

Improving the Recruitment and Hiring Process for Women Faculty

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In the past decade, the number of women medical students has equaled or exceeded the number of men. Despite this growth, women continue to be persistently and substantially underrepresented in academic medicine.¹⁻⁴ Although women are more likely than men to pursue an academic career, they are still underrepresented, constituting fewer than one-third of all physicians holding academic appointments nationwide.⁵⁻¹² Across all medical specialties, only 16% of full professors are women.¹³ As administrators at academic medical centers formulate ways to address gender disproportions within academic medicine, one factor to investigate is recruitment of women faculty. In 2002, the Association of American Medical Colleges Increasing Women's Leadership project recommended that medical schools "enhance the effectiveness of search committees to attract women candidates, including assessment of group process and of how candidates' qualifications are defined and evaluated."¹⁴

The University of Pennsylvania School of Medicine has tracked the percentage of women faculty and, although there have been improvements, many departments continue to have few women faculty. The Department of Surgery is of particular interest because of the nationwide deficit of women in surgery.

Nationwide, only 7 of 301 chairs of surgery in 2005 (2%) were women.¹⁵ Nationally, women surgeons now constitute 16% of faculty at academic medical centers, and data from studies reveal that true leadership positions remain elusive for women in academic surgery.¹⁶ According to Department of Surgery statistics at the University of Pennsylvania, in 2007 only 15% of total faculty members in the Department of Surgery were women.

This article documents some responses to the Gender Equity Initiative at University of Pennsylvania School of Medicine, both school-wide and by the department of surgery. As part of the work of meeting the goals for recruiting

women into faculty positions in the department of surgery, we held discussions with the chiefs of each division within the department of surgery and the department chair and reviewed recent faculty searches. In addition, this study reviews processes put into place at the school of medicine level, intended to improve the recruitment process and provide a framework for monitoring efforts to recruit women into faculty positions.

Issues and environment for recruiting women

Based on an internal review of the University's policies and data, the School of Medicine's Faculty Diversity Working Group produced a report to the Dean of the School of Medicine covering women's issues in September 2002. Broadly, the recommendation included tactics to fulfill the strategy of making "the recruitment, retention and promotion of women part of the overall institutional strategic plan." As part of this goal, each department was enjoined to formulate a 5-year plan to address the recruitment, retention, and promotion of women. In addition, a medical school committee on gender equity was convened, with faculty representatives from each department. The initial Gender Equity Committee was very large, consisting of both a faculty member and the faculty coordinator from each department (total of 28 departments, with >50 members on the committee).

Assessing the problem through interviews

To assess existing issues in recruiting women surgical faculty, interviews were conducted with the surgical division chiefs. It is worth noting that all interviewees in this process were men. The interviews were conducted by the Department of Surgery representative to the University of Pennsylvania School of Medicine's Gender Equity Committee (SS). Within the Department of Surgery, the Department Chair and Division Chiefs expressed interest in improving recruitment of women. In part, these concerns respond to the emphasis placed on these issues by the School of Medicine and University leadership. In addition, there is broad recognition that recruiting the best candidates into surgery, as compared with other specialties, is becoming more difficult, as younger physicians increasingly choose so-called "lifestyle" specialties.¹⁷⁻²⁰ Improving the recruitment process can improve the department's identity and ability to

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recruit outstanding candidates, regardless of gender. Several issues affecting successful recruitment of women surfaced in the interviews.

Targeted recruiting of women

There were various opinions about whether women were or should be specifically identified and targeted for faculty positions. To some degree, this appeared to depend on perceptions of patient desire, such as “many women want a woman surgeon,” or “because these conditions are more common in men, women are unlikely to enter the field.” For certain fields, finding women to interview was not a problem, “We’ve interviewed many people [for a position available in breast surgery,] and all of them have been women.” In addition, there was a great deal of hesitation about specifically targeting women, including statements such as “I don’t think women should be identified separately. If they are good, I don’t care [about gender],” “We wouldn’t make a particular effort to get a woman to fill the position,” “. . . [It] would not be logical to recruit a woman, we want to recruit the best, but there are a lot of women . . .” “I’m not sure you can do anything beyond looking at resumes. You can’t put in the ad that you prefer women, just as you can’t put that you prefer men, so it is hard to target recruiting.” “Our primary endpoint is quality, and a secondary endpoint can be diversity.” “I don’t like the notion of quotas . . . I think it is bad for women.”

