

SPECIAL ARTICLE

Factors Influencing the Pharmacy Faculty Workforce

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In 2005, the Council of Faculties and the Council of Deans within the American Association of Colleges of Pharmacy (AACP) formed a task force to review the status of the pharmacy faculty workforce and to identify factors that may influence the supply of and demand for pharmacy faculty members. This manuscript summarizes the Task Force on Faculty Workforce's findings and describes specific strategies needed to address the various issues facing the academy. Based on Task Force predictions, the academy will need approximately 1200 new faculty members over the next 10 years due to the creation of new pharmacy programs, the expansion of existing programs, faculty retirements, and recurring vacant faculty positions.

Keywords: faculty recruitment, faculty retention, faculty work force, faculty development

INTRODUCTION

Central to the success of academic pharmacy is the availability of appropriate numbers of well-qualified faculty members teaching in its professional and graduate programs. Numerous individuals¹⁻³ and groups within AACP⁴⁻⁸ have studied this issue and have identified key areas regarding the recruitment and retention of faculty members across all disciplines. The urgency of the situation has been articulated in a series of articles that discussed key factors such as increased faculty retirements,⁹ increased non-academic salaries that steer potential faculty members into non-academic careers,¹⁰ decreased numbers of professional students entering graduate education,¹¹ and increased opportunities for faculty members outside the academy.¹²

To continue the exploration of contemporary faculty workforce issues, the Council of Faculties (COF) and the Council of Deans (COD) within AACP formed the Task

Force on Faculty Workforce in 2005. The goals of the Task Force were to review the status of the pharmacy faculty workforce and to identify factors that may influence the supply of and demand for pharmacy faculty members. This work was needed to provide guidance to the academy as it attempts to identify strategies to assure that the appropriate number of qualified faculty members is available.

The Task Force conducted its research using 3 primary strategies: reviewing the previous workforce literature, performing "environmental scans" to identify contemporary workforce issues, and presenting its work at 2 AACP meetings and receiving feedback from association members. During its analyses, the Task Force focused on 4 key areas: (1) the current status of the workforce, (2) anticipated demand for faculty, (3) supply dynamics, and (4) internal and external factors that influence both the supply of and demand for pharmacy faculty. The Task Force felt that it was important to first create a "snapshot" of the current status of the workforce. That is, what does the workforce look like and what current issues exist? Thus, the Task Force reviewed relevant demographic information, such as age, tenure status,

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employment status, and type of degree, to create a general impression of the current workforce. The Task Force then attempted to project future faculty demand and studied the various dynamics that influence the supply of faculty members. These analyses will provide a better understanding of the future so that the academy can respond more appropriately as it develops strategies to meet future unmet demand. Finally, an analysis of internal and external factors was conducted to provide a clearer picture of the challenges facing academic pharmacy from within the academy and from forces outside the academic environment. The results of these analyses are provided below. Embedded within the Task Force's findings are recommendations to the academy about how to respond to current and future challenges and opportunities. The key is to develop new strategies to enhance the recruitment and retention of qualified faculty members.

FINDINGS

Status of the Current Workforce

To gain a broad perspective about faculty workforce issues, Task Force members first reviewed the most recent (2006-2007) AACP data¹³ regarding current pharmacy faculty members. From this vast database, the Task Force selected data elements that were relevant to the recruitment and retention issues it was attempting to examine. Tables 1 to 5 reveal faculty attributes related to: employment status (full-time vs. part-time), tenure status, age, and whether the faculty member has earned a pharmacy degree.

Number of faculty. According to data submitted to AACP by member schools, 5084 faculty members served in the nation's schools and colleges of pharmacy in 2007 (Table 1). AACP is confident that these numbers accurately reflect the state of academic pharmacy because almost 100% of schools/colleges submit data on an annual

basis. The association is less confident about the assignment of faculty members into the various disciplines (eg, pharmaceuticals versus pharmacy practice) because each reporting school/college determines placement based on its own criteria using academic training/background or role within the institution. In addition, differences may exist in how schools report preceptors, adjunct faculty members, research faculty members, or other individuals. As noted in Table 1, faculty members within pharmacy practice comprise over half of the positions (52%) with the medicinal chemistry, pharmaceuticals, and pharmacology disciplines each representing about 12% of faculty positions. Approximately 83% of all faculty members serve as full-time members of the academy, and 17% as part-time members.

