



Middle School to Medical School (M2M)

An outreach program developed and implemented on the Anschutz Medical Campus

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Introduction

- The diversity of the U.S. population is not currently reflected in the composition of the medical student, faculty, and physician workforce¹
- Lack of diversity in the health professions contributes to health care disparities among racial/ethnic minority groups²⁻⁴
- Diversity in medicine improves cultural responsiveness, which impacts health outcomes in racial/ethnic minority groups⁴
- Studies show that increasing the number of students and physicians who are underrepresented in medicine (URM) improves learning outcomes, cultural competency, and helps reduce health disparities⁴⁻⁷
- To strengthen diversity in the health care workforce we must focus recruitment efforts on students who are URM^{8,9}
- Several initiatives promoting health careers among the URM population already exist, but most of these programs focus on high school or undergraduate students
- Few programs feature younger students (e.g. middle school youth)
- CU students developed an outreach program allowing middle school youth from underrepresented backgrounds to engage with diverse medical students and participate in medically-focused enrichment activities on the Anschutz Medical Campus (AMC)



Program Goals:

- To encourage a positive attitude towards higher education
- To increase interest and encourage URM students to pursue a career in a health profession
- To increase confidence and self-efficacy in pursuing any health care career
- To increase students' confidence and self-efficacy in specifically becoming a physician

Program Development

- May 2017: Students obtain support from the University of Colorado Department of Family Medicine and Office of Inclusion & Outreach
- June 2017: Students identify partnering middle school and stakeholders from existing relationship
- June 2017: Students design curriculum in collaboration with stakeholders
- July 2017: Pre/post evaluation surveys created for program evaluation
- January 2018: 1st iteration of the M2M program
- 2018-2019: Program evaluation reviewed to inform 2nd iteration
- February 2019: IRB Protocol approved as Exempt (19-0261)
- February 2019: 2nd iteration of the M2M program
- Spring 2020: Preparation for 3rd iteration of the M2M program

Methods

Curriculum

Time	Curriculum Component	Details	Time	Curriculum Component	Details
9am	Participant Arrival	Participants arrive and are provided breakfast followed by icebreaker activities	12:30pm	Activity 3: Campus Tour	Tour of the Anschutz Medical Campus including the anatomy bone room, and campus library
10am	Activity 1: Anatomy Lab	Review of anatomy, physiology and pathophysiology of the heart, lungs, and brain, with hands-on learning using healthy/diseased pathology specimens	1pm	Activity 4: Introduction to Health Professions	Presentation on careers in medicine, nursing, physician assistant, pharmacy, physical therapy, and dentistry
11am	Activity 2: Ultrasound Workshop	Review of how ultrasound works with hands-on ultrasound lab	1:30pm	Activity 5: Jeopardy Game	Participants answer questions to assess knowledge obtained throughout the day
12pm	Lunch	Participants provided a catered lunch	2pm	Activity 6: Medical Student Panel	Medical students share stories of their educational journey followed by Q&A

Data Collection

- Pre-and-post surveys assessing the participant's interest in pursuing medicine or another health care career, sense of self-efficacy in pursuing such health care careers, and belief that other students of the same race/ethnicity could become health professionals
- Survey questions were asked on a 5-point Likert scale, from 1=Strongly disagree to 5=strongly agree
- Post-survey collected qualitative feedback using open-ended questions on what the students enjoyed and did not enjoy about the program, as well as their recommendations for improvement

Data Analysis

- Quantitative data from the 2019 iteration of the Middle School to Medical School (M2M) program were analyzed using paired two-sample t-tests, with P-values provided as applicable
- Qualitative data were reviewed and coded into themes using a manual thematic analysis

Evaluation and Assessment

Demographics	2019 Participants=18
Gender	Male: 9 (50%), Female: 9 (50%)
Grade Level	Sixth: 3 (17%), Seventh: 10 (56%), Eighth: 5 (28%)
Race	African American: 2 (11%) , American Indian/Alaskan Native: 1 (5%) , Hispanic: 13 (72%) , White: 2 (11%)

Quantitative Measures: Pre- and Post- participation in the M2M program			
Measure	Mean		P- Value
	Pre	Post	
Interest in becoming a medical doctor*	3.33	3.56	0.130
Interest in becoming a health care provider (non-physician)*	3.11	3.44	0.015
Confidence in having the knowledge/intelligence to become a medical doctor*	3.50	3.89	0.024

*5-point Likert Scale: 1-Strongly Disagree, 2-Disagree, 3-Neither agree nor disagree, 4-Agree, 5- Strongly Agree

Qualitative Measures:

Themes

Would the student recommend this program to his/her friends?

77%-Yes

What did the students like the most?

Seeing and touching human organs, learning about and using the ultrasound machines, seeing and holding human bones

"I really liked the campus tour & the Anatomy lab because they really make me wanna go to CU more."

What workshops did the students enjoy the most?

Anatomy lab, Campus tour, Ultrasound workshop

What is one thing the students learned that day

There are 206 bones in the adult human body, Ultrasound machines have multiple uses not just to see babies
"I learned from all the med students that no matter the situation or struggle believe[sic] in yourself and that you are your own self motive."

Feedback for improvement

Increasing meal time, incorporating additional human body topics, most wouldn't change anything

Discussion

- Increasing diversity in the health care setting improves cultural competency and decreases healthcare disparities
- Exerting pressure at all points along the educational pipeline and into medical practice can increase diversity
- This program was unique by focusing outreach efforts on middle school youth
- Hands-on learning experiences led by medical students evoked a positive reaction from students
- Sharing personal stories during the medical student panel is an influential way to inspire youth
- After participating, students had an increased interest in becoming a health care provider and self-efficacy in becoming a physician
- As with similar initiatives, our program demonstrates the benefits of introducing URM students to science and health professions at a young age



Limitations

- One-day program
- Some students attended the program in both the 1st and the 2nd iteration and therefore experienced similar workshops
- Unable to show long-term impact of this program due to its nature

Next Steps

- Student panel include students from other professional schools
- Expand program to include more local Aurora middle schools
- Recruit passionate medical students to sustain program

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