



Influence of a Rural Family Medicine Rotation on Residency Selection: MS3 Versus MS4

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BACKGROUND AND OBJECTIVES: Many family medicine educators feel that a required clinical rotation in family medicine has a positive influence on medical students' selection of family medicine residencies. We investigated the effect of a rural family medicine rotation on students' residency choices and examined the differences between a third-year and a fourth-year rotation.

METHODS: We surveyed 1,260 students before and after they participated in a required rural family medicine rotation.

RESULTS: The rotation had a small positive effect on student interest in family medicine. Over 20 years, there was a net gain of 4.7% (93 students) from before to after the rotation. Moving the rural rotation from the MS4 to the MS3 year resulted in a significant decline in the number of students who switched their preferences toward family medicine and ultimately matched to a family medicine residency.

CONCLUSIONS: When the rotation occurs in the third year, there is more time following the rotation for other influences to exert an impact on a student's specialty choice, resulting in a small "bleed" away from family medicine. It might be useful to develop programs that continue to pique the interest in family medicine during their fourth year.

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Medical student interest in family medicine remains a topic of acute interest. While Match rates into family medicine residency positions have been declining in past years, results of the 2010 National Resident Matching Program, which produced the highest number of US graduates choosing family medicine since 2004, suggest that this decline may be abating.¹ A recent federal initiative designed to ensure that all residents of the United States have access to a "medical home" with a primary care

physician have heightened awareness nationally about medical student interest in family medicine^{2,3} and may have contributed to the turnaround. It remains to be seen whether this interest will be sustained over the long term.

Medical student career/residency choice is a complex topic. Several factors including but not limited to individual student characteristics, socioeconomic factors, physician role models, student spouse, family, or significant other preferences and characteristics of medical schools

and associated curricula all appear to exert some influence on medical student residency choice.⁴⁻⁶

Previous studies of medical school/curriculum influences on student interest in family medicine have demonstrated that the presence of a family medicine administrative unit at the college, curricular offerings in family medicine, and other student activities (such as a student family medicine interest group) have a positive influence on medical students' selection of family medicine residencies.⁷

Many family medicine educators feel that the presence of a required clinical rotation (clerkship) in family medicine in the third (or first "clinical" year) of medical school is the optimum positive medical school curricular influence on medical students' selection of family medicine residencies.⁸⁻¹⁰ It is unclear, however, whether having a family medicine rotation in the third year has a more positive effect on students' ultimate residency preferences than a fourth-year rotation.

In previous articles, we reported the effect of the University of Nebraska Medical Center (UNMC) College of Medicine's required rural clinical family medicine rotation on medical students' residency/career choices.^{11,12} This manuscript

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reexamines this effect over the past 20 years. Additionally, it provides information about the effect of this rotation when it was placed in the fourth year of medical school compared to the current placement in the third year of medical school.

Methods

The UNMC College of Medicine is located in Omaha, Nebraska's largest city, and is part of the University of Nebraska, a public, state-funded, land grant institution. The college enrolls approximately 120 medical students per year for a 4-year MD degree program. The 8-week rural family medicine rotation places medical students in an immersion experience with one or more practicing family physicians. Rotation sites include more than 50 Nebraska communities ranging in population from 1,100 to 45,000. More than 140 Nebraska family physicians participate in the rural rotation. This rotation began as an elective in 1949 and became a required rotation for senior (fourth year) medical students in 1971. In the 1994–1995 academic year, as part of a college-wide curriculum reform, this rotation became a required part of the junior (third year) curriculum.

As part of the course evaluation, students completed pre-rotation and post-rotation questionnaires that included the question, "Which specialty training programs are you most considering at this time" (they were asked to rank their top three choices). Data from these questionnaires were then compared to students' eventual residency Match choices. The questionnaires were administered by family medicine administrative staff and were not viewed by evaluating faculty until after rotation grades were recorded. Study authors did not examine questionnaire or Match data until all student residency Match choices were finalized.

