Medical Student Education

FaMeS: An Innovative Pipeline Program to Foster Student Interest in Family Medicine

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Background and Objectives: *There is a national shortage of primary care physicians; many medical school departments of family medicine are searching for new ways to attract and retain students who may be interested in primary care. In 2004, our department began a "pipeline" program targeted at entering first-year students that incorporates curricular, extracurricular, summer, and career-planning elements.* Methods: *The program was evaluated and data collected on the numbers of students who were regular attenders of events, who expressed intent to apply in family medicine at the end of third year, and who ultimately matched in family medicine. Qualitative measures of program success were also noted (comments from students outside the department and the influence of the family medicine interest group).* Results: *Data are preliminary but suggest that the Family Medicine Student Track (FaMeS) has increased the numbers of students matching in family medicine from Boston University (BU) during a period when the national average was decreasing. The odds of a BU student matching in family medicine were nearly double (1.94) the odds compared with before the program. The family medicine interest group substantively increased its presence at the medical school and won a national Program of Excellence award.* Conclusions: *The FaMeS program appears to be associated with a significant increase of numbers of students matching in family medicine during a time period when the national average decreased. The program is young, and results may be most generalizable to schools, like BU, with a strong specialist presence.*

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The United States is experiencing a shortage of primary care physicians, both regionally[1,2] and nationally.[3,4] The number of medical students choosing to pursue further training in primary care is now low enough that the American Academy of Family Physicians (AAFP) predicts every state will experience a shortage of primary care physicians by 2020.[5] This statistic presents a direct challenge to the goals of Healthy People 2010, which include the elimination of health disparities, especially in medically underserved groups.[6] Consequently, most medical school departments of family medicine seek to increase the numbers of medical students choosing family medicine as a career at their medical school, through a variety of methods (admissions policies, family medicine interest groups, National Primary Care Day, and other events or programs unique to each school). Recent data suggest that while most students make career decisions during the clinical years, elements of the preclinical experience such as location[7] and exposure to career information[8] have been associated with specialty choice and practice location.

Boston University (BU) Medical School has had specific challenges to overcome in generating student interest in family medicine. The school lacked a department of family medicine until 1997, and the medical center has strong training programs in the subspecialties and in internal medicine, with a medical and social environment in Boston that tends to be biased toward subspecialty training. In 2004, with these challenges and the national primary care shortage in mind, the department of family medicine conceived a pipeline program for medical students beginning during their first year, funded in part by the department's grants

From the Department of Family Medicine, Boston University.

from the Health Resources and Services Administration. The specific goals of the program (called the Family Medicine Student Track, or FaMeS)[9] included increasing student exposure to family medicine faculty in the preclinical years and, ultimately, increasing the numbers of students applying in family medicine.

Methods

Program Description

The FaMeS program consists of several core elements classified as curricular, extracurricular, summer, and career planning (Table 1). These elements are open only to FaMeS students.

Curricular Elements

One curricular element is placement with a family medicine faculty member in one of two preclinical courses. The first is Introduction to Clinical Medicine (ICM), which spans years 1 and 2 of medical school). The other is Integrated Problems (IP), a small-group, problem-based learning class that is offered through the first semester of second year.

Another curricular element is preferential enrollment in Healer's Art. This is a preclinical elective offered through the Department of Family Medicine.

A third curricular element is preferential match for a family medicine clerkship site (at BU, family medicine is a required 6-week clerkship, and students are placed at a variety of clinical sites). FaMeS students are particularly encouraged to pursue placement at designated HPSA sites.

FaMes students are also offered the opportunity to apply for the family medicine scholars program. This programs includes a mentored research or community-focused project culminating in a publication or presentation at a national meeting.

Extracurricular Elements

A monthly workshop series is offered throughout first and second year at lunchtime or in early evening. The topic schedule is decided on each year, for each class, with input from the FaMeS advisory board (two–four students from each class year willing to participate in workshop planning). The workshops are usually 2–3 hours long and often focus on the acquisition of a clinical skill (Table 2), discussion about career and family, or an exploration of types of careers in family medicine.

