (p<.01). MED graduates were more likely to practice in counties with a slightly higher proportion of African-American citizens (p<.05), more Native Americans (p<.01), more Medicaid eligibles (p<.01), higher slightly unemployment rates (p<.01) and lower per capita income (p<.01).

Discussion: Despite making up just 1.4% of the overall physician workforce in the state, MED graduates contributed to a significant portion of the state’s African American and Native American physicians. MED
graduates were more likely to be in primary care, provide prenatal care and obstetric care and provide care in underserved counties.

**Significance:** This analysis demonstrates the important role that programs like MED play in not only diversifying the health workforce but also providing care for underserved communities.
Title: Post-Application Advisement for Repeat US Medical School Applicants: Exploring Best Practices

Submission Type: Innovation Highlights in Medical Education

Submitting Author: Marlene Ballejos, PhD

Submitting Author Institution: University of New Mexico School of Medicine

Purpose: According to the American Medical College Application Service (AMCAS), in 2016 there was a nine percent (52,535 to 53,029) increase from 2015 in the total number of applicants to US medical schools. Of the 53,029 applicants, 14,256 (27%) were previous applicants. Although they comprise over a quarter of the applicant pool, advisement for previous applicants is often unstructured or non-existent. Repeat medical school applicants and their reapplication process have received little attention in the literature.

Approach/Methods: The University of New Mexico School of Medicine (UNM SOM) identified an increased need to provide post-application advisement to repeat medical school applicants. UNM SOM created an innovative post-application program that involves a Post-Application Seminar (PAS), completing a self-assessment and action plan development, and individual advisement consultation. After several years of the program, we sought to evaluate re-applicants and whether those who participated in PAS had higher rates of acceptance in subsequent years compared to those who did not participate in PAS.

Results/Outcomes: From 2010-2016, 926 applicants who were interviewed and rejected were eligible to participate in PAS. Between 2010-2016, 19.2% (178/926) of the previously rejected applicants were accepted. Seventy-nine percent of re-applicants who were subsequently accepted attended PAS and the individual consult (3.9% attended PAS only) compared to 17.4% of subsequently accepted re-applicants who did not attend PAS (p-value = 0.001). Males had a higher participation rate in PAS (57.2%) in comparison to females (48.4%; p-value = .01). African American applicants had a higher participation rate (70.6%) and Native American applicants had a lower participation rate (26.6%) than any other race.

Discussion: We will discuss lessons learned and provide the seven-year program analysis and demographic data of program participants.

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Title: The Path to Medical School: Does First-Generation Status Matter?

Submission Type: Research Highlights in Medical Education

Submitting Author: Hyacinth Mason, PhD, MPH, CHES

Submitting Author Institution:

Purpose: The experiences of students whose parents did not graduate from college, so called first-generation college students (FGCS) are well documented. Data indicate that compared to continuing-generation college students (CGCS) (peers who have at least one parent that has earned at least a bachelor's degree), FGCS are more likely to leave college prior to graduation and are less well prepared academically for college. Comparatively little is known about the path FGCS take to medical school, although they comprise approximately 15% of medical-school matriculants. Our purpose was to examine differences in the likelihood of the following outcomes: medical-school application, acceptance, and matriculation between FGCS and CGCS.

Approach/Methods: We obtained individualized, de-identified records of all 2001-2006 Association of American Medical Colleges (AAMC) Pre-Medical College Admission Test (MCAT) Questionnaire (PMQ) respondents with follow-up through 2012. Using Chi-square tests, we measured proportional differences between FGCS and CGCS for each outcome (2-sided P values reported). In separate multivariable logistic regression models, we examined the odds of each outcome for FGCS (vs. CGCS), adjusting for gender, race/ethnicity, MCAT prep course, paid employment, college summer academic enrichment program, college laboratory research apprenticeship, and MCAT score, reporting adjusted odds ratios (aOR) and 95% confidence intervals (CI).