When to recruit women

Some division chiefs pointed out that they typically hire from within the fellowship or residency program, and the important issue is recruiting women into these programs, rather than at the faculty level.

Lifestyle issues

In addition to the recruiting process, participants also pointed to lifestyle issues that continue to make it difficult to recruit women into academic surgery. “I would be willing to build something with some flexibility, but I would not compromise the fellowship. If you want to be working here, you have to work—period.” “Putting off family until late is an issue,” “I am aware that women are under a lot more pressure than I am.” “It is hard for women to be everything they need to be and be on the tenure track.”

The need to have women in visible leadership positions

It is also clear that current leaders recognize this need, but that filling those positions can be difficult. “It is important to always have a woman in the program if you want to recruit other women.” “Few women are seeking fellowship positions [in a surgical specialty].” “I’m puzzled and ashamed that we have only one tenured woman in the

surgery department . . . this is a disgrace to the department, and we have to correct it . . . if we have no tenured women, we will have no women division chiefs, and no women in vice-chair positions.”

Lack of female mentors

A number of faculty cited a lack of women in leadership positions in professional societies to serve as role models and mentors for young women.

Feelings that women choose not to accept leadership roles

Although the role of women in the department of surgery was generally seen as positive, there still remains this feeling. “[Faculty name] has sensitized me. It is good to have women around because they make you aware of different things. I’m happy to be made aware.” “Women involved [in the surgical profession] greatly improve the scope and effectiveness of the culture.” “There are no specific efforts from our profession’s societies to increase the number of women in [our specialty].” “I wonder if women are more comfortable referring cases to women. I’m happy to refer to [women surgeons].” “I’m happy to hire women to broaden whatever it is that women bring to the department” “[fellow name] said the faculty position would not allow her to meet family obligations” “I try to be sensitive to the needs of a diverse faculty. This may include being a mom or being devoutly religious.” “We have women interested [in leadership positions,] but they are intimidated by the demands.”

Adequate progress in recruitment

Some faculty expressed a belief that adequate progress was being made in the recruitment of women faculty, “When I look at where we’ve come in 20 years, I don’t really see the problem.” “The faculty and staff here don’t exhibit bias.” “We have no issues with equitable salary or promotion [in our department]; we regularly conduct review of this process.” “[I think] we are not bad as a department [in recruitment and retention of women].”

Cultural factors

There was an identification of cultural factors in place that act as barriers for women. “There are mentorship and bonding issues [with women]; it is hard for women to bond with surgical specialties.” “We need child care at this hospital, this is crazy . . .” “If Penn is interested in attracting women in general, we need to have childcare . . . this is a major flaw of our health system.” “Sabbaticals should simply be awarded, they should not have to be earned.” “[Some fields are] not good for part-time practice.”

Improving culture

Some faculty identified ways that the current culture was improving for women in the department. “The fact that

the clinician-educator track can be a division chief may help the cause for women.” Policies were available in the Department of Surgery to accommodate women with children: “[faculty name] is in a tenure position and has [grants]. She has two kids and has done a ‘clock-stop.’” For one extremely competitive fellowship program, “interview invitations are gender-blind,” and women applicants “increased from 6.5% to 29% over the previous ten years.” “In some ways, having to comply with [new residency work restrictions] will force us to deal with issues.” “[In a surgical specialty] we are seeing a movement to ‘block time,’ which will be of interest to women.” “We document everything in our faculty search process . . . reasons for [nonacceptance] are documented for all parties in the recruitment process.”

Possible solutions

Others offered possible solutions for improving the department’s culture. “One solution is to learn to work more in a ‘team fashion.’ The [division name] has learned it. The overall effectiveness is enhanced when surgeons work as a team, and the concept of teams make it easier for women to be equal members.” “[There is a] willingness to add flexibility to positions, such as the academic clinician track, which will allow flexibility because of a reduction in scholarship . . . everything is up for reexamination [in recruitment and retention of women in surgery].”

Regardless of the reasons, there was universal agreement about the difficulty of identifying and recruiting women and the lack of knowledge and resources available to division chiefs and search committee chairs involved in the process. There is clearly a great deal of variation in the process, although there did exist some documentation of searches that included information on women who applied for open faculty positions. Although many of the social and cultural issues cannot be easily addressed, it appeared that there were procedural steps that could assist in the identification and active recruiting of qualified women for faculty positions in the department of surgery.

Strategies for improving the recruitment of women

Based on an internal review of policies and data, the Gender Equity Committee made recommendations about the recruitment of women faculty.

