



# MMC Helps Students Get Accepted Into Med School

## ABSTRACT

The United States can be viewed as a cultural melting pot containing diverse cultures which affect patient attitudes towards healthcare.<sup>1</sup> There has been consistent underrepresentation of minorities among both physicians and their physical distribution among society.<sup>1,2</sup> Latinos or Hispanics and Blacks or African Americans remain underrepresented, with the Latino group being the largest disparity.<sup>3</sup> Part of the problem is that only 24.4% of medical student applicants identifying as Latino or Hispanic actually matriculate.<sup>3</sup> Furthermore, the 2002-2011 trends in medical school matriculates reveal that African American and Caucasian applicants are decreasing.<sup>3</sup> This study sought to explore a novel approach to increasing minority representation in medical school. The Medical Mastermind Community (MMC) was developed in 2009 to bridge the gaps in academic and social support for future physicians by providing scientific education, personalized career counseling, and a long-term supportive community for participants. Data was previously published that demonstrated that access to the MMC multimedia training increased MCAT and undergraduate GPA scores and this is a follow-up study assessing rates of matriculation into medical school.<sup>4,5</sup> Overall, 34.3% of MMC participants matriculated into medical school. This study demonstrates that academic and social mentoring via Internet-based multimedia and teleconferencing may be a useful delivery method.

## INTRODUCTION

The United States can be viewed as a cultural melting pot containing diverse cultures which affect patient attitudes towards healthcare.<sup>1</sup> Unfortunately, it has been historically difficult for ethnic minorities to find physicians who share their own heritage.<sup>1</sup> Two major reasons for this include the fact minorities are underrepresented in medical school and physicians are distributed disproportionately among society after their training is complete.<sup>2,3</sup>

Substantial discourse regarding reasons for barriers to obtaining a career as a physician has been discussed in the literature.<sup>6-8</sup> Available data suggests that minority students frequently have lower undergraduate grade point averages (GPA) and Medical College Admission Test (MCAT) scores, which may have a negative impact on their matriculation rates.<sup>9,10</sup> It is difficult to assess the overall drop-out rate at the premedical, undergraduate level because there are scant studies on the subject, inadequate premedical advising, and students that don't follow-through with applying to medical school that otherwise would have if they had appropriate professional mentorship.<sup>11</sup> The Association of American Medical Colleges data sets do help provide one piece of this puzzle. Between 2002-2011, a total of 24.4% of medical student self-identifying as Latino or Hispanic that actually apply to medical school successfully matriculate.<sup>12</sup> Applicant and matriculate data are not available for other ethnicities.

Comparing 2010 U.S. Census data to medical school matriculate demographics for the same year yields a recent snapshot of racial/ethnic disparities within academic medicine. Only Caucasians and American Indian or Alaskan Natives matriculate into medical school in percentages that closely reflect their representation in society at large (97% and 111.1%, respectively).<sup>12,13</sup> Asians (468.8%) and Native Americans or Pacific Islanders (200%) are actually overrepresented within medicine with respect to their campus demographics, but distribute disproportionately across the nation after training.<sup>4,5</sup> Latinos or Hispanics (47.2%) and Blacks or African Americans (64.3%) remain underrepresented, with the Latino group being the largest disparity.<sup>4,5</sup> The 2002-2011 trends in medical school matriculates reveal that the Latino and Asian applicants are increasing, while the African American and Caucasian applicants are decreasing.<sup>12</sup>

The Medical Mastermind Community (MMC) was developed in 2009 to bridge the gaps in academic and social support for future physicians by providing scientific education, personalized career counseling and a long-term supportive community for participants.<sup>4,5,14-16</sup> The MMC offers training from experts in various



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fields such as test anxiety, financial assistance and essay writing, as well as training from authors of scientific review books. Much of the general mentorship content is similar to existing university programs. What makes the MMC unique is its internet-based, syndication and a robust curriculum in study techniques, critical reasoning and organizational skills.<sup>4</sup> Data was previously presented that showed increased Medical College Admission Test scores and undergraduate grade point averages.<sup>5</sup> This is a follow-up study assessing the outcome of matriculation into medical school, correlated to the degree of participation in the Medical Mastermind Community website.<sup>4,5,14,15,17</sup>

### METHODS

Five undergraduate colleges and universities located in counties federally-designated as Health Provider Shortage Areas and/or Medically Underserved Areas were randomly selected. All students interested in a “career as a physician” were invited to join the Medical Mastermind Community for one year in exchange for participating in this study. Respondents received teleconference style mentorship program which included didactic lectures about the field of medicine, academic resources, study skills training, access to physicians and current medical students, and group discussions.<sup>5</sup>

Students provided informed consent. After one year of access to the Medical Mastermind Community, a survey was electronically mailed to the participants. The primary outcome measure was medical school matriculation. Additional survey components included age, gender, duration of participation in the Medical Mastermind Community, number of failed medical school application attempts, willingness to serve medically underserved populations, and pre- and post-intervention grade point average and Medical College Admission Test scores.

### RESULTS

There were 168 survey respondents, 74 (44%) were female and 94 (56%) were male. The age range was 18-57 with a median of 28.4 years of age. This age range is considerably older than the comparison group of actual matriculates. According to the Association of American Medical Colleges, 90% of medical school matriculates from 2008-2011 were between the ages of 22-27. This makes direct comparison less helpful because there were survey respondents that were too young to be eligible for medical school matriculation.

The overall matriculation rate in the study sample was 33.3%. Because there were respondents that were ineligible to be accepted to medical school (ages 21 and under), a subset analysis was performed. When the survey respondents were controlled for age (ages 22-27), 57 respondents met criteria for our sub-analysis. Twenty-seven students (47%) matriculated into medical school in this subset of age controls.

### DISCUSSION

There were more males than females among respondents, which was opposite of the trend in U.S. matriculates. Currently, the best minority matriculation data we have available from the Association of American Medical Colleges is for Latino applicants that get accepted at a rate of 24.4%. Compared to this minority group, participants in the MMC have a 93% increase in medical school matriculation.

Limitations to this study include insufficient power to do individual race-based analysis of matriculation rates. More transparency in applicant and matriculate data should be a goal in order to assess the effectiveness of mentorship programs’ ability to increase students’ competitiveness. Also, the age ranges of the general sample population did not reflect national averages of matriculating medical students, but this effect was mitigated with a subset analysis. Finally, there exists no definite way to capture the true number of premedical students that never complete applications to medical school for an accurate matriculation rate. Future research could include a larger sample size from multiple, large undergraduate institutions to

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prospectively study all students with an interest in a career as a physician in order to better understand these career barriers.

Table 1: Demographic and medical school matriculation results from a sample of undergraduate institutions located in U.S. federally-designated, medically underserved areas.

Total number of respondents	168
Male	94 (56%)
Female	74 (44%)
Age, range	18-57
Age, median	28.4
Overall number of matriculates	56 (33.3%)
Number of matriculates among age controls (ages22-27)	27 (47%)

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