

The Role of a 6-Month Primary Care Mentorship Program on Medical Student Residency Specialty

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Abstract

Primary care is the greatest physician specialty shortage area nationally and in the State of Hawai‘i, and the shortage is expected to worsen in the coming years. During the 2015–2016 academic year, a 6-month Primary Care Mentorship Program (PCMP) for first-year medical students was launched at the John A. Burns School of Medicine (JABSOM). This study sought to determine (1) whether participation in a PCMP as a first-year medical student correlates with an increased likelihood of matching into a primary care graduate medical education (GME) residency specialty, (2) whether the PCMP medical student participants developed lasting mentorship relationships with their assigned mentor, and (3) whether a PCMP is a worthwhile endeavor for medical schools to incorporate into their structured undergraduate medical education curriculum. Mentees were surveyed before and after the PCMP and after the residency Match. Overall, 105 (36%) of the 288 students in the JABSOM classes of 2019–2022 have applied to participate in the PCMP. Seventeen (85%) of the 20 JABSOM class of 2019 PCMP mentees completed the post-Match reflection survey. The study found as follows: (1) participation in a 6-month PCMP as a first-year medical student does not correlate with an increased likelihood of matching into a primary care GME residency specialty, (2) 7 (41%) participants did continue their mentorship relationship following completion of the PCMP, and (3) overwhelmingly positive qualitative feedback from mentees and the number of mentees who did establish lasting mentorship relationships suggest a PCMP is a worthwhile endeavor for medical schools to implement.

Keywords

primary care issues, mentoring, undergraduate medical education

Abbreviations

GME = graduate medical education

JABSOM = University of Hawai‘i John A. Burns School of Medicine

PCMP = Primary Care Mentorship Program

PCP = Primary Care Progress

Introduction

Primary care is the greatest physician specialty shortage area nationally and in the State of Hawai‘i. As of 2018, Hawai‘i had a shortage of 263 full-time equivalent primary care physicians spread across every island and in both urban and rural communities. The demand for additional primary care providers is expected to worsen in coming years.¹ The University of Hawai‘i John A. Burns School of Medicine (JABSOM), through its undergraduate and graduate medical education programs, has produced about half of all physicians practicing in Hawai‘i today.² Researchers have attempted to better understand the factors that influence medical student specialty

choice to inform medical schools to meet the primary care physician shortage.^{3,4} Numerous factors play a role in medical student specialty choice: (1) social compassion, attitudes, and values; (2) financial considerations; (3) family and personal concerns; (4) subjective and reinforcing influences; and (5) medical training experiences.⁵ An important factor in multiple studies is the role of faculty mentorship in medical student specialty choice.^{4–8} The Office of Student Affairs at JABSOM has had some form of formal mentorship program for medical students since 2009. During the 2015–2016 academic year, the mentorship program was called “Pod-ving” and consisted of medical students from all 4 medical school classes and faculty advisors. Each “Pod” group met once a quarter for 1 hour to provide peer and faculty group mentorship.⁹

During the 2014–2015 academic year, a Primary Care Progress (PCP) chapter was founded at JABSOM. PCP, a non-profit company based out of Boston, Massachusetts, has a mission to promote “leadership development and community building,” and as part of that mission, the new JABSOM PCP chapter held a town hall meeting to assess what was keeping medical students from entering a career in primary care.¹⁰ The overwhelming theme from the town hall meeting was a lack of actively working, engaged, and enthusiastic primary care physician mentors for medical students. To assist JABSOM in producing more students entering primary care specialties, the JABSOM PCP chapter created a Primary Care Mentorship Program (PCMP) during the 2015–2016 academic year. The 6-month program paired first-year medical students with community primary care physicians in the specialties of Family Medicine, Internal Medicine, and Pediatrics. The PCMP encouraged 6 half-day clinical shadowing experiences, 6 telephone or email communications, and attendance at JABSOM PCP events. Upon completing the 6-month PCMP, each participant received a certificate of completion. Due to the success of the initial 6-month program, it has been continued since the inaugural cohort in Fall 2015.