Recommendations

First, all departments within the School of Medicine were to conduct and submit an annual report with a plan for faculty recruitment and a common methodology for assessing candidates proposed for recruitment. The annual report was to include a description of the academic and clinical needs of the department in the context of the strategic mission of the school and health system, and planned recruitments to address these academic and clinical needs.

Second, the committee recommended that each department devise goals for the recruitment of women faculty in conjunction with their recruiting plans, which should be determined by the department chair or division chief in collaboration with the dean.

Third, the committee recommended that promotion and retention of women faculty should be both emphasized and monitored. One suggestion was for chairs and division chiefs to receive incentives or bonuses for meeting their recruiting goals.

Implementation of strategies

A set of revised faculty search committee procedures and resources was established in a centralized location on the faculty affairs and professional development Internet home page.²¹ Resources established for search committee members included an advertising checklist to track completion of advertising guidelines, a search committee checklist, a candidate evaluation form, and a list of resource commitments for selected candidates. A key resource was a “recruitment worksheet,” used to track all candidates who submitted applications. Data to be collected on each of the applicants included gender, ethnicity, receipt of required application documentation, and the faculty recruiter’s subsequent actions (“None—no interest,” “Information gathered through phone or email,” “References contacted,” and “Whether candidate was interviewed”).

Specific requirements for the composition of search committees for all tenure track positions, and associate and full professor ranks in clinician-educator and research tracks were also posted on the Faculty Affairs and Professional Development Web site.

Search committee members were to be reviewed and approved by the Department Chair, and the office for faculty affairs was charged with reviewing all search committees as well. The search committee chair was required to give the final search committee report to the department chair to process the recruitment and appointment of the selected candidate, which is consolidated from reports provided by all committee members.

Next, procedures for conducting faculty searches were completely revitalized. A national search was already required for new full-time faculty appointments. Guidelines were expanded to state that the position should appear in sources that are highly visible to women and minority candidates, and advertisements were to be placed in a minimum of two professional journals.

A list of these sources were posted on the search committee resources home page, and included the Association of American Medical Colleges (AAMC) recruitment services, AAMC Women in Medicine Specialty Organizations, AMA Women Physician Specialty Groups, and AMA Resources for Minor-

ities. The text of the advertisement must be approved by the University's Affirmative Action office. A completed Affirmative Action form was required to document the search process.

A formal national search letter from the department chair and search committee was required to be sent to the relevant departments in all US medical schools, and all advertisements and search letters were to be valid for up to 2 years. Faculty advertisements were also required to be placed on the Faculty Affairs and Professional Development Web site.²²

In addition, all members of the search committee should have responsibility to identify and recruit qualified women and minority persons. The data are tracked by all departments within the School of Medicine.

Gender Equity Executive Committee

The official establishment of a Gender Equity Executive Committee was also recommended, with members comprising senior female and male faculty. The initial Gender Equity Committee was very large (>50 members). Ultimately, it was too large to meaningfully and proactively function. The Gender Equity Executive Committee was formed to remedy this issue. The Gender Equity Executive Committee consists of about 12 faculty members and functions as the working body of the Gender Equity Committee. The Gender Equity Executive Committee convened in 2006 and meets once a month during the academic year. The purpose of this committee was to oversee the implementation of these strategic planning recommendations and to monitor its progress. This committee is to report directly to the Dean, and is to monitor progress toward the achievement of gender equity goals. The committee is also to review scholarly activities and track how they differ between genders. The Gender Equity Executive Committee is currently working on projects from the following list of agenda items (and others might be added):

1. Put together a formal group of senior women faculty who will be available to meet with prospective recruits.
2. Put together a "resource packet" of information for faculty recruits so that they have information about family friendly policies, day care, FOCUS programs, and so forth.
3. Meet with department faculty who have established best practices in the area of "peer mentoring" with the goal of disseminating those practiced to Chairs/Division Chiefs so that other departments can take advantage of these initiatives.
4. Consider meeting with small groups of faculty so that current issues can be identified (focus groups).

