

# Academic and Pre-Medical Advising Factors Associated with Admission to the John A. Burns School of Medicine Among Premedical Students at the University of Hawai'i at Mānoa

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## Abstract

The Medical School Hotline of the University of Hawai'i John A. Burns School of Medicine was founded in 1993, by Satoru Izutu PhD (former vice-dean of UH JABSOM). It is edited by Kathleen Kihmm Connolly PhD, HJH&W Contributing Editor.

*Understanding predictors of medical school acceptance is essential for informing effective premedical advising and applicant preparation. The objective of this study was to identify academic and advising-related factors associated with successful admission to medical school. A retrospective cohort study was conducted using institutional student records from the University of Hawai'i at Mānoa, including 238 premedical students who applied to medical school between 2018 and 2024. Academic variables included Medical College Admission Test scores, cumulative grade point average, and Association of American Medical Colleges Professional Readiness Examination scores. Advising-related variables included the number of pre-health workshops attended and advising appointments completed. Medical school acceptance was significantly correlated with Medical College Admission Test scores ( $r = 0.595$ ), grade point average ( $r = 0.443$ ), and Professional Readiness Examination scores ( $r = 0.355$ ), with all associations reaching statistical significance ( $P < .001$ ). In contrast, participation in advising appointments and workshops was not significantly associated with acceptance outcomes. These findings indicate that academic performance measures remain the strongest predictors of medical school acceptance among premedical students in this cohort. The lack of association between advising utilization and acceptance suggests a need to evaluate and potentially restructure advising services to better align with applicant needs and measurable outcomes. Improving the effectiveness of advising interventions may enhance their contribution to student success in the medical school application process.*

## Abbreviations and Acronyms

AAMC = Association of American Medical Colleges  
AMCAS = American Medical College Application Service  
GPA = grade point average  
MCAT = Medical College Admission Test  
PAC = Pre-Health/Pre-Law Advising Center  
PREview = Professional Readiness Exam  
UHM = University of Hawai'i at Mānoa

## Introduction

Research on premedical students is sparse despite the large number of students interested in pursuing a career in medicine,<sup>1</sup> with highly competitive acceptance rates at 41.9% of 165 326 applicants nationwide from 2021-2022 through 2023-2024.<sup>2</sup> A literature review identified some articles focused on a specific group or groups.<sup>3,4</sup> For example, Hadinger interviewed 33 underrepresented minority medical students about their application experiences and factors influencing application decisions.<sup>3</sup> Using a grounded theory approach, motivating factors were identified: commitment to medicine as a career, exposure to the health care field through personal experiences or by observing others (eg, role models), and desiring a fulfilling job where one can have both a stable income and help others.<sup>3</sup> Regarding “barriers and supports,” some respondents found the application process to be “overwhelming, difficult, and expensive,” especially the Medical College Admissions Test (MCAT). Mitigating factors included having a role model, familial support, and in some cases guidance from a pre-health advisor or someone similar. Hadinger noted that although further research was needed, pre-health advisors can play a critical role for students who lack other supports.<sup>3</sup>

Several articles evaluated perceptions of student needs in larger cohort studies. For example, a recent study by Malvitz et al utilized a Collective Case Series framework to identify themes in premedical student data. Data from 6 universities in the United States were collected between June and July 2022 in an attempt to identify student needs and the resources available to support them. Results found students reported a significant “mismatch” with the lack of adequate information on what a career in medicine actually entails.<sup>1</sup>

Attempting to include other factors into the medical admissions process, the Association of American Medical Colleges (AAMC) recently developed the Professional Readiness Exam (PREview). The exam is a standardized test that assesses 9 professional competencies relevant to entering medical students. When included in pre-interview screening, this test strives to improve holistic review in a high-volume context earlier in the application review process.<sup>5</sup> The PREview exam was piloted in 2020-2021.<sup>6</sup> A recent study found that there were small and positive correlations between PREview scores and MCAT scores and undergraduate GPAs.<sup>7</sup>