The goals of this study were to determine

- (1) whether participation in a PCMP as a first-year medical student correlates with an increased likelihood of matching into a primary care graduate medicine education (GME) residency specialty;
- (2) whether the PCMP medical student participants developed lasting mentorship relationships with their assigned mentor; and
- (3) whether a PCMP is a worthwhile endeavor for medical schools to incorporate into their structured undergraduate medical education curriculum.

Methods

The JABSOM classes of 2019–2022 were emailed an application to participate in the program in the fall and spring of their first year of medical school. Community primary care physicians were also emailed an application to participate in the program before each 6-month PCMP cohort (Appendix 1). First-year medical students were then paired by the PCP PCMP leadership team based on medical student primary care specialty of interest, as feasible. Upon completing each 6-month PCMP, each medical student and community primary care physician was emailed a post-participation survey containing quantitative and qualitative questions (Appendix 2 and 3). In Spring 2019, the first 2 PCMP cohorts successfully matched into GME residency specialties. The National Resident Matching Program is a private, non-profit organization that provides a fair mechanism for United States fourth-year medical students to pair with a graduate medical specialty and releases the pairing result, called “The Match,” in the spring of each academic year.¹¹ After “The Match,” a reflection survey containing both qualitative and quantitative questions was emailed to JABSOM class of 2019 PCMP cohort participants regarding their experience in the PCMP and the remainder of training in medical school (Appendix 4). Quantitative data were analyzed to address goal (1) of the study using Microsoft Excel version 16.16.6 (Microsoft; Redmond, Washington), including mean with standard deviation [SD], median, and mode; and two-sample t-test assuming equal variances. Qualitative analysis was conducted on the data to determine goals (2) and (3) of the study. The study was submitted and approved by the University of Hawai‘i Institutional Review Board for Human Research (IRB 2018-00742).

Results

Overall, 105 (36%) of the total 288 students in the JABSOM classes of 2019–2022 have applied to participate in the program as first-year medical students, assuming 72 JABSOM students per class, as seen in Table 1.¹² Forty-three medical

student applicants were interested in finding a primary care Internal Medicine mentor, while 32 indicated an interest in Family Medicine and 21 indicated an interest in Pediatrics. Of the 105 medical student applicants, 13 were unable to be paired with a mentor due to a lack of mentor availability, as seen in Table 2. Ninety-two first-year medical student participants were successfully paired with community physician mentors: 47 with Internal Medicine, 30 with Family Medicine, and 15 with Pediatric community physicians.

Upon completing the 6-month PCMP, 32 (30%) of first-year medical student participants completed the feedback survey. The mean number of shadowing experiences medical students had during the program was 2, with a mode of 1. The most common issue expressed by medical students concerning shadowing was difficulty scheduling, primarily due to the lack of available time during the week. Twenty-nine (91%) of the 32 medical students communicated with their mentors outside of clinic shadowing via email, while 17 (53%) had face-to-face meetings, and 8 (25%) had phone calls. Medical students also gained a better understanding of the reality of being a primary care physician, with one mentee stating, “[My mentor] taught me that the best doctors are ones that take the time to really connect with patients and provide them with the education and information to allow them to make their own informed decisions regarding their health care.” Other feedback regarding insight into primary care provided by the PCMP include “You don’t ONLY see ‘coughs and colds,’” “I aspire to become a caring physician who gains her patients’ trust, just like how my mentor had done,” and “I believe that it is one of the most important fields in medicine.” Other positive themes expressed included the benefit of flexibility in clinic scheduling, the number of career options, the complexity of chronic disease management, and the breadth of knowledge needed. Negative themes included the frustrating and complicated coordination of patient care, the number of patients needed to be seen per day, the high overhead cost of private practice, patient non-compliance, the volume of paperwork, and complex reimbursements from insurance companies’ services.

