



Preliminary Findings from an Effort to Increase Black Student Recruitment, Retention, and Completion of Medical School

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Research Note

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Abstract

Background: Black physicians are underrepresented in the healthcare workforce, accounting for only 5% of all physicians in active practice, whereas Blacks comprise 13% of the nation's population. There is also a dearth of Blacks who are successful in applying to and completing medical school. Numerous studies show that Blacks are more likely to live in medically underserved areas and to prefer being treated by providers of color. Thus, the underrepresentation of Blacks in the physician workforce can be a factor in the perpetuation of health inequities. Howard University College of Medicine, a Center of Excellence (CoE), funded by the Bureau of Health Workforce (BHW) at the Health Resources and Services Administration, was launched to increase the number of Blacks who complete medical school and promote a more diverse physician workforce.

Objectives: To design, implement, and evaluate a virtual curriculum and supportive programming that will enhance the capacity of Black undergraduate students at Historically Black Colleges and Universities (HBCUs) to apply to and complete medical school successfully.

Methods: Surveys and document review.

Results: Two years into our project, we have been particularly successful in assisting students already enrolled in medical school to achieve high national medical examination pass rates. However, we will need to sustain efforts to prime the pipeline by supporting higher numbers of undergraduates to successfully apply to medical school.

Discussion: Our study aligns with programmatic goals to strengthen the physician workforce by diversifying it. The preliminary findings demonstrate that completing medical school and entering the physician workforce is a multi-faceted challenge, beset with financial burdens, and the need for sustained supportive environments.

Conclusions: Preliminary findings highlight the need for a comprehensive approach to identifying and addressing the needs of this student population and providing targeted interventions.

Keywords: Recruitment; Retention; Financial Burdens

Abbreviations

BHW: Bureau of Health Workforce; HRSA: Health Resources and Services Administration; HUCOM: Howard University College of Medicine; CoE: Center of Excellence; HBCUs: Historically Black Colleges and Universities; MCAT: Medical College Admission Test; USMLE: United States Medical Licensing Examination; URM: Under-Represented Minority students; AAMC: Association of American Medical Colleges.

Introduction

In 2022, the Bureau of Health Workforce (BHW) at the Health Resources and Services Administration (HRSA) awarded the Howard University College of Medicine (HUCOM) a Center of Excellence (CoE) grant to design, implement, and evaluate a virtual curriculum and supportive programming that will enhance the capacity of Black undergraduate students at Historically Black colleges and Universities (HBCUs) to apply to and complete medical school successfully. Complementary aims of the HUCOM-CoE are to improve the cultural competence of medical education, broadening its focus to address patients' social determinants of health; and to create a supportive environment for health equity and disparities research, particularly student-initiated studies.

The goals the HUCOM CoE intends to achieve by June 30, 2027 are:

- Conducting medical school recruitment activities with at least 500 Black HBCU undergraduates
- Creating and delivering a virtual medical school enrichment curriculum to at least 280 Black HBCU undergraduates
- Assisting 280 Black undergraduates to prepare, take the Medical College Admission Test (MCAT) and apply to medical school
- Assisting 120 Black medical students to prepare for and take the United States Medical Licensing Examination (USMLE).

This paper explains why recruiting more Black students to enter and complete medical school is an urgent need. It then presents a summary of a comprehensive literature review of the barriers to Black and other Under-Represented Minority students' (URM) recruitment, retention and completion of medical school [1]. It also identifies strategies that have been most successful in overcoming these challenges, which the CoE conducted to ensure that the Center employed best practices and lessons learned from the project's outset. We conclude with a description of the CoE's approach to implementing recommendations emerging from the literature review and our results to date.

Why the Urgency?

According to the most recent data from the Association of American Medical Colleges (AAMC) only 5% of all physicians in active practice are Black, but Blacks comprise 13% of the nation's population [2,3]. The pipeline to increase the number of practicing Black physicians is not promising as in 2018, only 8.4% of medical school applicants and only 7.1% of applicants who were accepted to medical school were Black. Of the Black applicants who were accepted the majority (61%) were female versus 39% male [4]. The number of Black medical school students is not keeping pace with the number of Black medical school graduates, for whereas in 2018, 7.1% of medical school students were Black, in that year, only 6.2% of medical school graduates were Black [5].