Tenure status. Traditionally, AACP compiles data from member institutions into 3 main tenure categories: faculty members who are in a tenure track and have achieved tenure; those who are in a tenure track but not yet tenured; and those who are in the non-tenure track and typically have some type of contractual appointment. Tables 2 and 3 list the most recent data collected by AACP regarding the tenure status of only full-time faculty members. Data regarding part-time faculty members are not reported here because most part-time appointments are in the non-tenure track. The total number of faculty positions for each discipline may be different than the totals in Table 1 because member schools did not report tenure status for some faculty members.

The majority (62%) of full-time pharmacy practice faculty are in the non-tenured track (Table 2), while most of the basic and applied science faculty members are in the tenure track. The percentage of science faculty members in the non-tenure track ranges from 13% (in medicinal chemistry) to 38% (in biological sciences). Having a relatively large number of practice faculty members in

Table 1. Number and Status of US Pharmacy Faculty Members in Each Discipline (N = 5084)

Discipline	Part-Time Faculty Members	Full-Time Faculty Members	Total	Percent Faculty Members in Each Discipline	Percent Full-Time Faculty Members
Biological sciences	17	115	132	3	87
Continuing education	12	39	51	1	76
Liberal arts	14	24	38	1	63
Library	3	25	28	1	89
Medicinal chemistry	126	497	623	12	80
Pharmaceuticals	92	503	595	12	85
Pharmacology	74	517	591	12	87
Social & admin sciences	75	326	401	8	81
Pharmacy practice	455	2170	2625	52	83
Total	868	4216	5084	100	83

Table 2. Number of Full-Time US Pharmacy Faculty Members by Tenure Status and Discipline

Discipline	No. of Faculty Members in Non-tenure Track	No. of Faculty Members in Tenure Track	Total Full-time Faculty members	Percent Faculty Members in Non-tenure Track
Biological sciences	44	71	115	38
Continuing education	29	10	39	74
Liberal arts	8	15	22	38
Library	15	7	22	68
Medicinal chemistry	63	434	497	13
Pharmaceutics	119	382	501	24
Pharmacology	84	433	517	16
Social & admin sciences	73	253	326	22
Pharmacy practice	1332	833	2165	62
Total	1768	2438	4206	42

the non-tenure track impacts the strategies needed to enhance the recruitment and retention of these faculty members, as will be addressed later in this manuscript.

The Task Force was also interested in studying what proportion of faculty members in the tenure track were tenured. Table 3 indicates that about two-thirds (65%) of all faculty members in the tenure track are tenured, ranging from 44% (biological sciences) to 87% (liberal arts area).

Age. Diversity in regard to faculty member age needs to be monitored because recruitment and retention strategies vary depending on one's position along the age continuum. Younger faculty members typically have different needs compared to more senior faculty members. Monitoring the number of younger faculty members entering the workforce is important because orientation, mentoring, and career development programs must be in place to meet the needs of these individuals. It is also important to monitor the number of faculty members reaching retirement age as an indicator of possible future openings within the academy. However, it is not easy to

predict exact retirement patterns since individuals tend to retire at various ages, some in their 50s and 60s; others in their 70s and 80s. The current age distribution of all full-time faculty members is depicted in Table 4. Unfortunately, age was not reported to AACP for 592 (14%) of the faculty positions. Based on the reported data, several disciplines (medicinal chemistry, for example) have a disproportionate number of senior faculty members (25% age 60 or older) compared to younger faculty members (13% below age 40), which could be problematic in the future. In some disciplines, the combined number of faculty members in the 50-59, 60-69, and over 70 age cohorts represents almost half of all the discipline's faculty members.

To further study this issue, Task Force members reviewed longitudinal data within AACP's records and found that the faculty population is getting older within most disciplines, especially in the basic science areas. This reinforces the compelling need for enhanced recruitment efforts to replace future retiring faculty members. In fact, within the next 5-9 years there will be a significant

Table 3. Status of Full-Time US Pharmacy Faculty Members in Tenure Track Positions by Discipline

