

# The Impact of Role Models on Medical Students

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**OBJECTIVE:** To explore the relationship between exposure to clinical role models during medical school and the students' choice of clinical field for residency training, and to estimate the strength of this association.

**DESIGN:** Cross-section study.

**SETTING:** McGill University School of Medicine, Montreal, Canada.

**PARTICIPANTS:** Of the 146 graduating medical students in the class of 1995, 136 participated.

**MEASUREMENTS AND MAIN RESULTS:** Clinical field chosen by students for residency training and the students' assessment of their exposure to and interaction with physician role models were the main measurements. Ninety percent of graduating students had identified a role model or models during medical school. Personality, clinical skills and competence, and teaching ability were most important in the selection of a role model, while research achievements and academic position were least important. Odds ratios between interacting with "sufficient" role models in a given clinical field and choosing that same clinical field for residency were 12.8 for pediatrics, 5.1 for family medicine, 4.7 for internal medicine, and 3.6 for surgery. Most students (63%) received career counseling and advice from their role models.

**CONCLUSIONS:** Exposure to role models in a particular clinical field is strongly associated with medical students' choice of clinical field for residency training. Knowing which characteristics students look for in their role models should help identify the physicians who may be most influential in medical students' career choice.

**KEY WORDS:** medical students; role models; choice of career; choice of clinical field for residency training.

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Role models in medical education not only are important in enhancing learning but also have been shown to affect students' choice of residency and career.<sup>1-3</sup> Retaining interest in primary care fields has been a challenge in recent years.<sup>4,5</sup> The few studies attempting to identify the factors important to promote "generalism" suggest that role models might be influential.<sup>6,7</sup>

Ficklin et al. asserted that role modeling, or teaching by example, is an educational method that students encounter throughout their medical school training, in the

classroom and laboratory as well as during bedside rounds and in the outpatient setting.<sup>8</sup> They also found that for role modeling to be an effective teaching method, faculty members must understand that all of their interactions and attitudes affect students.

Shuval and Adler studied the interaction between medical students and their teachers.<sup>9</sup> These authors noted that although some teachers and clinicians may be outstanding role models, students generally pick and choose traits from many models so that their internal values are an amalgam from a variety of sources. They noted three basic patterns: active identification (includes classic modeling in which one emulates the role model), active rejection, and inactive orientation (includes reinforcement of the student's preexisting values). Active identification was the most common student-physician interaction.

Some medical schools attempt to foster these important relationships by assigning a mentor to each student. As Flach et al. noted, although such a program was felt to be valuable, other faculty become "unofficial" role models, and these relationships tend to come about more naturally without special efforts.<sup>10</sup>

In a previous study, we found that most residents were satisfied with the number of positive role models in their current residency training program.<sup>11</sup> We also determined that the residents' perception of clinical excellence, personality, and teaching ability were the most frequently noted factors in the identification of outstanding role models.

No study has specifically explored the possible association between role models encountered in medical school and choice of clinical field for residency training. In the study reported here, we sought to ascertain the strength of this association. Other issues addressed included the specific attributes deemed to be most important to students in selecting a faculty role model, the stability of role models throughout medical school training, and the stage of medical school training at which these role models were identified.

## METHODS

### Study Population

The study was conducted on the graduating class of 146 students at McGill University School of Medicine in March 1995. McGill University medical students were not assigned faculty role models or mentors.

### Data Collection

A 60-item questionnaire was developed to explore role modeling in medical school. A role model was defined as "a person considered as a standard of excellence to be imitated."<sup>12</sup> Specific items included in the questionnaire, for

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example, traits of potential role models, characteristics of the process of choosing a role model, and interactions with role models, were established by a review of the literature, interviews with eight medical students and four staff physicians, as well as the insights gained from our previous study.<sup>11</sup> To evaluate the possible association between role models and choice of clinical field for residency training, specific questions were asked about career counseling and guidance given by the role models, whether the students felt they had been exposed to “sufficient” role models in each clinical field, and students’ choice of clinical field for their upcoming residencies.

Responses were in the form of yes/no, rank order, or a 3-point rating scale. A pilot study was conducted to ensure clarity. The questionnaires were distributed and collected during 1 day at a class gathering 3 months before graduation in March 1995. The questionnaires were completed anonymously.