The purpose of the current study is to identify academic and advising-related factors associated with successful admission to medical school. In a previous study the authors attempted to learn more about premedical students' characteristics and experiences through an online, anonymous survey, and interviews; however, due to a low response rate, limited data were obtained.<sup>8</sup> Of the 8 students who voluntarily provided their contact information to be interviewed, all had quite diverse experiences. But, the 2 areas in common were viewing the MCAT as very difficult and a "major obstacle", and gratitude for the assistance they received from their pre-health advisors. This current study analyzed available data from University of Hawai'i at Mānoa (UHM) premedical students to identify significant differences between those who were accepted to medical school and those who were not, with the aim of determining whether utilization of Pre-Health/Pre-Law Advising Center (PAC) services was positively associated with medical school acceptance. The study was approved as exempt by the University of Hawai'i Human Studies Program on August 22, 2024 (Protocol Number: 2024-00581).

## Methods

Data were obtained from a University of Hawai'i System database with student-submitted information on applications, registration, and PAC advising; PAC Google Drive; and American College Application Services (AMCAS). Information on 20 451 UHM students who graduated with bachelor's degrees from Spring 2014 through Summer 2023 was downloaded on September 19, 2024. Any student self-identifying as a premedical student, declaring a major relevant to seeking a career in medicine (eg, biology, chemistry), or indicating interest in a medical career was included. Additionally, students who signed up for services at PAC related to medicine or attended medicine-related workshops were also included. Data on students who saw PAC for 3977 appointments from January 2019 through February 2024 was pulled on March 7, 2024. The PAC Google Drive houses a database that collects data inputted directly by students who attend PAC workshops. PAC event attendee data from January 2018 through April 2024 was pulled on June 24, 2024, totaling 2149 registration entries. AMCAS is a nationwide database of medical school applicants. Information on 694 UHM applicants who applied from 2018 through 2024 was pulled on June 24, 2024. Of these applicants, 238 provided consent to access their application data. Exploratory analyses were conducted using data from 2014 through 2024. The final analyses presented in this study include only data from 2018-2024. The final analytic sample comprised 238 UHM medical applicants during this period.

The following information on the applicants were obtained from AMCAS: grade point average (GPA), MCAT and PREview scores, the number of medical schools they were accepted into, and, if accepted, the school they enrolled in. Information on students who attended PAC workshops and the number of events they registered for were collected. Information from all databases was merged into 2 files: ac-

cepted (n=112) and rejected (n=126) students. Data were deidentified and assigned participant ID numbers.

A Pearson correlation analysis and independent-samples *t* tests were conducted using IBM SPSS Statistics version 29 (IBM Corp., Armonk, NY) to examine the relationships and group differences between acceptance status (0 = rejected, 1 = accepted) and continuous predictors, including the number of PAC workshops attended, the number of PAC appointments, MCAT total score, undergraduate GPA, and PREview total score.

## Results

The study population included 238 UHM medical school applicants from 2018-2024 who consented to share application data. Bivariate correlations were conducted to examine relationships among acceptance status and key academic and noncognitive metrics, including MCAT total score, undergraduate GPA, and PREview total score. As summarized in [Table 1](#), acceptance status demonstrated significant associations with multiple applicant metrics, and interrelationships among these measures were also observed.

Acceptance status was significantly and positively correlated with MCAT total score ( $r = 0.595, P < .001$ ), indicating a strong relationship where higher MCAT total scores were associated with a greater likelihood of acceptance. Similarly, undergraduate GPA ( $r = 0.443, P < .001$ ) and PREview total score ( $r = 0.355, P < .001$ ) were moderately and positively correlated with acceptance, suggesting that higher GPA and PREview scores were also associated with higher chances of being accepted. In addition, total MCAT score was strongly and positively correlated with GPA ( $r = 0.622, P < .001$ ) and moderately correlated with PREview total score ( $r = 0.374, P < .001$ ), demonstrating consistency across academic performance metrics. A weak but significant positive relationship was also observed between GPA and PREview total score ( $r = 0.307, P = .004$ ), suggesting some alignment between these measures of academic preparedness.