There are 107 HBCUs, but only four (4), including Howard, are listed among the HBCUs that had 40 or more Black medical school applicants in 2018 [6,7]. In 2018, 126 Howard students applied to medical school; this figure represents 2.3% of all Black medical school applicants in that year and established Howard as the institution with the highest number of Black medical school applicants in the country.

Barriers to Recruitment, Retention, and Completion of Medical School

Recruitment Barriers: Low Self-Confidence/ Role Models: One of the greatest obstacles to medical school enrollment among Blacks is due to systemic racism that depicts medical careers and mastery of science as pursuits restricted to Whites and beyond the capacity of Blacks. Dissemination of these messages begins as early as elementary school and is supported by the depictions of Blacks in the media. The messages are often internalized by Black students leading to a lack of self-confidence in their ability to enter the medical field. These perceptions are further reinforced by the lack of real-life or even fictional role models of Black physicians as portrayed in the media. Unlike many of their white peers' Black undergraduates and matriculating medical school students may be the first in their families to pursue higher education. Furthermore, their families and the larger community may not present a medical career as a viable choice [8].

The experience of Xavier University confirms the importance of confidence boosting and role models as the primary steps in building a medical school pipeline for Blacks. Xavier sends more Black students to medical school than any other institution in the country. The institution's reputation as a setting in which Black students can excel buoys students' confidence, as noted by one Xavier undergraduate who observed [9].

"One of the main driving points for me coming to Xavier was their success rate. Every time Xavier was mentioned, every time I say I go to Xavier University in Louisiana, people say oh you want to become a doctor because they just know that Xavier University breeds doctors, successful doctors, all over the country. We are successful in every aspect, and every region, all over the world. So, I know that, to me, that is what, every time I'm studying, I say okay, it's been done before, I can do this, and I just have to keep going [9]."

Many physicians and academic researchers think that waiting until students are in college to introduce them to the idea of a career in medicine is too late. They posit that earlier recruitment efforts must begin much earlier to counter negative stereotypes and build interest and capacity in science [10].

Financial Hardship: Applying to medical school entails expenses for applicants that can be prohibitive to low-income students and many Black students come from modest backgrounds [11]. To apply to medical school, at a very minimum, students must take the Medical College Admission Test (MCAT) and complete and submit the application forms for the school(s) of their choice. The MCAT fee is \$335. Some medical schools use the AAMC's American Medical College Application Service® (AMCAS®) to process applications. The cost of this service is \$170 for the first school application and \$43 for each additional school. Students must pay any secondary application fees covering documents not processed by AMCAS. Typically, undergraduate institutions also charge their students a small fee for the institution's registrar to transmit their transcripts and letters of recommendation to medical schools.

Additionally, to ensure a successful MCAT result, the AAMC reports that over a third (36%) of undergraduates enroll in MCAT preparation courses [12,13]. Although free MCAT prep courses exist, students may not be aware of them. The cost of paid MCAT prep courses can range from \$700 to \$10,000 [13]. Other costs may include travel and overnight accommodations as well as appropriate attire for medical school interviews, although most medical schools will defray some if not all travel and lodging costs for URM interviewees. Thus, in sum, the medical school application process and related fees can easily amount to thousands of dollars, a figure that is beyond the reach of many URM students, including Blacks.

Inadequate Academic Preparation: Many Black undergraduates do not receive instruction in the basic sciences that is the foundation of the medical school curriculum. HBCUs offer basic science courses but the content may not align fully with what is tested by the MCAT and covered in the medical school curriculum [14].

Additionally, some undergraduate institutions postpone offering organic chemistry, biology, and physics until students are sophomores or even juniors. Doing so prevents students from mastering the content of these subjects which is needed to perform well on the MCAT, which most medical school applicants take as rising seniors.

Studies show that Black students' interest in becoming physicians is influenced most profoundly by their high school and early college experiences in chemistry. Poor or scant training in the basic sciences and mathematics leads to many Black students having a scant interest in the medical or other STEM fields. Furthermore, if accepted to medical school, in the absence of supportive, remedial measures, the unprepared Black student is more likely to become discouraged and drop out [15]. In fact, a recent study found that over a third (38%) of Black medical school matriculants dropped out because of course failure or failure of a board exam [16].