Students in FaMeS are encouraged to attend national conferences and are given a limited amount of funding to reimburse their expenses coming from the grant, the department's discretionary funds, and the Massachusetts Academy of Family Physicians. Typically, student attendance is highest at the AAFP's National Conference for Students and Residents in August and at the Society of Teachers of Family Medicine (STFM) NorthEast Regional Meeting in October, but students have also attended the STFM Predoctoral Education Conference and the STFM Annual Spring Conference.

There is a monthly series of brown-bag lunches during which only Spanish is spoken, as a chance for

Table 1

Elements of the FaMeS Program

Curricular	*Extracurricular*	*Summer*	*Career Focused*
Placement with family physician in ICM and/or IP in first and/or second year	Series of monthly workshops focusing on clinical skills, variety of careers in family medicine	Preferential placement in Family Medicine Summer Externship	Escalating series of talks on careers in family medicine; culminates in third- and fourth-year workshops on the match
Preferential enrollment in Healer's Art*	Attendance at national conferences (AAFP, STFM)		
Preference given in clerkship match for family medicine site	Monthly brown-bag lunches to practice Spanish language skills		

AAFP—American Academy of Family Physicians
STFM—Society of Teachers of Family Medicine
ICM—Introduction to Clinical Medicine (patient interviewing, history, and physical skills)
IP—Integrated Problems (problem-based learning class to teach research skills, diagnostic reasoning, and use of the medical literature); note that both ICM and IP are classes where students are placed in small groups, and placement means that these students were placed in a small group taught by a family physician

* Healer's Art is a non-credit elective offered at Boston University and many medical schools nationally. It focuses on medical student well-being through the discussion of several specific topics, including grief and loss, and finding mystery and meaning in medicine. It meets for five 3-hour evening blocks during the spring semester.

Table 2

Examples of Extracurricular Workshops, 2007–2009*

	First Year	*Second Year*
Fall	• Support group/lunch to discover new students' interests in September • "Unpacking the toys" workshop (brief introduction to stethoscope, otoscope, ophthalmoscope) • Interviewing workshop with standardized patients (known as the "sex, drugs, and rock and roll" workshop for its emphasis on taking sexual and substance abuse histories) • Joint dinner with second-years and senior faculty member in family medicine (usually our chair)	• Welcome back lunch; students share summer experiences and formulate interests for the year • Pediatric physical exam workshop; students examine faculty children between ages of 0 and 7 • Neurologic exam and Mini-mental Status Exam workshop with faculty feedback on techniques • Joint dinner with first-years (see opposite) • Knee and shoulder exam workshop with sports medicine faculty member
Spring	• "Heart, lungs and cookies" exam workshop close to Valentine's Day • Women's health lunch with providers of prenatal care; obstetrics; and options counseling services; head, ear, eye, nose, and throat exam; and abdominal exam in a workshop with small-group faculty feedback • Lunch discussion about summer opportunities with second- and third-year students • Lunch discussion on alternative medicine and supplements with faculty member • Workshop with second-years on writing histories and physicians and progress notes and learning to do 5-minute presentations	• Sports medicine workshop with on-field evaluation for injuries, concussion, etc, with sports medicine faculty member • Lunch discussion on intergrating career and family with several faculty members • Lunch discussion on nutrition counseling and diabetes care • Panel discussion with current third-year students on preparing for clinical rotations and choosing schedules • "Putting it all together: the complete H&P" workshop on efficiently performing a start-to-finish H&P • Workshop with first-years on histories and physicals and progress notes notes (see opposite)

* Note that topics vary from year to year depending on each class's preferences; this list is a representative example of the most popular topics.

H&P—history and physical examination

students to practice their Spanish language skills by immersion. These lunches are hosted by core FaMeS faculty members and students who are fluent in Spanish; between five and 15 students usually attend.