In comparing the number of PAC appointments between rejected and accepted applicants, descriptive statistics indicate that rejected applicants ( $n = 57$ ) attended an average of 2.65 PAC appointments ( $SD = 2.27$ ), while accepted applicants ( $n = 61$ ) attended an average of 3.33 PAC appointments ( $SD = 2.09$ ). The mean number of PAC appointments was higher among accepted applicants than rejected applicants, but the difference was not statistically significant ( $P = .093$ ). An independent samples *t*-test was conducted using cases with complete data to compare the PREview total scores of applicants whose applications were rejected and those whose applications were accepted. The results indicated a statistically significant difference in scores between the 2 groups ([Table 2](#)). Descriptive statistics showed that rejected applicants ( $n = 50$ ) had a mean PREview total score of 4.44 ( $SD = 2.05$ ), while accepted applicants ( $n = 38$ ) had a higher mean score of 5.79 ( $SD = 1.34$ ). Therefore, results were interpreted as though equal variances were not assumed. The *t*-test revealed that the difference in PREview total scores between rejected and accepted applicants was statistically significant,  $t(84.256) = -3.723, P < .001$ . This

Table 1. Correlation Between Medical School Acceptance Status and Various Resources Utilized and Test Scores for University of Hawai'i at Mānoa Students from 2018-2024

Variable	1 <i>r</i> , <i>P</i> -value <sup>a</sup>	2 <i>r</i> , <i>P</i> -value <sup>a</sup>	3 <i>r</i> , <i>P</i> -value <sup>a</sup>	4 <i>r</i> , <i>P</i> -value <sup>a</sup>	5 <i>r</i> , <i>P</i> -value <sup>a</sup>	6 <i>r</i> , <i>P</i> -value <sup>a</sup>
1. Accepted	1					
2. PAC workshops	0.10, .48	1				
3. PAC appointments	0.16, .09	-0.19, .27	1			
4. MCAT total score	0.60, <.001	-0.17, .24	0.09, .35	1		
5. Undergraduate GPA	0.44, <.001	-0.02, .89	0.09, .36	0.62, <.001	1	
6. PREview total score	0.36, <.001	-0.13, .50	0.10, .45	0.37, <.001	0.31, <.004	1

PAC = Pre-Health/Pre-Law Advising Center, MCAT=Medical College Admission Test, GPA=grade point average, PREview = Professional Readiness Exam

<sup>a</sup>Values are Pearson correlation coefficients (*r*) and 2-tailed *P*-value. Acceptance status was coded as accepted versus not accepted. Sample sizes varied by variable due to data availability, ranging from *n* = 28 to *n* = 238.

Table 2. Comparison of Number of Premedical Advising Center Appointments by Acceptance Status

Acceptance Status	<i>n</i>	Mean	SD
Rejected	50	3.85	1.02
Accepted	38	5.79	1.12

Note. An independent-samples *t* test indicated that accepted applicants had significantly higher PREview total scores than rejected applicants,  $t(84.16) = 8.72, P < .001$ . Equal variances were not assumed based on Levene's test.

finding suggests that applicants with higher PREview total scores were significantly more likely to be accepted, highlighting the potential importance of this score in the selection process.

## Discussion

Overall, the results highlight that MCAT total score, GPA, and PREview total score were key predictors of acceptance, while PAC-related activities (workshops and appointments) were not significantly associated with acceptance. These findings emphasize the need for more data to fully understand how premedical advising and workshops impact students persistence in premedical pathways and actual matriculation into medical school. Results reflect the complexity in identifying a “profile” of a student who successfully gains admission into medical school beyond traditional criteria (ie, high MCAT test scores and undergraduate GPA). With the intent of providing support to students who may have difficulty with certain aspects of the admissions process, the current study included the role of pre-health workshops and advising. Although “traditional” metrics like MCAT score, undergraduate GPA, and now PREview score were positively correlated with medical school admission, this was not the case with other measures. Past studies have championed the importance of pre-health advising early and over the long term, but how that should be measured is not clear.<sup>1,3</sup> Future research needs to take a more detailed look at the specific types of assistance being provided by pre-health advisors, when these services are being given to students, and how pre-health advising

curriculum can be enhanced to further assist premedical students.