Biased Recruitment Policies and Procedures: Acceptance at medical school is highly contingent on applicants' achieving a minimum score on the MCAT with the rationale that MCAT performance is predictive of the likelihood of medical school completion and other markers of a successful medical career. However, this may be a faulty assumption. One study compared the MCAT scores, medical school, and post-graduate performance of two groups of Black medical students over a 15-year period; one group having completed their undergraduate studies at HBCUs and the other at Predominantly White Institutions (PWIs) [17]. The study found that while the HBCU students had lower MCAT scores than the PWI students the two groups did not differ in statistically significant terms relative to graduation rates, matching into residencies, selecting primary care, or achieving board certification.

Retention and Completion Barriers: Unsupportive Academic Environment- Black students attending medical school at PWIs may find their institutions are unprepared to assist them with challenges such as remedial coursework so that they can complete the medical school curriculum and prepare for the United States Medical Licensing Examination (USMLE) Step 1 [18]. PWIs may also not provide URM medical students with adequate financial support, typically a critical need for URM. Concerning overall financial support, AAMC data show that 22.9% of Black medical school graduates had \$50K+ in medical school debt as compared to 8.1% of Whites [19]. In addition, the PWI schools may not offer students opportunities to make the connections between health equity, health disparities, and the Black community, although such connections are often highly influential in students' choices to complete medical school and practice in medically underserved areas and/or conduct research of conditions that

disproportionately affect Black or other communities of color.

Unsupportive Social Environment: Once at medical school, particularly at PWI schools, Black matriculants may see few other Black or other students who face the same challenges they encounter in trying to remain in school. They may grapple with persistent feelings of not belonging, of incapability, and other reminders of the negative messaging they have received all of their lives. During their studies, Blacks enrolled at PWI medical schools are unlikely to meet Black professional role models or even student peers who can inspire them to remain engaged. Social support including access to Black physician role models is key for the recruitment, retention, and graduation of Black medical students, particularly males [20]. However, PWIs often lack this capacity, and HBCU faculty and staff may be too overstretched with teaching, clinical, and administrative commitments to provide the needed support.

Promising Practices

Recruitment Models: In a study Atkinson DD, et al. [14] nine HBCU undergraduate programs found that those with the highest number of graduates accepted to medical school fit the following profile:

- Offered extensive premedical training (for example, advising students about how to prepare for medical school; offering curriculum with the necessary biology and chemistry content; and maintaining premedical or pre-health professions offices and clubs that provide information on medical school options)
- Maintaining strong affiliations with medical schools
- Offering a broad range of externally sponsored enrichment programs that give students' experiential learning opportunities in the medical field
- A recent study commissioned by the National Science and Technology Council recommended that to increase URM enrollment at, and completion of medical school, the academic institution should provide [21] financial support for high school and undergraduate internship experiences to pique and sustain students' interest in the medical field. Unpaid internships are often not an option for low-income students.
- Actively engage with Minority Serving Institutions (MSIs) and scientific societies that serve URM groups to proactively identify potential matriculants.
- Offer culturally responsive pedagogical practices, summer bridge programs, research experiences, and mentoring that include participant stipends.
- Promote a sense of belonging (inclusiveness) in the health professions and connection to mentors in the medical field who have shared experiences with potential matriculants that reflect common barriers, support systems, discrimination, perception of STEM

programs, stereotypes and stereotype threat, bias, and STEM identity.

- Set quantifiable goals for outcomes and measurable impacts related to recruitment and retention efforts.

Academic Preparation

A review of effective pipeline programs identified the following as critical components of any efforts to improve students' preparation for medical school [22]: academic enhancement career discussion with medical students and physicians, health science lessons, direct experiences with patients including medical procedures, mentorship, and introduction to public health science with community-based problem-solving

Retention Supports

Once students matriculate to medical school, the institutions face the challenge of ensuring that students remain enrolled and complete the program on time. The literature offers many examples of strategies that medical schools are using with Black and other URM students to achieve this goal.