Summer Element

During the summer, students in FaMeS are offered preference in the lottery for BU's Summer Externship in Family Medicine, a preexisting program offered during the summer after students' first year of medical school.[10] Students in the externship are awarded a stipend for spending 4 weeks in the office of a family physician (they are responsible for finding the placement, which can be anywhere in the country) and participating in an online discussion group about their experiences. The externship is usually so popular that not every student can be granted a slot with a stipend, and there is a lottery to decide which students will participate. Students in FaMeS participate in a smaller lottery initially to match for about half the available slots (this year, seven of 14); those not matched go on to participate in the school-wide lottery, effectively getting two chances to match.

Career-planning Element

In the first 2 years of medical school, we offer panel discussions about types of careers available in family medicine, managing career and family, or repaying student loans. In the third year and fourth year, a series of events are offered focusing on choosing a specialty, writing a personal statement, and approaching residency interviews and the match. By then, the group attending these events will include some students not originally in FaMeS who decided later that they were interested in family medicine; similarly, some students originally in FaMeS will decide to apply to residencies in another specialty and stop attending the career-planning events.

Recruitment of Students

Students are recruited for FaMeS during the summer preceding their first year of medical school through several steps. First, a detailed mailing goes out to all first-year students informing them of various requirements they must meet for general enrollment, including information about optional programs and electives, among them FaMeS. Students can register online for FaMeS prior to arriving on campus; each year we typically recruit between two and five students via this method.

Second, during their official Orientation week, a FaMeS faculty member gives a 15-minute talk to the entire class. We typically ask a second- or third-year FaMeS student to co-present. After this talk, students are given an opportunity to sign up for FaMeS. We usually enroll an additional 20–30 students at that time.

Third, there is a FaMeS table at the student activities night hosted by the Family Medicine Interest Group

(FMIG) co-leaders, who are second-year members of FaMeS. An additional 5–10 students usually sign up at the FaMeS table.

Students can also enter FaMeS at any point during their medical school career; it is not unusual to enroll several students during second and third year as they become interested in family medicine. However, only students who sign up by the end of orientation are offered placement in ICM and IP classes with a family physician. The administrators for ICM and IP need to submit their class schedules and student lists during orientation, and it is not possible to switch students' sections after this deadline.

Influence on Faculty Teaching Time

Making FaMeS work requires involvement by several faculty members. Two faculty members have shared responsibility for the FaMeS program, including recruitment, planning of courses and workshops, and tracking student involvement. The combination of planning and administering the program and going to all the workshops each month comprises 10% of each faculty member's time. These two faculty members make decisions regarding topics, logistics, scheduling, and new strategies for the FaMeS program with the input of the predoctoral director and the student advisory group. Both faculty members are early-career women and feel a strong sense of ownership of the program, which has contributed to its momentum and success.

Other members of the faculty participate in teaching ICM and IP (a curricular element of FaMeS) and in some of the workshops with content (eg, sports medicine) that fall outside the expertise of the two primary faculty members. As a result, several faculty members in the department have between five and 10 half days earmarked for FaMeS workshops. An effort has been made to involve no more than five or six faculty members consistently, in hopes of building student relationships with a consistent group.

Student Feedback and Involvement

Faculty members consult with the student advisory group members about once a month for feedback on workshops and ideas about future workshops, and an effort is made to tailor each year's extracurricular activities to that class's expressed needs. Feedback is sought from all FaMeS members after each workshop, and input from any FaMeS student is welcome on an ongoing basis. Occasionally, students suggest types of workshops that are not feasible from a time or financial standpoint, and faculty members are candid with students about this while working with them to try to incorporate their ideas in some other form. All elements of FaMeS are planned only one semester in advance to maximize the program's flexibility and ability to meet the needs of different groups of students.