Questionnaire results span a 20-year period, beginning with the 1988–1989 school year and ending with the 2007–2008 school year. Data were collected for a total of

2,409 students. Complete data (pre- and post-rotation questionnaires, residency Match data) were available for 1,962 students. Pre- and post-rotation questionnaire data were lost for the 1994 graduating class (n=115). Much of the remaining missing data resulted from incomplete questionnaires, missing records in the database, or inability to match questionnaire data with residency data. The study has been approved by the Institutional Review Board at the University of Nebraska Medical Center (IRB #461-09-EX).

Results

A total of 1,260 students (64.2%) took the rotation during their third year of medical school, and 702 (35.8%) took it during their fourth year. Of those for whom gender was available, 57% were male.

Overall Changes in Preference

Not surprisingly, the preferences for most of the students were unaffected by the rural family medicine rotations (see Table 1). Most of the students (73.4%) did not indicate a preference for family medicine before or after the rural rotations. An additional 16.9% of students preferred family medicine both before and after their rotations.

Results suggest, however, that the UNMC rural family medicine rotation had a positive overall effect on student interest in family medicine as a career choice (pre-post rotation data, Table 2). Over the course of the study, while 2.5% of the students switched their preferences from family medicine prior to the rural rotation to another specialty after the

rotation, 7.2% of the students did not indicate a preference for family medicine prior to the rural rotation and switched their preferences to family medicine following the rotation. Over the course of the study, there was a net gain of 4.7% (93 students) between before and after the rotation.

This observed net gain remains robust throughout the remainder of medical school for many, but not all, of these students. A total of 2% of students indicated a preference for family medicine prior to the rural rotation, preferred another specialty after the rotation, and matched to a non-family medicine residency. Conversely, 4.1% of all students switched their preference toward family medicine immediately after the rural rotation and went on to match to a family medicine residency, resulting in a net gain of 2.1% (41 students) of all students during the course of the study.

Over the 20-year study period, there is a small but meaningful increase in the number of students interested in family medicine. There was an average gain of almost five students per year from before to after the rotation and, on average, two of those students went on to a career in family medicine.

Third Versus Fourth-year Rotation

At first glance, moving the rural rotation from the MS4 to the MS3 year appears to have had a positive influence on students' preferences for family medicine. When the rotation occurred in the fourth year of medical school, 1.2% of the students switched their preferences from

Table 1: Number of Students Indicating That Family Medicine Is the First Choice of Specialty Before and After the Rural Family Medicine Rotation

Before the Rotation	After the Rotation		
	No	Yes	Total
No	1,440 (73.4)	142 (7.2)	1,582 (80.6)
Yes	49 (2.5)	331 (16.9)	380 (19.4)
Total	1,489 (75.9)	473 (24.1)	1,962 (100.0)

Table 2: Number (Percent) of Students Indicating Preferences for Family Medicine Before and After Rural Family Medicine Rotation and With Residency Match Choice, by Year of Rotation

Before	After	Match	Fourth-year Rotation	Third-year Rotation	Total
Yes	Yes	No	11 (1.6)	75 (6.0)	87 (4.4)
No	Yes	Yes	26 (3.7)	54 (4.3)	80 (4.1)
No	Yes	No	9 (1.3)	53 (4.2)	62 (3.2)
No	No	Yes	27 (3.8)	31 (2.5)	58 (3.0)
Yes	No	No	8 (1.2)	31 (2.5)	39 (2.0)
Yes	No	Yes	1 (0.1)	9 (0.7)	10 (0.5)
No Change			620 (88.3)	1,006 (79.8)	1,626 (82.8)