### Statistical Analysis

The main hypothesis of the association between role models and the choice of clinical field for residency training was tested using odds ratios (ORs)<sup>13</sup>; 95% confidence intervals on the ORs were obtained using Epi Info.<sup>14</sup> For rank order data, medians were used as the measure of central tendency.

## RESULTS

Of the 146 graduating students, 136 completed the questionnaire (93% response rate). The average age of the respondents was 25.4 years; 43% of respondents were female. Nonrespondents had similar characteristics. The distribution of choice of clinical field for residency training of these graduating students was as follows: internal medicine 23%, surgery 22%, family medicine 14%, pediatrics 9%, obstetrics and gynecology 5%, and psychiatry 4%; 18% chose residencies in other areas. (Four percent did not respond either because they were undecided or didn’t want to share this information.) Ninety percent of students identified one or more physician role models during their medical school training. For 35% of the students, at least one of the physicians they were striving to emulate was a resident.

Role models, once identified, were perceived as such for the remainder of their medical school training for 52% of the students. The remainder of the respondents changed their primary role model at least once during their training. For 85% of the male students, a male physician served as their role model. For the female students, 41% had female physicians serving as their role models, which is noteworthy as female physicians make up only 28% of the faculty (assistant professors, associate professors, and professors) and 38% of the residents at McGill University.

Although a vast majority (89%) of students identified their role model during the third and fourth clinical years of medical school, 11% did so during the 2 years of medical school when they were predominantly exposed to basic science faculty.

Sixty-three percent of students received counseling and advice regarding future direction and career opportunities from their role model. Sixty-one percent claimed that their relationship with their role model resulted in personal growth and development. Fifty-seven percent of respondents claimed that their role model was influential in their choice of clinical field for residency training.

For each of the core clerkship clinical rotations, the students were asked whether they had encountered “sufficient” role models. Odds ratios were calculated to assess the strength of association between their choice of clinical field for residency training and interacting with “sufficient” role models during the clinical years of medical school. As shown in Table 1, the odds were high that students who chose a specific field for residency training felt that they were exposed to a “sufficient” number of positive role models in that area during their clinical rotations.

Students were asked to rank six factors that were important in selecting their role models. Personality ranked first with a median rank of 1 (mean 1.7); it was followed by clinical skills and competence (median rank 2, mean 2.0) and teaching ability (median rank 2, mean 2.2). These were the three most important attributes of role models, followed by area of specialty (median rank 4, mean 4.3), research experience and publications (median rank 5, mean 5.1), and position or academic rank (median rank 5, mean 5.3), which were felt to be significantly less important.

The students rated a number of skills and traits pertaining to personality, clinical skills, teaching ability, and

**Table 1. The Association Between Choice of Residency and Having Been Exposed to “Sufficient” Role Models in That Specialty (n = 136)**

	Number Exposed to Sufficient RMs* in Specialty	Total Number Who Chose Specialty	Number Exposed to Sufficient RMs and Chose Specialty	Odds Ratio (95% CI) for Choosing Specialty Given the Exposure to Sufficient RMs*
Internal medicine	98	31	28	4.6 (1.2, 20.7)
Surgery	63	30	21	3.6 (1.4, 9.3)
Family medicine	91	19	17	5.1 (1.1, 33.8)
Pediatrics	72	13	12	12.8 (1.6, 267)

\*RM indicates role models.

research experience on a 3-point scale (0 = not important to 2 = very important) to assess which ones were more desirable in a role model. The average of the individual mean scores for the skills related to teaching was 1.6, illustrating that all were highly valued, and the average of the individual mean scores for the skills related to research was 0.8 (Table 2).

At the end of the questionnaire, the students were asked to name the physicians who impressed them as outstanding role models, regardless of whether these persons functioned as their own role models. On average, each student listed 3.7 physicians.

## DISCUSSION

In a recent paper by Meurer et al., 108 studies that examined primary care specialty choice were evaluated for the quality of the research.<sup>15</sup> Among the recommendations and conclusions was the need to develop valid ways for studying the influence of mentors and role models. Our study addresses this issue and demonstrates the strength of the association between exposure to role models and medical students' choice of clinical field for residency training.