JABSOM Class	No Preference n (%)	Mentor Specialty			Total n (%)
		Family Medicine n (%)	Internal Medicine n (%)	Pediatrics n (%)	
2019	4	5	10	3	22
2020	2	12	10	6	30
2021	3	7	9	8	27
2022	0	8	14	4	26
Total	9 (9%) ^a	32 (30%) ^a	43 (41%) ^a	21 (20%) ^a	105 (36%) ^b

Abbreviations: JABSOM, University of Hawai‘i John A. Burns School of Medicine; PCMP, Primary Care Mentorship Program; PCP, Primary Care Progress.

^a Total number of JABSOM students who selected a mentor in a particular primary care specialty versus no preference in mentor primary care specialty divided by the total number of JABSOM students who participated in the PCMP (105).

^b Total number of JABSOM students who selected a mentor in a particular primary care specialty versus no preference in mentor primary care specialty (105) divided by the total number of JABSOM students per class between 2019–2022 (288), assuming 72 students per year, the average class size increased during the study period (University of Hawai‘i John A. Burns School of Medicine. Admitted Class Profile. <https://admissions.jabsom.hawaii.edu/prospective-students/admitted-class-profile/>)

The mode rating for mentee experience in the PCMP was 4 out of 5, with 5 being a life-altering experience. Additional qualitative feedback from mentees regarding their experience overall was positive, with numerous mentees expressing that the PCMP was a “valuable experience,” “great program,” and that they would “love to participate in the program again.” There was a significant difference for medical student motivation to pursue a career in primary care before (mean, 3.2; SD, 1.1) and after (mean, 3.6; SD, 0.6) participation in the PCMP ($t(31), -2.7; P = .01$). Overall, 27 (84%) mentees also stated that they would participate in the program again.

Of the JABSOM class of 2019 mentees who went through the Spring 2019 Match, 13 (62%) matched into a primary care GME residency specialty: 8 into Family Medicine, 3 into Internal Medicine, and 2 into Pediatrics (Table 3). Seventeen (85%) of the 20 JABSOM class of 2019 mentees completed the post-Match reflection survey. Seven (41%) of these mentees who completed the survey kept in contact with their assigned mentor after they participated in the PCMP. For those mentees who did continue their mentorship relationship after completion of the program, most had additional mentorship meetings during medical school. Overall, 5 (29%) of the 17 JABSOM class of 2019 mentees who completed the survey felt that their participation in the PCMP influenced their choice in GME residency specialty, while 9 (53%) felt that their participation in the program influenced their career choice. All 17 of the

JABSOM class of 2019 mentee survey respondents felt that the PCMP is a worthwhile endeavor. Fourteen (82%) of the 17 PCMP mentee survey respondents noted that they would be willing to serve as mentors for first-year medical students upon completing residency. The JABSOM class of 2019 mentee survey respondents also reflected that they “greatly appreciated [their] mentor” and “felt more comfortable talking to my attendings about my aspirations” after participating in the PCMP.

Discussion

This study found that participation in a 6-month PCMP as a first-year medical student does not correlate with an increased likelihood of matching into a primary care GME residency specialty: 13 (18%) of PCMP participants versus 25 (35%) of non-PCMP participants in the JABSOM class of 2019 entered primary care GME residency specialties. This finding is despite the significant difference for mentee motivation to pursue a career in primary care before and immediately after participation in the PCMP, suggesting a change in the mentees motivation to pursue a primary care career during later years of medical school. This change in career plan throughout medical school is well documented.^{4,13} Family Medicine was the only primary care GME specialty that resulted in a greater percentage of students matching into it if they participated in the PCMP (11%) compared to those who did not participate in the PCMP (6%). Although many studies have shown that faculty mentor-

Table 2. JABSOM PCP PCMP Mentee and Mentor Pairings, JABSOM Classes of 2019–2022.