Program Evaluation

The Boston University Institutional Review Board (IRB) deemed the study methods reported here as exempt from IRB review.

Quantitative Evaluation

The primary endpoint of interest for this study was the number of BU students matching into family medicine residencies. This number was expressed as a percentage of the total class and compared to the national average. Interim variables of interest were also collected, including (1) the numbers of students expressing interest in family medicine at the end of the third year of medical school and (2) the number of "regular attenders" of FaMeS events in each class year. Since there are no national numbers for comparison for these interim variables, they were merely collected and reported to give information about trends.

Descriptive statistics are reported. We also calculated Mantel-Haenszel odds ratios for the entry of BU students into family medicine residencies compared to national rates of entry into family medicine residencies. These calculations were performed using JavaStat.[11]

Qualitative Evaluation

The success of FaMeS can also be considered qualitatively as the improved reputation and increased visibility of family medicine within the medical school. For these qualitative measures, we discussed the depth and breadth of the FMIG (a student-run group with events open to the general medical school population) and collected comments from students not planning to apply to residencies in family medicine.

Results

Table 3 details the enrollment, both by class and total, during the first 4 years of FaMeS. For the first 3 years, the first-year enrollment nearly doubled until becoming stable between 35 and 40.

In Table 4, the FaMeS students who are regular attenders (attending >50% of workshops per year) are compared to the numbers of students expressing interest in family medicine and ultimately matching in family medicine. These numbers are preliminary because the program is only 5 years old, but the table shows that the group planning to apply in family medicine is comprised of all the regular attenders plus a few additional students who entered FaMeS in the third year.

Figure 1 shows numbers of students (expressed as a percentage of the graduating class) matching in family medicine from BU compared with the national average. While there are relatively few years of data from the FaMeS program, it shows an increase in the number of graduates matching in family medicine compared with the national average, which has slightly decreased from 2005–2009.

Table 3

Enrollment in FaMeS Program, 2005–2008, With Numbers of "Regular Attenders" (Attending >50% of Events Each Year) in Parentheses*

	2005–2006	*2006–2007*	*2007–2008*	*2008–2009*
First-year students	12 (12)	28 (22)	37 (28)	39 (29)
Second-year students	0	15 (12)	28 (18)	31 (22)
Third-year students	0	0	16 (10)	27 (14)
Fourth-year students	0	0	0	13 (8)
Total students	12 (12)	43 (34)	81 (56)	112 (73)

* At the end of each year, students who have not been regular attenders are e-mailed and asked whether they would like to remain in FaMeS. While the regular attenders tend to remain the same students from year to year, there is some variability. Students who appear in this table as non-regular attenders are students who have asked to remain on the e-mail list but attend less than 50% of events per year.

Table 4

Progression of "Regular Attenders" to Students Applying in Family Medicine, 2005–2009

Class Year	*# of Regular Attenders' by Fourth Year*	*# of Students Expressing Interest in Applying to Family Medicine Residencies by June of Third Year*	*# Matched in Family Medicine in March of Fourth Year*	*% of Total Class*
Class of 2008	NA	11	10	6.5%
Class of 2009	8	12	9	6.1%
Class of 2010	14	18	Pending	Pending
Class of 2011	16*	Pending	Pending	Pending

* This number is an estimate; at the time of publication, the class of 2011 is beginning their third year.

In Table 5, the numbers of students matching in family medicine at BU in the 3 years before the introduction of FaMeS is compared to the numbers matching in the 3 years after the introduction of FaMeS. The match number for 2010 was estimated at 14 of 18 students expressing intent to apply in family medicine, based on similar rates from past years noted in Table 4. The odds ratio is estimated at 1.94 (students graduating in or after 2008 were 1.94 times more likely to match in family medicine compared to 2004–2007, P=.028).