Creating A Supportive Academic Environment

One study [23] recommends that pre-medical and medical school programs foster supportive environments through the following:

Student Centeredness: Program staff know students academically, personally, and socially and focus on relationship building to maximize trust.

Community Building: Through the creation of peer networks; student-faculty networks and networks among students and experiential learning sites to reinforce that URM students can be successful in STEM fields.

Collaboration: With other MSIs to enhance and diversify students' experiences and outcomes.

Mentorship: That matches students with trained and appropriately supervised mentors who understand not only prospective mentees' academic history but also their sociocultural background, including the possible effects of financial struggles, microaggressions, and negative messaging on mentees' self-confidence in pursuing a medical career. Morehouse College of Medicine attributes the College's low attrition rate (less than 2 percent) in part to the success of its mentorship model [24–27]. Providing students with opportunities for experiential learning that integrates medicine and public health is another important aspect of a supportive academic environment [28]. This is particularly

important for URM medical students as URM physicians are more likely to practice in underserved communities where medical and public health practice are intertwined [24-26].

HUCOM Coe Interventions

Given time and funding limitations, the HUCOM CoE leadership recognized that the project cannot address all the barriers and implement all the promising practices identified in the literature review. Therefore, we surveyed 342 HBCU undergraduate and medical school students and sought the advice of an Expert Panel, composed of HBCU medical school faculty, to identify the most serious barriers to recruitment. We also obtained the response that would most likely be beneficial to the CoE's target population. And retention that the academic institution should provide [21] financial support that would most likely be beneficial to the CoE's target population. Based on the student survey and the Panel's review, we identified Inadequate Academic Preparation, Food insecurity, Financial Hardship, and Unsupportive Academic Environment as the barriers that the CoE should address [27-30].

Interest in Medicine

We developed and distributed a Medical Career Interest Form to the students at our 10 partner institutions. We received a total of 633 responses over the past two years

YR 1 Total Responses

Freshman responses: 100

Upperclassmen responses: 151

YR 2 Total Responses

Freshman responses: 191

Upperclassmen responses: 191

Inadequate Academic Preparation

The Expert Panel reviewed Howard's and institutional partners' premed curricula to identify any gaps that could negatively impact students' preparedness to successfully apply to medical school. They found no major gaps. However, to ensure full alignment between undergraduate institutions' basic science curricula and the standard pre-clinical medical school curriculum we developed and disseminated to our undergraduate institutional partners a tool that they can use to assess the degree of alignment and redress any identified gaps. We also urged them to encourage freshmen and sophomores to take basic science courses as early as possible in their academic journey in order to be fully prepared for the MCAT.

The Expert Panel and our survey identified the lack of

awareness of the medical school application process and the medical school first-year curriculum as the greatest skills gap experienced by HBCU undergraduates. These students are not receiving guidance on study skills, test taking, interviewing, and other topics that are essential to a successful medical school application. Students concurred with the Panel and reported that they need assistance with study skills and time management, in addition to increased knowledge about the medical school application process.

In response to these findings, the CoE developed the HUCOM-CoE Enrichment Curriculum Guide. The Guide provides undergraduate and continuing medical students with opportunities and skills to assess their own learning needs and develop strategies to meet those needs. The Guide is grounded in active learning principles, covers the topics listed below, and includes self-assessments as part of a self-reflective and strength-based approach to strengthen prospective applicants' knowledge and skills. The Guide covers the following topics:

Compiling an Impressive Medical School Application

- How to Compile an Impressive Medical School Application
- Medical School Application Resume Tips
- Helpful Articles for the Medical College Admission Test (MCAT)

American Medical College Application Service (AMCAS) Applicant Guide

- How to Complete and Submit Your AMCAS Application
- Additional Resources for Applying to Medical School
- The Howard Medical School Admissions Process Timeline
- Helpful Interview Tips

MCAT Guide

- Prepare for MCAT Exam Using AAMC MCAT Official Prep Resources
- The MCAT Essentials for Testing Year
- A Step – by – Step look at the MCAT Application
- MCAT Paid and Fully Funded Resources and Programs

Pre-Med Skills Building and Self-Assessment

- The 15 Core Competencies for Entering Medical Students
- Effective strategies and tips for test taking, anxiety, preparation, time management

Preparing for Your First Year of Medical School

- Self-Advocacy
- Self-Care
- Procrastination
- Mental Health

Preparing for the United States Medical Licensing Examination (USMLE)

- What are the United States Medical Licensing Examination (USMLE)?