JABSOM Class	Unable to Pair n (%)	Mentor Specialty			Total PCMP Participants n (%)
		Family Medicine n (%)	Internal Medicine n (%)	Pediatrics n (%)	
2019	1	5	13	3	21
2020	6	9	12	3	24
2021	6	7	9	5	21
2022	0	9	13	4	26
Total	13 (12%) ^a	30 (33%) ^b	47 (51%) ^b	15 (16%) ^b	92

Abbreviations: JABSOM, University of Hawai'i John A. Burns School of Medicine; PCMP, Primary Care Mentorship Program; PCP, Primary Care Progress.

^a Total number of JABSOM students who applied to participate in the PCMP who were unable to be paired with a community primary care physician divided by the total number of JABSOM students who participated in the PCMP (105).

^b Total number of JABSOM students who were successfully paired with a community primary care physician, by specialty, divided by the total number of first-year medical students who were successfully paired with a community primary care physician (92).

Table 3. 2019 JABSOM and JABSOM PCP PCMP Prior Mentee GME Residency Match Specialty.

Primary Care Specialty	PCMP Participants ^a n (%)	Non-PCMP Participants ^a n (%)	JABSOM Total ^a n (%)
Family Medicine	8 (11%)	4 (6%)	12 (17%)
Internal Medicine	3 (4%)	15 (21%)	18 (25%)
Pediatrics	2 (3%)	6 (8%)	8 (11%)
Total	13 (18%)	25 (35%)	38 (53%)

Abbreviations: JABSOM, University of Hawai'i John A. Burns School of Medicine; GME, general medicine education; PCMP, Primary Care Mentorship Program; PCP, Primary Care Progress.

^a Number of PCMP versus non-PCMP participants from the JABSOM class of 2019 who matched into a primary care GME residency specialty divided by 72, the total class size of the JABSOM class of 2019.

ship influences medical student specialty choice, this study did not find a correlation between primary care mentorship via participation in a 6-month PCMP and an increased likelihood of entering primary care.³⁻⁷ The structure of the PCMP implemented by Indyk et al at the Einstein College of Medicine that showed an increased likelihood of participants matching into a primary care GME residency specialty, which involved a detailed 3-year PCMP requirement list and a monthly mentor stipend.⁸ The reduced length of this study's PCMP, the limited number of requirements of the program, and the lack of direct medical school support of the PCMP likely resulted in a reduced effectiveness of the PCMP in increasing participant matching into primary care. The JABSOM PCMP was structured to not put a significant requirement burden on medical students or busy community primary care physicians to deter them from participating in the program. This structure likely exposes areas of opportunity for improvement for this PCMP compared to the Einstein College of Medicine PCMP. A PCMP supported directly by the medical school itself, with its additional logistical support and ability to hold medical students accountable to meet program requirements, would likely result in a greater number of students entering primary care.

The second goal of this project was to determine if PCMP mentees developed a lasting mentorship relationship with their assigned mentors. For the 7 participants who did continue their mentorship relationship following completion of the PCMP, continued interactions did occur, including additional meetings, clinical experiences, and letters of support for scholarships and residency applications. Based on JABSOM class of 2019 participants stating the PCMP is a worthwhile endeavor 3 years after participation in the program and the number of students who had continued mentorship following completion of the program, it appears the PCMP was a useful program.