Gender Equity Recruitment and Retention Fund

A Gender Equity Recruitment and Retention Fund was established by the provost's office to promote the recruitment and retention of senior women (associate professor or higher) in the tenure and clinician-educator track in departments where women are underrepresented. This fund will provide up to 50% of salary and benefit support for recruitments in the first year of appointment, followed by 25% support in the second year. Comparable levels of support will be provided for retention efforts, but need not be spent exclusively on salary and benefits.²³ Similarly, a Diversity Recruitment and Retention Fund was established to recruit and retain both faculty and students from underrepresented minority groups and to facilitate research on diversity in higher education. Although funding for most projects was not to exceed \$20,000, the fund supports a variety of efforts to include implementation of schools' strategic plans to increase the presence of underrepresented minorities, research on diversity in higher education, and projects to diversify the campus environment.²⁴

Areas to Monitor and Improve

To recruit the most highly qualified women faculty, it is helpful to have women in leadership positions on the faculty. The committee found that, proportionally, the number of female faculty holding leadership positions within the School of Medicine (17%) compared with male faculty in the School of Medicine (34%) was extremely low.²⁵ This proportionally low number of women in positions of leadership is consistent with national percentages, with only 10% of department chairs and 19% of division chiefs being women on a national level in 2006.²⁶ To better track this phenomenon, leadership positions were specifically defined as clinical and basic science department chairs, directors of centers and institutes, senior administrative leadership, hospital senior leadership, and associate and assistant deans. The Gender Equity Executive Committee was then tasked to collect this data and survey the Chairs and Deans to set goals for women in leadership positions during the next 5 years. Appointments to major School of Medicine committees and to leadership positions were to be documented in annual departmental reports to the Dean and Gender Equity Executive Committee for review.

Salary equity was identified as another important area for analysis and tracking, to establish a "women-friendly" environment at the University. Annual review of women's and men's salaries, by track, position, and title were recommended to be submitted by the Chairs and reviewed by the School of Medicine's Gender Equity Executive Committee, with apparent inequities to be brought to the Dean's attention and appropriate recommendations to ensure salary equity discussed with the Chair.

Table 1. Faculty Searches in the Department of Surgery, University of Pennsylvania (January 2003 to January 2007)

	n	%
Total no. of job searches	42	NA
Total job offers	47	NA
Total no. accepted offers	45	NA
No. of women who declined offer	0	NA
Total no. of women offered positions	9	19
Total no. of minorities offered positions	12	26
No. of searches where no women were interviewed	21	50
No. of searches where only 1 women was interviewed	8	19
No. of searches where 2 or more women interviewed	6	14
No. of searches where there was no committee	3	7
No. of searches with insufficient information on women interviewed	4	10
Total no. of women on search committees	42	NA
Total no. of minorities on search committees	18	NA

NA, not applicable.

The Gender Equity Executive Committee acknowledged the inherent barriers that exist to the recruitment of women faculty, including the difficulties in relocating spouse and family. Because of these difficulties, division and departmental chiefs were encouraged to document efforts taken to recruit women faculty, and to use innovative strategies to overcome these barriers to recruitment.

Reinforcing this commitment at the medical school, the University's Office of the Provost began requiring that individual schools collect information about the number of women in the applicant pool for each faculty search, the number who are interviewed, the number who are offered positions, and the number who accepted, and the number of women who served on each search committee. The University also developed a template to provide a uniform basis for reporting the details of each search in a report that is sent to the Provost's Office at the end of each academic year.

Results of recent searches for women faculty at the University of Pennsylvania

The Department of Surgery began to implement these recommendations for faculty searches in January of 2003. For each search, data were collected about the number of women and minorities interviewed for each position, the number of women and minorities on search committees, and the number of women declining a position (see Table 1). At this time (January 2003), 7 of 83 faculty members (8%) in the Department of Surgery were female, in contrast to national data of 13% of surgical faculty in 2003.²⁷ Since January of 2003, 47 job offers have been made by the Department of Surgery, 9 to women (19%) and 12 to minority physicians (26%). Forty-five of the offers were accepted. Neither of the indi-

viduals declining an offer was female. A total of 42 women were on the search committees (average 0.89 women per committee), and 18 minorities (average 0.38 per committee). For 21 of the searches, no women were interviewed, and for 8 of the searches, only one woman was interviewed. In only 6 of 42 searches were two or more women interviewed (Table 1).

Tracking progress: current gender equity status at University of Pennsylvania School of Medicine

It is evident that although some progress has been made, room for improvement still exists in the recruitment process of women faculty to the University of Pennsylvania School of Medicine's department of surgery. There was improvement seen even if all goals were not completely satisfied. In 2006, there were 12 women faculty in the department of surgery, of a total of 97 faculty members. An increase of 4% women faculty during an 8-year time frame, for a total of 12% female faculty, appears relatively small, particularly in light of the fact that >28% of surgery residents nationwide in 2005 were female.²⁸ This figure is also slightly below the national average of 16% female faculty in departments of surgery nationwide. At this rate of increase, it will require >30 years for the percentage of women faculty at the University of Pennsylvania School of Medicine in the department of surgery to equal the current percentage of female residents in surgery nationwide. These improvements reflect a partial effect of the new recruitment policies at the University of Pennsylvania School of Medicine. Supporting this trend of improvement, in 2007 the number of women faculty in the department of surgery increased again from 12% to 15% (see Table 2 for more current University of Pennsylvania and national percentages).