One critical issue of note is the understaffing of premedical advising offices. For example, in a study by Malvitz et al, a university in their sample reported that there were 2 advisors for 3200 students.<sup>1</sup> Similarly, during the current study's timeframe, UHM only had 1 advisor for both the entire pre-health student population of an estimated 4092 students and an additional 1708 pre-law students. To mitigate this, Malvitz et al suggested that universities consider developing a curriculum for premedical students to reach a larger number of students and help them to gain a better understanding of what a career in medicine actually entails. This would include not just the scientific aspects of medicine, but also the importance of compassion and patient-centered care.

Ultimately, a longitudinal study tracking students over time from when they first show an interest in medicine to admission would provide the most insight. Given the complexity of such an endeavor, initiatives to reach more students can be implemented: decreased premedical advisor-to-student ratios, mandatory advising and workshop attendance, assigned premedical advisors and mentors, and MCAT preparation courses offered through the university. On a more personal level, peer mentoring can also be encouraged. These strategies would help ensure more consistent preparation of premedical students.

Limitations of this study include that data were obtained at a single institution, making it difficult to generalize findings. Additionally, some applicants were excluded from the analytic sample because access to AMCAS application data requires applicant authorization. During the 2018–2024 application cycles, 694 University of Hawai'i at Mānoa (UHM) students applied to medical school; however, only 238 applicants (34.3%) granted permission at the time of application for UHM to access their AMCAS data. Authorization is provided during the application process and is not contingent upon medical school acceptance. As a result, the final analytic sample reflects only those applicants who consented to data access, accounting for the smaller sample size relative to the total number of applicants.

## Conclusions

The results highlight that MCAT total score, undergraduate GPA, and PREview total score are key predictors of medical school acceptance, while pre-health workshops and advising did not have a significant association. At UHM, premedical advising opportunities remain limited, with only 2 advisors serving more than 2000 premedical students annually. Given these constraints, advising services warrant evaluation and possible restructuring to more effectively support applicants. Although the analytic sample represents only applicants who authorized access to their AMCAS data at the time of application, this authorization was independent of acceptance outcomes, and the findings provide insight into applicant experiences within a resource-constrained environment. These findings underscore the importance of examining how premedical advising and workshops could influence medical school acceptance. Future research should also investigate the specific factors influencing students from backgrounds underrepresented in medicine and identify strategies to improve their acceptance rates.

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## Other disclosures

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## Ethical approval

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## Disclaimers

None.

## Previous presentations

None.

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## References

1. Malvitz M, Khan N, Morgenstern LB. College preparation for a medical career in the United States. *PLoS One*. 2024;19(2):e0298203. doi:10.1371/journal.pone.0298203
2. AAMC. Table A-23: MCAT and GPA Grid for Applicants and Acceptees to U.S. MD-Granting Medical Schools, 2021-2022 through 2023-2024 (Aggregated.). October 25, 2023. Accessed December 31, 2024. <https://www.aamc.org/media/6091/download>
3. Hadinger MA. Underrepresented Minorities in medical school admissions: A qualitative study. *Teach Learn Med*. 2017;29(1):31-41. doi:10.1080/10401334.2016.1220861
4. Teherani A, Uwaezuoke K, Kenny J, et al. Aspiring physicians program: Description and characterization of the support processes for an undergraduate pathway program to medicine. *Med Educ Online*. 2023;28(1):2178368. doi:10.1080/10872981.2023.2178368
5. Learn More About the AAMC PREview® Professional Readiness Exam Program. AAMC. Accessed December 20, 2024. <https://www.aamc.org/services/admissions-lifecycle/aamc-preview-professional-readiness-exam-admissions-officers/learn-more>
6. AAMC PREview® Professional Readiness Exam Research. AAMC. Accessed December 20, 2024. <https://www.aamc.org/services/admissions-lifecycle/aamc-preview-professional-readiness-exam-research>
7. Ellison HB, Grabowski CJ, Schmude M, et al. Evaluating a Situational Judgment Test for Use in Medical School Admissions: Two Years of AAMC PREview Exam Administration Data. *Acad Med*. 2024;99(2):183-191. doi:10.1097/ACM.0000000000005548
8. Chun MBJ, Shiroma K, Morrison B. A shared but diverse path: A snapshot of medical school applicants who received assistance from the Pre-Health Advising Center at the University of Hawai'i at Manoa. *The Advisor*. Published online March 2024:1-6.