In the qualitative evaluation, three students who chose different specialties offered comments about the FaMeS program and family medicine in general. A student entering a surgery residency reported, while referring to summer externship experience after first year, that:

> I was really glad that we learned parts of the physical exam, because another medical student...has only learned the neurological exam and was not able to perform any other parts of the physical...Thanks to… FaMeS I was able to do the whole physical exam except for the breast exam.

A student entering an obstetrics and gynecology residency stated that:

> I've gotten a lot of compliments on my interviewing skills and comfort with patients...my confidence and self-esteem around patients has really shot through the roof.

A student entering a radiology residency reported that:

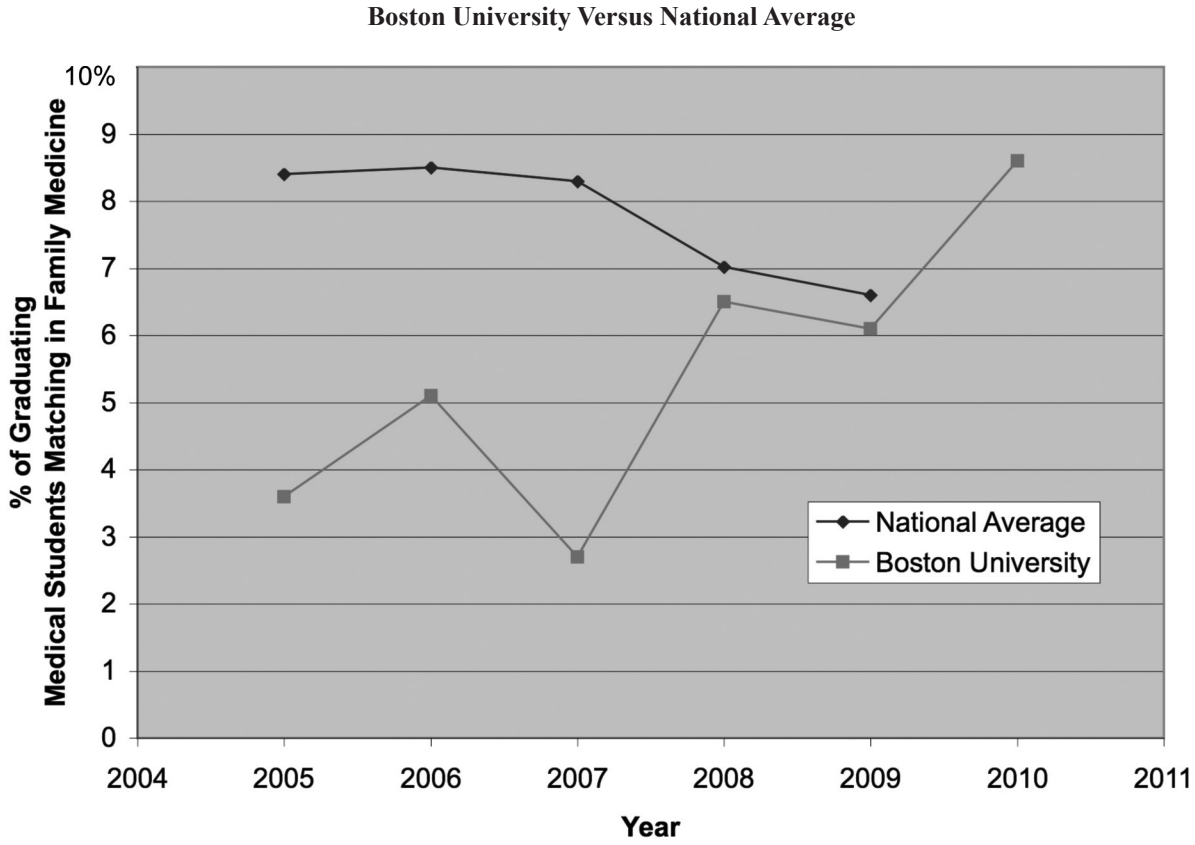
> All the smart people in our class are choosing family medicine this year.