The number of women interviewed in the faculty searches also shows room for improvement. In half of faculty searches, no women candidates were interviewed, and two or more women were interviewed in only 14% of faculty searches. Factors that can contribute are a reluctance of women to enter academic surgery, and the barriers to women in academic medicine discussed previously, such as the constraints of traditional gender roles, manifestations of sexism in the medical environment, and lack of effective mentors and potential unconscious bias by those on search committees.²⁹ Increasing mentorships and role models for women can mitigate some of these issues.

The low number of women faculty on a tenure track is another area of concern in need of improvement and monitoring. Faculty at University of Pennsylvania School of Medicine fall into two classes: standing faculty and the associated faculty. The standing faculty is composed of two tracks, the tenure track and the clinician-educators track. Probationary periods and the Committee on Appoint-

Table 2. Women in Academic Medicine at University of Pennsylvania School of Medicine and Nationwide

	University of Pennsylvania			Nationwide*		
	% Women	Total n	Year	% Women	Total n	Year
School of Medicine						
Residents, fellows	41	1035	2006–2007	42.5	99395 [†]	2005–2006
Medical student enrollees (2007)	49	706	2006–2007	48.8	69167	2005–2006
Department of surgery						
Residents and fellows in surgery	19	140	2007	28	7418	2005
Surgical faculty	15	160	2007	16.5	10380	2006
Tenured	5	20	2007	1.4	1914	2006
On tenure track	8.3	24	2007	5.3	1637	2006
Not on tenure track	16.2	136	2007	5.9	3644	2006

*Nationwide data was all collected from Association of American Medical Colleges data available at <http://www.aamc.org/data/start.htm>.

[†]Excludes combined specialty.

ments and Promotions review for promotion apply to both tracks. Permissible ranks in the standing faculty are professor, associate professor, and assistant professor. We also have associated faculty in the research and academic clinician tracks. As of 2007, 2 of 24 tenure track faculty in the Department of Surgery are women. This is greater than the 2006 national percentage of 5.3 (see Table 2), but still a very low percentage, and only one of these women is an MD.

DISCUSSION

Although University of Pennsylvania School of Medicine's department of surgery continues to strive to improve their recruitment and retention of women through the initiatives here, other institutions can benefit from similar initiatives and strategies. Table 3 outlines the general strategy that was undertaken by University of Pennsylvania School of Medicine. In addition, the University of Pennsylvania has already undertaken one initiative in this regard, with the establishment of the FOCUS on Health and Leadership Program for Women. The goal of this program is to support the advancement and leadership of women in academic medicine, and to promote education and research in women's health.³⁰ FOCUS has launched a number of initiatives designed to help recruit, retain, and promote women faculty. Search committees, leadership and faculty groups are also now receiving a lecture on unconscious biases that can affect recruitment, hiring, and promotion process, presented by a female department chair and male vice dean of faculty affairs.

Recruitment of women for key leadership positions is another area in which improvement is needed. Although five full-professor positions were filled in the 4-year time period considered, no women were interviewed for any of these positions. Two hospital surgery department chair positions also became available, which were both filled by male faculty and no interviews of female candidates were conducted. Unfortunately, we do not have access to the

data needed to examine why no women were identified or interviewed for these positions. Interviews of qualified women candidates should be conducted for these positions whenever possible, particularly because of the absence of

Table 3. Suggestions for Improving the Recruitment and Hiring of Women Faculty

Step 1	Establish a formal committee, council, or other acting group to investigate and improve recruitments and retention of women faculty.
Step 2	Determine the environment for recruiting women within the school and within individual departments. Conduct interviews to establish cultural context of the school and departments about recruitment and retention of women faculty. Review current policies that address or affect the recruitment and retention of both women and faculty in general. Review recent record and process of recruitment and retention of women faculty.
Step 3	Based on the internal review of policies and data and other information established in Step 2, develop school or departments specific recommendations and possible goals for recruitment and retention of women faculty. Recognize that school-wide recommendations should be rigorous and, at the same time, flexible enough for each department to implement them in the most appropriate manner. Recommendations should include policy implementations, as well as built-in accountability and monitoring of recruitment and retention status.
Step 4	Implementation. Should include easily accessible resources for recruitment committees and faculty members. Updated guidelines for faculty recruitments should be easily accessible and distributed.
Step 5	Monitoring progress. There should be a longterm standing committee that is assigned the duty of tracking and monitoring progress toward newly set goals, as well as continuing to update policy and goals when appropriate.