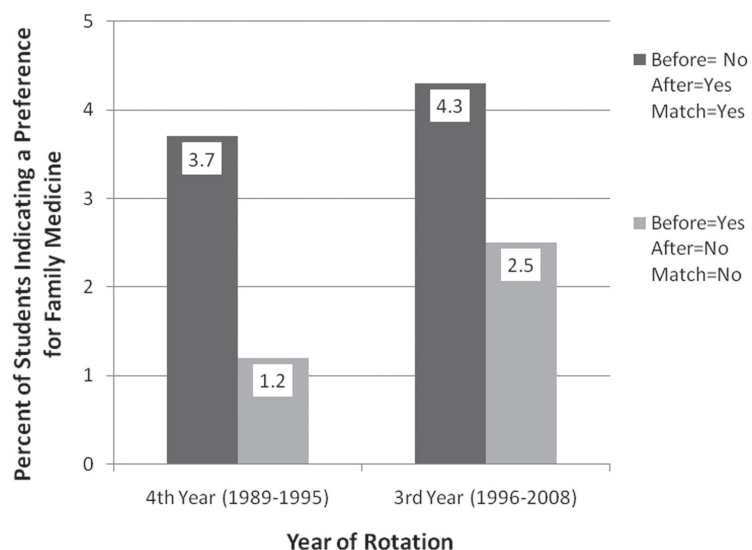
family medicine prior to the rural rotation to another specialty after the rotation, while 5.0% of the students switched their preferences toward family medicine, resulting in a net gain of 3.8%. In contrast, when the rotation occurred in the third year, 3.2% of the students switched their preferences away from family medicine after the rotation, while 8.5% of the students switched their preferences toward family medicine, indicating a net gain of 5.3%.

However, this pattern was not robust when examining students' residency Match choices (Figure 1). Moving the rural rotation from the MS4 to the MS3 year appears to have resulted in a significant decline in the number of students who switched their preferences toward family medicine and ultimately matched to a family medicine residency. When the rotation occurred during the MS4 year (classes of 1989–1995), there was a net gain of 2.6% (3.7% who moved toward family medicine and 1.1% who moved away) of all students who switched to a preference for family medicine and matched to a family medicine residency. When it occurred during the MS3 year (classes of 1996–2008), the net gain decreased to 1.8% of all students (4.3% toward and 2.5% away).

Discussion

Our results replicate the findings presented by Paulman and Davidson-Stroh,¹² verifying that there is at least a small positive influence of a rural family medicine rotation on interest in family medicine, regardless of whether the rotation was offered in the third or fourth year. An average gain of about two students per year, although small, can certainly have an impact on the shortage of family medicine physicians nationwide.

Requiring a rural rotation in the third year of medical school resulted in greater overall positive effects in terms of family medicine preferences. When examining changes in preference immediately following the rural rotation, a third-year rotation yields a higher net gain of students preferring family medicine than a fourth-year rotation. However, this effect is lost when examining changes in preference at the time of residency Match, which reflects a “bleed” in students away from family medicine during their final year of

Figure 1: Change in Preference for Family Medicine, by Rotation Year

medical school. This is undoubtedly due to the fact that, when the rotation occurs in the third year, there is more time following the rotation for other influences to exert an impact on a student's specialty choice. Conversely, when the rotation was offered during the fourth year of medical school, the positive effects were more likely to carry over to a residency match in family medicine.

Data from this study only represent the UNMC College of Medicine and are observational in nature. Findings from this study may not be generalizable to other students. Additionally, preference data are missing for one school year, and we were unable to match preference data with Match data for several hundred students over the course of the study period. Those students for whom we are missing data may be qualitatively different from those included in the analysis.

The number of students who chose a family medicine residency may not accurately reflect the number of students who ultimately practice in family medicine, as some students choose to do 1 year of family medicine residency as a preliminary year and move into another specialty later. Other students may have selected a family medicine residency as a last resort. While there is some evidence that graduates who enter a family medicine residency ultimately end up practicing in primary care more frequently than graduates who enter into other primary care residency programs,¹³ further research needs to follow the progression of students' specialty choice throughout medical school and residency and into their medical practices after residency.

This study supports the idea that a required family medicine rotation can positively impact the number of family physicians in the United States. Future research should focus

on prospective studies and should determine if this effect is seen at other institutions. Additionally, researchers should concentrate on ways in which this positive effect can be reinforced and how it can influence students' residency choices. Research shows that targeted interventions during medical school can be successful in producing more rural primary care providers, including family physicians.¹⁴⁻¹⁶ Perhaps similar programs, focused on increasing the number of family medicine providers in general, would be equally as successful.

It is clear that there are ample competing influences that occur in the time between the rotation's end and residency selection. It might be useful to develop programs that continue to pique the interest in family medicine throughout medical school, particularly during their fourth year. Additionally, it might be necessary to investigate the possibility of again scheduling the family medicine clinical rotation during the fourth year of medical school to reduce the opportunity for students to change their minds.

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