Results/Outcomes: Of 262,813 PMQ respondents, we included 211,216 (80.4%) with complete data for analysis. Significant bivariate differences were observed by generation status (FGCS vs CGCS) in applying to medical school (67.6% [142,847/211,216] overall; 58.0% [30,320/52,302] FGCS vs. 70.8% [112,527/158,914] CGCS; P<.001); and in being accepted to medical school (60.5% [86,486/142,847] overall; 48.5% [14,708/30,320] FGCS vs. 63.8% [71,778/112,527] CGCS; P<.001). The vast majority of medical students matriculated in medical school if accepted (97.8% [84,604/86,486] overall; 97.6% [14,348/14,708] FGCS vs. 97.9% [70,256/71,778] CGCS; P=.013). In multivariable logistic regression models adjusting for race/ethnicity, MCAT score and other variables of interest, FGCS remained less likely than their CGCS peers to apply (aOR 0.84, 95% CI 0.82-0.86) or be accepted (aOR 0.85, 95% CI 0.83-0.88) to medical school. FGCS and CGCS were equally likely to matriculate into medical school if accepted (aOR 0.94, 95% CI 0.84-1.06).

Discussion: These findings from a national cohort study of PMQ respondents indicated that first-generation students were less likely to apply medical school and be accepted to medical school than their continuing-generation counterparts even after controlling for gender, race/ethnicity, MCAT prep course, paid employment, college summer academic enrichment program, college laboratory research apprenticeship, and MCAT score. No significant difference was observed in the likelihood of FGCS and CGCS to matriculate into medical school once accepted. Further research is crucial in order to determine why these disparities exist and ways to effectively support FGCS.
Significance: Although there may be other unmeasured variables, our results indicate significant disparities exist in medical-school application and acceptance between FGCS and CGCS PMQ respondents. A FGCS indicator has been added to the American Medical College Application Service application for schools to use during the holistic review admissions process. More research is needed to learn more about how to best support these pioneering students as they navigate the physician pipeline.
Title: Match Outcomes of Students who Attend a Regional Medical Campus vs. the Main Medical Campus: Is There Any Difference?

Submission Type: Innovation Highlights in Medical Education

Submitting Author: Emily Walvoord, MD

Submitting Author Institution: Indiana University School of Medicine

Purpose: Medical students and academic faculty often express concern that students whose entire medical curriculum is delivered at a regional medical campus (RMC) are not as competitive in the residency match process as students who receive all of their training at the central academic health center. As the largest medical school in the country, Indiana University School of Medicine (IUSM) has nine campuses and over 1400 medical students. Over half of IUSM students spend their first two years at a RMC. Since 2008, IUSM has increased the class size and opportunities for clinical clerkships at the RMCs. A growing number of students now choose to spend all four years at their RMC site except for an occasional clerkship or elective at the MMC. We compared the specialty match data of students who spent all four years at a regional medical campus (RMC students) to students who spent their third and fourth years at our main medical campus (MMC students) in Indianapolis.

Approach/Methods: We compared all known specialty matches of RMC students to MMC students for the past 6 years. We also compared the specialty matches of RMC students to all IUSM students over that same time period.

Results/Outcomes: From 2012-2017, of the 248 matched RMC students, 114 (46%) matched into a primary care specialty (defined as family medicine, pediatrics, medicine-pediatrics & internal medicine). Of the 1571 MMC students, 581 (37%) matched into a primary care specialty (OR=1.45 Chi square=6.94, p<0.01). Alternatively, 41 (17%) RMC students matched into a “highly competitive specialty” (defined as dermatology, emergency medicine (EM), pediatric-EM, neurosurgery, ophthalmology, orthopedics, otolaryngology, plastic surgery, thoracic surgery, urology, or vascular surgery) and 284 (18%) MMC students matched into a “highly competitive specialty” (OR=0.89 Chi square=0.25, p>0.05). The results and significance were highly similar when comparing RMC students to all IUSM students.

Discussion: Only a few studies have analyzed the specialty match rates for RMC students. Our finding that a significantly larger percentage of students from regional campuses enter primary care is consistent with the two studies that report students from RMCs enter family medicine at double or more the rate of non-RMC students (1,2). To our knowledge this is the first report to compare match rates into highly competitive specialties, where we found no differences, suggesting that students who spend all four years at a RMC are not at a disadvantage when it comes to obtaining a residency in a highly competitive field.

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