- Free Prep Resources

We also launched a monthly webinar series for undergraduates that covers the following topics:

- The Need for Black Physicians
- MCAT Review Presentation
- Compiling an Impressive Medical School Application
- AMCAS Applicant Guide & HUCOM Application Process
- Skills Building and Self-Assessment
- Effective Self-Esteem Tools
- Scholarship Opportunities
- Preparing for your First Year of Medical School

As a complement to the webinar series, we offer undergraduates, free of charge, the "Strategy-based Skill-building MCAT Review Course" a four-week course designed to decrease test-taking anxiety and increase MCAT score in 4 weeks.

For medical students, the Panel recommended that we organize experiential learning that reinforces the applicability of what is learned in the classroom with an emphasis on care of disadvantaged and vulnerable communities of color. Specifically, they proposed that the CoE enhance medical students' didactic coursework with experiential learning that would expose students to communities with health inequities and social determinants of health. Consequently, the Center develops and facilitates medical school students' enrollment in courses on cultural competence and social determinants of health and then links them to experiential learning in medically underserved communities [31-32].

Food Insecurity

Some of our medical students shared that they were food insecure and inquired about support from the CoE to address food insecurity. Food insecurity is when people cannot access the food, they need to live their fullest lives [29]. Among medical students, a population at high risk for burnout and depression, who are burdened by long study hours, irregular schedules, and demanding clinical rotations during medical training leaves little opportunity for any type of employment to supplement their income, food insecurity is well documented [30]. Paired with the financial burden of high tuition, costly equipment, textbooks, exam/test-taking fees, and living expenses, many medical students are forced to make difficult choices. Unmet food needs are but one of those choices. A growing body of research has continued to bring a heightened sense of awareness to the issue of food insecurity among medical students. Findings from these studies show a troubling pattern, of hunger for populations on specific campuses, for example, 11%, nearly 27% and a staggering 56% [30-32]. In response to this need, we provided food vouchers for our hospital cafeteria, and we also developed a food security resource showing students where they could access food within a five as well as 10-mile radius, of our

campus. The resource was shared with the 5 higher education institutions in our city.

Financial Hardship

Undergraduate students who were surveyed reported that their financial difficulties go beyond the costs associated with applying to medical school. Many stated that their families and personal finances have not recovered to pre-COVID levels. As a result, they are struggling financially to remain enrolled in school without even considering the financial cost of preparing for and applying to medical school. Medical school students report similar financial challenges that threaten their ability to remain in medical school. Many from both student cohorts report being compelled to work at least one and sometimes two part-time jobs to make ends meet. In some cases, students are also providing family members with financial support while maintaining exemplary academic status. Considering these findings and with approval from our funder, the COE disbursed tiered stipends (modest financial increases provided from freshmen to seniors and for students who participated in > 85% of our structured programs. Additionally, the COE provided financial support for 16 medical school students, selected by the HUCOM financial aid leadership, with living wage stipends. The stipends enabled the students to remain in their academic programs and concentrate on their studies, which in turn reduced their need to seek part-time employment and/or take out loans. At the end of the academic year, one hundred percent of this student cohort was promoted.

The CoE's financial support extended to covering fees for students' participation in various learning opportunities. For example, the Center paid the cost of MCAT preparation and MCAT examination fees; paid for first-year medical students to participate in the Medical School Summer Research Program (MSSRP) at Howard; purchased and distributed 330 USMLE Practice Exam vouchers to medical school students; and covered the USMLE fees for 40 medical school students.