The third goal of this study was to determine whether a PCMP is a worthwhile endeavor for medical schools to incorporate into their structured undergraduate medical education curriculum. Based on the overwhelmingly positive qualitative feedback from mentees and that 82% of mentees would participate in the PCMP again, it appears that the implementation of such a program into the structured undergraduate medical education curriculum would be enthusiastically accepted by medical students. A PCMP with greater than 6-month duration and the support of the medical school, such as the program at the Einstein School of Medicine, would likely increase the number of medical students pursuing a career in a primary care GME residency specialty.⁸

Limitations

Thirteen (12%) of mentee applicants were unable to be paired with a mentor in the PCMP, most likely due to the lack of perceived availability of free time to conduct mentoring by primary care physicians. Soliciting primary care physician associations,

such as the Hawai'i Academy of Family Physicians, would have likely resulted in a greater number of mentor volunteers for the PCMP. Only 32 (30%) of PCMP mentees completed the post PCMP feedback survey, likely due to the perceived time needed to meaningfully complete the survey. Mentees and mentors were unable to meet the suggested monthly shadowing experience requirement or outside of clinic communication requirement of the PCMP. As program participation was entirely voluntary for mentees and mentors and not a medical school requirement, the PCMP organizers were not able to enforce the requirements of the program. Mentors, similar to mentees, submitted applications to participate in the PCMP and were surveyed following completion of the PCMP. Unlike the JABSOM class of 2019 mentees, their mentors were not surveyed in 2019 to assess the long-term result of participating in the PCMP for this study. The surveying of mentors who participated in the program would have likely provided meaningful insight into the mentor's perspective on the PCMP, an area of needed study.

Conclusions

A 6-month PCMP for first-year medical students interested in a career in primary care immediately increases their motivation to pursue a career in primary care upon completion of the program but does not correlate with an increased likelihood of matching into a primary care GME residency specialty. A PCMP does have the potential to create a lasting mentorship relationship through the completion of medical school and overall is a worthwhile endeavor for mentees. Based on the results of other PCMPs, it appears a PCMP directly sponsored by the medical school is more effective at producing medical students matching into primary care GME residency specialties than a PCMP facilitated by an outside organization. A medical school has more resources for logistics, can hold medical students accountable, and can provide compensation to mentors versus an outside organization without these resources, such as PCP. The JABSOM PCPPCMP continues to be successfully implemented by upper-level medical students since its inception in Fall 2015, and based upon these findings, the authors hope that JABSOM, along with other medical schools, will implement a longitudinal PCMP into their undergraduate medical education curriculum. The authors will provide upon request templates for other student-run organizations and medical schools to implement similar programs at their institutions. Every effort to decrease the primary care physician shortage helps our communities, and if a PCMP can increase the number of medical students entering primary care, it should be implemented.

Conflict of Interest

None of the authors identify a conflict of interest.

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Appendix 1. Mentor Application.

1. Name
2. Contact info: email
3. Contact info: phone
4. Specialty area
 - a. Internal Medicine
 - b. Family Medicine
 - c. Pediatrics
 - d. Other
5. Mentorship availability
 - a. Fall, August - February
 - b. Spring, February – July
6. Fellowship training
7. Medical school and graduation year
8. Residency and fellowship
9. Office location
10. Office type
 - a. Community health center
 - b. Private practice
 - c. Group private practice
 - d. Kaiser Permanente
 - e. Other
11. Quick biography
12. Research Area
13. Agreement to meet program expectations
 - a. Yes
 - b. No
14. Any additional information you would like to share with the program or your future mentee

Appendix 2. Community Primary Care Physician Feedback Survey.

1. Were you able to have a shadowing experience with your mentee? If so, how many times did he/she shadow you?
 - a. 0, I did not have a shadowing experience with my mentee
 - b. 1 time
 - c. 2 times
 - d. 3 times
 - e. 4 times
 - f. 5 times
 - g. 6 times
2. Any issues with scheduling shadowing opportunities with your mentee? Any issues encountered on the day(s) your mentee shadowed you? Please provide any additional feedback concerning these shadowing experiences and any ways that you think PCP could improve this experience in the future.
3. One of the program requirements is that you communicated with your mentee at least twice outside of the clinic. Please check all means of communication that apply to your pairing.
 - a. E-mail
 - b. Phone
 - c. Face-to-face
 - d. Other
4. The goal of this requirement was to allow your mentee to gain a better understanding of the reality of being a primary care physician. Do you feel you were able to accomplish this? How so? Or why not? Please provide us with any other feedback concerning this requirement.
5. How would you rate your experience in this program?
 - a. 1, waste of my time
 - b. 2
 - c. 3
 - d. 4
 - e. 5, life-altering
6. Would you serve as a mentor for this program again?
 - a. Yes
 - b. No
7. Please provide us with any additional feedback regarding your experience with this program! Remember, all responses are anonymous. We are extremely appreciative of any suggestions also!