The 18% of students who chose to pursue residencies in other areas (as opposed to the core residencies) were divided among dermatology, radiology, neurology, emergency medicine, ophthalmology, radiation oncology, and pathology. These more competitive residencies often attract top students.<sup>16</sup> The OR for these students interacting with sufficient positive role models in internal medicine during medical school was 1.0. Potentially, if one could expose these students to more role models in internal medicine, some of these top students might decide to become internists.

Clinical skills, personality, and teaching ability (but not research, specialty area, or title) were the more important characteristics making these physicians excellent role models in the eyes of their students. These findings were also observed in our previous study of residents. Interestingly, at many institutions it is the researchers and those with high academic positions who are chosen to serve as the attending physicians and, consequently, are available to be the role models.

The results of our study also point out that some students identify role models before their clerkship. Thus, it would seem important for medical students to interact

**Table 2. Graduating Students' Mean Ratings of Skills and Traits Considered Important in Selecting Physicians as Role Models\***

Ranking	Personality Trait	Mean	Clinical Skills	Mean	Teaching Ability	Mean	Research Trait	Mean
More important (1.51-2)	Attitudes displayed toward residents and students	1.98	Enthusiasm in his/her work	1.96	Communication skills (esp. listening)	1.95		
	Compassion for patients and their families	1.91	Interactions with patients and their families	1.89	Ability to make difficult topics understood	1.91		
	Integrity and objectivity	1.90	Proficiency as a diagnostician	1.79	Teaching is exciting and stimulating	1.89		
	Interaction with other health care workers	1.89	Awareness of his/her strengths and weaknesses	1.74	Patience	1.85		
	Leadership qualities	1.68			Nonthreatening teaching style	1.81		
	Sense of humor	1.67			Ability to teach various levels of trainees	1.77		
	Social conscience	1.66						
Medium importance (1-1.5)	Accessibility	1.45	Ability to perform various procedures	1.30	Strong knowledge base outside his/her specialty	1.48	Presentation skills	1.47
	Importance of family (balance of home and career)	1.42					Ability to promote interest in research	1.02
Less important (< 1.0)	Interests outside medicine similar to your own	0.87					Research honors and awards	0.71
	General appearance	0.80					Journals in which publications have appeared	0.36
							Number of publications	0.33

\*The students' rankings of traits are grouped under broad characteristics, on a 3-point scale (0 = not important, 1 = mildly important, 2 = very important). Values are means.

with positive role models throughout the entire medical school experience.

Our main outcome measure was the clinical field chosen by medical students for residency training, and not the field to which they matched. In the National Residency Matching Program and Canadian Residency Matching Service (the Canadian equivalent) for 1996, which occurred a couple of weeks after we collected our data, approximately 80% of McGill students matched to one of their top three choices (information courtesy of McGill University). The students' chosen field thus seems to be a fairly reliable marker for the field to which they matched. Even more importantly, medical students' choice of clinical field for residency training can be influenced by role models, and is therefore the outcome of interest in this study. Collecting our data before the match also captured information about students' role models unbiased by success or failure in the match.

A weakness of the study is the involvement of only one university, which may lead to a lack of generalizability. We believe that our findings are applicable to the United States where, like Canada, there is a need for generalist physicians rather than subspecialists. McGill University's School of Medicine is traditional, and relationships between medical students and physicians are comparable to those at other institutions. Because the medical student–role model relationship is ultimately determined by individuals and their interactions, it is likely that neither geography nor health care policy will prove to have a major influence. To test the hypothesis that political or economic forces that differ between Canada and the United States might influence the association between role models and choice of residency, our study would need to be replicated at U.S. medical schools.

Another explanation for our results is the possibility that a student who had determined to pursue a residency in a given specialty might have searched harder to find role models in that field. We conducted a cross-sectional study, and a longitudinal study might distinguish between these two possibilities, but not completely. Anecdotally, we can all recall medical school classmates who knew exactly what career path they would pursue before the first day of class. In this study, however, more than half of the students said that their role model influenced their choice of clinical field for residency training.

Important areas of future research on role modeling should include comparisons of outstanding role models from several medical schools to determine how they differ

from their colleagues, and to identify characteristics that might be enhanced by faculty development programs.

Attending physicians who are excellent role models need to be identified at all institutions so that they can be encouraged to spend more time with medical students and residents. Some would argue that they should also be rewarded with career advancement. We hope that attending physicians can be helped to improve themselves as role models, or at least become more aware of their potential impact on medical students.

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