Finally, the Enrichment Curriculum Guide lists free resources such as the Khan Academy and the Association of American Medical Colleges (AAMC) free MCAT Prep that can strengthen undergraduates' capacity to successfully apply to medical school. The Expert Panel reviewed the free resources and identified which ones are most suitable for students. The Guide also includes a list of Medical School Scholarship Opportunities for Black and other Underrepresented Minority Students', and a module entitled "Financial Planning for Medical School" that covers:

- Application, Registration, and Exam Fees
- AAMC Financial Assistance Program Application Guide

- Additional Information on Medical School Finance
Unsupportive Academic Environment

Mentorship by trained mentors is the centerpiece of the CoE's efforts to promote supportive academic environments at both the undergraduate and medical school levels. Undergraduate students are assigned HUCOM medical student mentors. The mentors provide one-on-one and group assistance on medical school application essays. They also assist students in taking advantage of CoE services such as Medical School Coaching; Virtual Shadowing Opportunities; and applications to Summer Pre-Health Programs including the Summer Health Professions Education Program (SHPEP) Application Checklist.

For medical school students, we created the HBCU-NMA Ancestral Mentorship Program (HNAM), a partnership between the CoE and the National Medical Association (NMA). HNAM proposes to engage retired or retiring URM physicians to directly contribute to the academic and professional success of potential and prospective Black medical students. During the year-long program mentors and mentees will meet at least monthly for check-ins. Quarterly program-wide meetings will allow mentors and mentees to share progress and advancements. At the conclusion of the year-long engagement, mentees and mentors will maintain relations and continue to seek professional and personal

development opportunities across the physician partnership network. Our goal is to develop a similar program with the National Hispanic Medical Association by the 4th year of our project.

Results

We contacted 101 undergraduate HBCUs to inform them about the CoE and encourage their students to participate in the project. We also enlisted the assistance of the regional chapters of the National Medical Association to publicize the project to their respective stakeholders and presented on the Center's COE operations at the White House Initiative on HBCUs. The CoE is funded by HRSA through June 2027 and to date has engaged 1,503 HBCU undergraduates, of which 212 have actively participated in the project. Similarly, we have engaged 309 medical students and 240 have participated in the project. Most importantly 105 are engaged in residency programs nationwide. We evaluated our MCAT cohort of 43 students and found that only about 27% were fully prepared to take the exam. A total of 12 students have taken the exam so far. Their scores ranged from 490 to 504. The remainder, 31 (73%) have taken a gap year to study and bolster their grades to ensure better MCAT scores. Table 1 presents the preliminary results of our efforts after two years of operation.

Type of CoE Assistance	Results to Date	Project Goal
Number of HBCU undergraduates assisted to prepare academically for medical school	212	280
Number of HBCU undergraduates assisted to take the MCAT	43	180
Number of HBCU undergraduates assisted to apply to medical school	13	180
Number of HBCU undergraduates assisted with stipends	117	280
Number of HBCU undergraduates assigned a mentor	113	280
Number of HBCU undergraduates assisted to participate in experiential research	27	80
Number of HBCU medical students assisted to prepare for the USMLE 1	121	120
Number of HBCU medical students who passed the USMLE1	107	120
Number of HBCU medical students assisted to prepare for the USMLE 2	71	180
Number of HBCU medical students who passed the USMLE 2	62	180
Number of HBCU medical students assisted with stipends	109	240
Number of HBCU medical students assigned a mentor	107	240

Table 1: HUCOM CoE Preliminary Outcomes.

Conclusion

The preliminary findings demonstrate that assisting more Black undergraduates to complete medical school and enter the physician workforce is a multi-faceted labor-intensive challenge, beset with financial burdens which

constitutes the most pressing problem. The financial challenges facing students and faculty suggest that future projects need to allocate a larger percentage of funding to stipends to ease the financial burden of medical school for both students and faculty. On the present project, the Howard CoE devised an array of supports including

provision of stipends, mentoring, and tutoring to propel students towards the finish line. We have engaged retired and practicing members of the National Medical Association as well as those who are unaffiliated with the organization, as well as URM medical school, and undergraduate faculty, to join us in these endeavors. Marshaling the "village" in this manner is designed to ensure the sustainability of the project once HRSA funding ends. As shown by the high USMLE pass rates, we have been particularly successful with assisting students already enrolled in medical school to move forward. However, we will need to sustain efforts to prime the pipeline by supporting higher numbers of undergraduates to successfully apply to medical school.

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