any female full professors within the department of surgery faculty. In controlled studies, both men and women select men before women for leadership positions, despite identical qualifications and in contradiction to research demonstrating women's equal or greater leadership efficacy.³¹ The presence of women faculty in highly visible leadership positions is essential, both as an example for and in mentorship of, future women in surgery; combating ingrained stereotypes is essential in the committees who will conduct recruitment of surgical leaders.

The University of Louisville has achieved notable successes in its chair searches in the past several years; between 1996 and 2001, university administrators recruited women or underrepresented minority candidates in 50% of chair searches conducted.³² Some strategies recommended include naming at least one woman and one minority faculty member on the committee, with a total of up to seven committee members. Although AAMC guidelines recommend at least two women and two minority members,³³ this is often not feasible in practice. Committee members should hold the rank of full professor or tenured associate professor, and the chair of the committee should be selected by the dean.³² Other AAMC guidelines are available on the recruitment process for medical department chairs, which can be adaptable for recruitment of key leaders in surgical areas.³⁴

Physician administrators at the Mayo Clinic Rochester, where female physician consulting staff were a full 10% below the national average of 25% in 1994, developed structured goals for female physician recruiting. Administrators used a mathematical model based on hiring and resignation patterns of female physician consulting staff to project the rate of female faculty hiring necessary (an increase in 1.5% per year) to achieve parity with the national average of female physician consulting staff in 13 years.³⁵ The current progress of this initiative is unknown, but exemplifies a rigorous system that could be used to systematically track progress toward a defined recruitment goal. The six major "lessons learned" from the Mayo Clinic study for the retention of female faculty included conducting exit interviews of resignees and surveying candidates who declined positions, appointment of a greater number of qualified women to policy-making committees, provision of specific and gender-sensitive criteria for the departments and divisions chair selection process, comparing data from Mayo Clinic departments and divisions with gender data at the national level, the development of mentorship programs for female faculty members, and the requirement of sensitivity and diversity training for all staff members, particularly those in leadership positions. Other recommendations included increasing work-time flexibility, increasing availability of child care options, and provid-

ing greater opportunities for networking and social interaction among female faculty. Although the overall results of these efforts are as yet unknown, the Mayo Clinic's process is one example of how institutional data can be used to devise a quantitative and specific model that leaders can use to realistically track progress toward recruitment and retention goals.

For individuals on selection committees for new faculty, it is important to keep in mind what one researcher has called the principle of "mental models of gender," when unconscious stereotypes of gender affect the evaluation of a person's performance.³⁶ For example, both men and women give lower ratings to works of art, written articles, or curriculum vitae when they believe they are evaluating the work of women.³⁷ In addition, an analysis of peer review scores of applications for postdoctoral positions in Sweden—named by the United Nations as the leading country in the world for equality of opportunities for women and men—revealed that women applicants had to be 2.5 times as productive as the average man to receive the same score.³⁸ The same study also revealed that the only other factor as powerful as gender in influencing an applicant's overall score is an affiliation with one of the committee members—indicating the power of nepotism in the selection process as well. To circumvent these effects, universities should consider making the review of applicant's credentials "gender-blind," and should consider developing other ways of evaluating individuals that are not as vulnerable to reviewer prejudice. The University of Pennsylvania approach includes education on unconscious bias for all search committee members.

There are many other aspects of creating a culture that is thoroughly supportive of women faculty that are beyond the scope of this analysis. For example, 80% of women surgical faculty interviewed in one study expressed that they had experienced either gender discrimination or overt sexual harassment.³⁹

Facilitating an environment that is supportive of women and conducive to professional growth and job satisfaction is essential in recruiting and retaining talented women faculty.⁴⁰ Indeed, the factors enhancing faculty retention might prove to be an even more critical component of a paradigm to promote women's leadership in academic medicine.⁴¹ Many of the gender-based obstacles that women face in academic medicine are not of the overt type, but rather take a more subtle form—"behaviors, actions, policies, procedures, or interactions that adversely affect a woman's work because of disparate treatment or impact, or the creation of a hostile or intimidating work or learning environment."⁴² These organizational problems, in combination with women's choices, cultural stereotypes, lack of

effective mentoring, and constraints in combining family responsibilities with professional opportunities result in a “cumulative disadvantage” to women faculty.⁴³ This effect, in part, might account for the slow pace of change in the percentage of women faculty during the past 20 years.