Discussion

Our quantitative evaluation indicates that since the introduction of FaMeS at BU, there have been substantive increases in the number of students enrolled

Figure 1

Percentage of Graduating Class Choosing Family Medicine at Boston University and Nationwide, 2005–2009



Note: Percentages for 2005–2007 from McGaha AL, Schmittling GT, DeVilbiss AD, Pugno PA. Entry of US medical school graduates into family medicine residencies: 2007–2008 and 3-year summary. Fam Med 2008;40(8):351-62. Percentages for 2008 and 2009 from AAFP Web site (www.aafp.org) and personal contact with AAMC (Dr Wiecha). BU percentage for 2010 calculated with a numerator of 14 students (projected) and a denominator generated by the registrar's office; both numbers may change by graduation.

in FaMeS. These increases are likely due to increased publicity and exposure of the program and, more important, the visibility of senior students already enrolled in FaMeS. Indeed, we reported previously that the FMIG doubled its number of workshops and events per year (from eight to 16) between 2007 and 2009;[12] and in 2009 the FMIG won a Program of Excellence award from the AAFP for "Promoting the value of primary care."

For entering first-year students, it is powerful to hear from students in the class ahead of them about this program that has enriched their preclinical experience and led to faculty mentorships. There is also a social effect that is difficult to quantify (student X is in FaMeS, and I admire this student and have similar interests, so I want to be in FaMeS as well).

While the number of students matching in family medicine from BU has varied over the years, it appears to be increasing as the students in FaMeS reach their fourth year. The class of 2008, while not formally included in the FaMeS program, nonetheless benefitted indirectly from the existence of FaMeS. Several students were invited to national meetings, asked to talk to FaMeS groups of younger students about their career choice, and all students were supported by the network of family medicine faculty focused on FaMeS and its students. Therefore, we feel that the class of 2008 benefitted directly from the presence of FaMeS although not formally enrolled. This year, the number of students applying in family medicine is projected at 14 (final numbers will not be available until after the match). Our goal is to continue to match 10+ students in family medicine from 2010–2012 and hopefully continue to increase this number in future years.

Table 5

Comparison of Match Data From Boston University Before and After Initiation of the FaMeS Program (Estimating Match of 14 in 2009)

	Matched in FM	*Did Not Match in FM*
2005, 2006, and 2007 totals	17	420
2008, 2009, and estimated 2010 totals	33	475

FM—family medicine

Mantel-Haenszel odds ratio for above: 1.94; *P*=.028 (calculations performed with JavaStat)

Comments in the qualitative evaluation also indicate benefit from the program—even for students not entering family medicine residencies. While these comments cannot be said to represent the views of all medical students at BU, it is worth noting that in past years, students have reported being dissuaded from careers in family medicine by their peers. We think these comments represent a changing environment at BU, in which even students who do not choose careers in primary care demonstrate respect for family medicine.

Limitations

A key limitation of this study is the possibility of selection bias. It is possible that the FaMeS program simply identifies students likely to match in family medicine anyway, rather than contributing to their career choice. Informal surveys among department faculty indicate that in past years, there were many students expressing interest in primary care upon medical school entrance, yet the numbers of students matching in family medicine remained well below the national average and were decreasing in the early to mid 2000s. We believe it is likely that the program does identify students already interested in family medicine but prevents the attrition seen in previous years.

Conclusions

The FaMeS program, while young, appears to be having a positive effect on the numbers of students matching in family medicine at BU. The program may be most generalizable to departments which, like BU's, exist in a specialist-oriented environment and have historically matched fewer students in family medicine than the national average. We find these results encouraging enough to continue the program and continue to collect data on FaMeS students, including the projects noted above.

In 2008 we received a second HRSA grant to expand the initiatives of FaMeS, including a specific initiative targeted at recruiting underrepresented minority students to FaMeS. Given the shortages in the primary care workforce, it is encouraging to note that programs like this may be able to prevent attrition among students who began medical school interested in primary care.

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