Appendix 3. Medical Student Feedback Survey.

1. Were you able to have a shadowing experience with your mentor? If so, how many times did he/she shadow him/her?
 - a. 0, I did not shadow my mentor
 - b. 1 time
 - c. 2 times
 - d. 3 times
 - e. 4 times
 - f. 5 times
 - g. 6 times
2. Any issues with scheduling your shadowing sessions with your mentor? Any issues encountered on the day(s) you shadowed your mentor? Please provide any additional feedback concerning your shadowing experience and any ways that you think PCP could improve this experience in the future.
3. One of the program requirements is that you communicated with your mentor at least twice outside of the clinic. Please check all means of communication that apply to your pairing.
 - a. E-mail
 - b. Phone
 - c. Face-to-face
 - d. Other
4. The goal of this requirement was to allow you to gain a better understanding of the reality of being a primary care physician. What were some of the rewards and challenges of primary care you learned? Also, please provide us with any feedback concerning this requirement.
5. How would you rate your experience in this program?
 - a. 1, waste of my time
 - b. 2
 - c. 3
 - d. 4
 - e. 5, extremely rewarding
6. Before participating in this program, please rate how motivated you were to pursue a career in primary care.
 - a. 1, not at all
 - b. 2
 - c. 3
 - d. 4
 - e. 5, I am 100% certain I want to be a primary care physician
7. After participating in this program, please rate how motivated you are to pursue a career in primary care.
 - a. 1, not at all
 - b. 2
 - c. 3
 - d. 4
 - e. 5, I am 100% certain I want to be a primary care physician
8. Would you participate in this program again?
 - a. Yes
 - b. No
9. Please provide us with any additional feedback regarding your experience with this program! Remember, all responses are anonymous.

Appendix 4. Fourth year medical student reflection survey.

1. What is your name?
2. During which semester/year did you participate in the mentorship program?
3. Who was your assigned mentor through the Primary Care Mentorship Program?
4. Into what specialty did you match?
 - a. Family Medicine
 - b. Internal Medicine
 - c. Pediatrics
 - d. Other
5. Did you keep in contact with your mentor after your assigned mentorship period?
 - a. Yes
 - b. No
 - c. Other
6. If so, in what way did you continue your mentorship relationship following the assigned mentorship period? (Check all that apply or fill in other with additional items he/she helped with)
 - a. MS3 6L Assigned Preceptor
 - b. Additional MS1/MS2/MS3/MS4 Mentorship Meetings (in person or via email/phone)
 - c. Residency Application Letter of Recommendation Writer
 - d. Scholarship/Other Application Letter of Recommendation Writer
 - e. MS4 Preceptorship
 - f. Other
7. Do you feel that your participation in the Primary Care Mentorship Program affected your choice in residency program?
 - a. Yes
 - b. No
 - c. Other
8. Do you feel that your participation in the Primary Care Mentorship Program affected your choice in career?
 - a. Yes
 - b. No
 - c. Other
9. Do you think the Primary Care Mentorship Program is a worthwhile endeavor for our organization, based on your participation in our program?
 - a. Yes
 - b. No
 - c. Other
10. Based on your experience in the Primary Care Mentorship Program, at this point, would you serve as a mentor for MS1s interested in primary care once you complete residency?
 - a. Yes
 - b. No
 - c. Other
11. Do you have any meaningful reflections on your experience in the Primary Care Mentorship Program that you would like to share with the us?