This study outlines efforts undertaken at the department and school level and the efforts on recruitment of women into the department of surgery at the University of Pennsylvania School of Medicine. Although the percentage of women faculty in the department has increased from 8% to 12% by 2006 and again to 15% in 2007, this is still below the national average of 16%, and well below the proportion of female surgical residents (28%). More work remains in this process, but this analysis illustrates the efficacy of a gender-based recruitment initiative to produce a substantial increase in the percentage of women faculty in a relatively short time period; other institutions can benefit from conducting similar analyses of their recruitment procedures.

Author Contributions

Study conception and design: Sonnad

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REFERENCES

- Morahan PS, Voytko ML, Abbuhl S, et al. Ensuring the success of women faculty at AMCs: lessons learned from the National Centers of Excellence in Women's Health. *Acad Med* 2001;76:19–31.
- Kaplan SH, Sullivan LM, Dukes KA, et al. Sex differences in academic advancement. *N Engl J Med* 1996;335:1282–1289.
- Carr P, Friedman RN, Moskowitz MA, et al. Research, academic rank, and compensation of women and men faculty in academic general internal medicine. *J Gen Intern Med* 1992;7:418–423.
- Brown AJ, Swinyard W, Ogle J. Women in academic medicine: a report of focus groups and questionnaires, with conjoint analysis. *J Women's Health* 2003;10:999–1008.
- Nonemaker L. Women physicians in academic medicine: new insights from cohort studies. *N Engl J Med* 2000;342:399–405.
- McGuire LK, Bergen MR, Polan ML. Career advancement for women faculty in a US school of medicine: perceived needs. *Acad Med* 2004;79:319–325.
- Baumgartner WA, Tseng EE, DeAngelis CD. Training women surgeons and their academic advancement. *Ann Thorac Surg* 2001;71[suppl]:S22–S24.
- Carr PL, Friedman RH, Moskowitz MA, Kazis LE. Comparing the status of women and men in academic medicine. *Ann Intern Med* 1993;119:908–913.
- Association of American Medical Colleges. Women in US Academic Medicine Statistics 2005–2006. Available at: http://www.aamc.org/data/aib/aibissues/aibvol6_no7.pdf. Accessed January 26, 2007.
- Paik JE. The feminization of medicine. *JAMA* 2000;283:666–671.
- Pincus S. Women in academic dermatology. Results of survey from the professors of dermatology. *Arch Dermatol* 1994;130:1131–1135.
- Association of American Medical Colleges. US medical school faculty 2006, Table 9. Distribution of US medical school faculty by sex and rank. Available at: <http://www.aamc.org/data/facultyroster/usmsf06/06table9.pdf>. Accessed December 1, 2007.
- Association of American Medical Colleges Women in US academic medicine statistics 2005–2006. Available at: http://www.aamc.org/data/aib/aibissues/aibvol6_no7.pdf. Accessed January 26, 2007.
- Bickel J, Wara D, Atkinson BF, et al. Increasing women's leadership in academic medicine: report of the AAMC Project Implementation Committee. *Acad Med* 2002;77:1062–1066.
- Kass RB, Souba WW, Thordyke LE. Challenges confronting female surgical leaders: overcoming the barriers. *J Surg Res* 2006;132:179–187.
- Wyrzykowski AD, Han E, Pettitt BJ, et al. A profile of female academic surgeons: training, credentials, and academic success. *Am Surg* 2006;72:1153–1157.
- Calligaro KD, Dougherty MJ, Sidawy AN, Cronenwett JL. Choice of vascular surgery as a specialty: survey of vascular surgery residents, general surgery chief residents, and medical students at hospitals with vascular surgery training programs. *J Vasc Surg* 2004;40:978–984.
- Dodson TF, Webb AL. Why do residents leave general surgery? The hidden problem in today's programs. *Curr Surg* 2005;62:128–131.
- Marschall JG, Karimuddin AA. Decline in popularity of general surgery as a career choice in North America: review of postgraduate residency training selection in Canada, 1996–2001. *World J Surg* 2003;27:249–252.
- Morris JB, Leibrandt TJ, Rhodes RS. Voluntary changes in surgery career paths: a survey of the program directors in surgery. *J Am Coll Surg* 2003;196:611–616.
- Faculty Affairs and Professional Development, University of Pennsylvania School of Medicine. Available at <http://somapps.med.upenn.edu/fapd/fapdweb.php?alias=faculty>, under “Search Committee Resources.” Accessed March 13, 2007.
- Faculty Affairs and Professional Development, University of Pennsylvania School of Medicine. Current job postings. Available at <http://www.med.upenn.edu/apps/jobpostings/public/>. Accessed March 13, 2007.
- Memorandum from the University of Pennsylvania Provost, Robert Barchi, to University Deans, dated November 18, 2002, Re: Gender Equity Recruitment and Retention Fund.
- Call for proposals: diversity fund. University of Pennsylvania Almanac 2003;49(17).
- FOCUS on Health and Leadership for Women Benchmark Statistics 2002. Overview: 1999–2005. Distribution of ranks separated by gender and year. Penn Medical School fulltime faculty (includes tenure, clinician-educator, research and academic clinician tracks) [slide 1 of 1]. Available at <http://www.med.upenn.edu/focus/Bench-3-06.pdf>. Accessed March 14, 2007.

26. Association of American Medical Colleges. Analysis in brief. An overview of women in US academic medicine, 2005–06. Available at: http://www.aamc.org/data/aib/aibissues/aibvol6_no7.pdf. Accessed December 1, 2007.
27. Internal data from The Office of Faculty Affairs, University of Pennsylvania and AAMC Faculty Roster reports, US Medical School Faculty, 2003. Available at <http://www.aamc.org/data/facultyroster/usmsf03/start/.htm>. Accessed March 18, 2008.
28. FOCUS on Health and Leadership for Women. Benchmark statistics 2005. Available at <http://www.cceb.upenn.edu/pages/focus/Benchmks2005-Final.pdf> [slide 100 of 192]. Accessed March 14, 2007.
29. Yedidia MJ, Bickel J. Why aren't there more women leaders in academic medicine? The views of clinical department chairs. *Acad Med* 2001;76:453–465.
30. FOCUS on Health and Leadership for Women at the University of Pennsylvania. Available at <http://www.cceb.upenn.edu/pages/focus/Background.html>. Accessed March 14, 2007.
31. Carnes M, Bland C. Viewpoint: a challenge to academic health centers and the National Institutes of Health to prevent unintended gender bias in the selection of clinical and translational science award leaders. *Acad Med* 2007;82:202–206.
32. Schweitzer L, Fleming M. An insider's guide to successful chair searches. *Executive Leadership in Academic Medicine Newsletter* 2003; winter edition.
33. Bickel J, Waya D, Atkinson BF, et al. Increasing women's leadership in academic medicines: report of the AAMC Project Implementation Committee. *Acad Med* 2002;77:1062–1066.
34. The successful medical school department chair: a guide to good institutional practice, module 1: search, selection, appointment, transition. Available at <http://www.aamc.org/members/msmr/successfulchair/start.htm>. Accessed March 15, 2007.
35. Heid IM, O'Fallon JR, Schwenk NM, Gabriel SE. Increasing the proportion of women in academic medicine: one institution's response. *Mayo Clin Proceed* 1999;74:113–119.
36. Bickel J. Women in academic psychiatry. *Acad Psychiatry* 2004; 28:285–291.
37. Sandler BR, Silverberg LA, Hall RM. The chilly classroom climate: a guide to improve the education of women. Washington, DC: National Association for Women in Education; 1995.
38. Wenneras C, Wold A. Nepotism and sexism in peer-review. *Nature* 1997;387:341–343.
39. Challenges confronting female surgical leaders: overcoming the barriers. *J Surg Res* 2006;132:179–187.
40. Foster SW, McMurray JE, Linzer M, et al. Results of a gender-climate and work-environment survey at a Midwestern academic health center. *Acad Med* 2000;75:653–660.
41. Fox G, Schwatra A, Hart KM. Work-family balance and academic advancement in medical schools. *Acad Psychiatry* 2006; 30:227–234.
42. Lenhart SA, Evans CH. Sexual harassment and gender discrimination: a primer for women physicians. *J Am Med Womens Assoc* 1991;46:77–82.
43. Bickel J. Women in academic medicine. *J Am Med Womens Assoc* 2000;55:10–12,19.