Discipline	Number Non-tenured Faculty in Tenure Track	Number Tenured Faculty in Tenure Track	Total Full Time Faculty in Tenure Track	Percent Tenured in Tenure Track
Biological sciences	40	31	71	44
Continuing education	2	8	10	80
Liberal arts	2	13	15	87
Library	2	5	7	71
Medicinal chemistry	135	299	434	69
Pharmaceutics	121	261	382	68
Pharmacology	127	306	433	71
Social & admin sciences	80	173	253	68
Pharmacy practice	350	483	833	58
Total	859	1579	2438	65

Table 4. Full-Time Faculty Members in the United States by Age and Discipline, No. (%)

Discipline	Age							Total
	Unknown	Below 30	30-39	40-49	50-59	60-69	70>	
Biological science	21 (18)	0 (0)	26 (23)	34 (30)	24 (21)	10 (9)	0 (0)	115 (100)
Continuing education	4 (10)	0 (0)	6 (15)	5 (13)	13 (33)	8 (21)	3 (8)	39 (100)
Liberal arts	5 (21)	0 (0)	1 (4)	4 (17)	7 (29)	6 (25)	1 (4)	24 (100)
Library	5 (20)	0 (0)	4 (16)	4 (16)	8 (32)	4 (16)	0 (0)	25 (100)
Medicinal chemistry	62 (13)	0 (0)	63 (13)	144 (29)	105 (21)	102 (21)	21 (4)	497 (100)
Pharmaceutics	57 (11)	5 (1)	76 (15)	127 (25)	145 (29)	83 (17)	10 (2)	503 (100)
Pharmacology	46 (9)	1 (1)	54 (10)	136 (26)	177 (34)	95 (18)	8 (2)	517 (100)
Social & admin sciences	37 (11)	2 (1)	46 (14)	82 (25)	107 (33)	49 (15)	3 (1)	326 (100)
Pharmacy practice	355 (16)	212 (10)	639 (30)	440 (20)	414 (19)	104 (5)	6 (1)	2170 (100)
Total	592 (14)	220 (5)	915 (22)	976 (23)	1000 (24)	461 (11)	52 (1)	4216 (100)

loss of senior leadership from many schools and colleges. These longitudinal data are not reported in this paper due to the complexity of this information.

Number of faculty with pharmacy professional degrees. Task Force members reviewed data related to whether or not pharmacy faculty members had pharmacy professional degrees (BS Pharm or PharmD) prior to entering the academy. Analysis of this factor is important because orientation and mentoring programs will vary based on the background of entering faculty members. Those without pharmacy professional degrees will need orientation programs that help them learn about pharmacy education and practice. In addition, members receiving professional degrees from foreign institutions may need more in-depth orientation programs compared to those receiving their degree from US schools and colleges.

Table 5 reveals that about one third (31%) of all full-time faculty members do not have a professional pharmacy degree. Within the pharmaceutical science disciplines, the percent without a professional pharmacy degree varies from 90% (in biological sciences) to 44% (in pharmaceutics). Not surprisingly, most faculty members within the pharmacy practice (95%) and social and

administrative science (65%) disciplines have pharmacy professional degrees. In addition, most individuals with pharmacy professional degrees received their degree from a US institution rather than an international institution.

The Task Force reviewed additional demographic data on full-time faculty members within AACP's workforce database and found that:

- 41% are women
- 5.6% are African-Americans
- 3% are Hispanic
- 0.1% are American Indian

Further analysis of AACP's longitudinal data indicates that the number of women entering the workforce has been increasing over the past several years. Unfortunately, the relative number of underrepresented groups (African-American, Hispanic and American Indian) has remained constant over the same period of time.

Demand for Pharmacy Faculty

Current vacancies. Having a clear picture regarding the relative demand for faculty members is important to the academy as it develops strategies to enhance its

Table 5. Full-Time Pharmacy Faculty Members by Degree Type and Discipline

Discipline	Professional Degree from US School	Professional Degree from Foreign School	No Professional Degree	Total	Percent Without a Professional Degree
Biological sciences	9	2	104	115	90
Continuing education	32	0	7	39	18
Liberal arts	1	0	23	24	96
Library	1	0	24	25	96
Medicinal chemistry	110	38	349	497	70
Pharmaceutics	188	94	221	503	44
Pharmacology	163	26	328	517	63
Social & admin sciences	195	16	115	326	35
Pharmacy practice	2035	16	119	2170	5
Total	2734	192	1290	4216	31

recruitment and retention programs. Thus, the Task Force first gathered information regarding the number of vacant positions within the academy using AACP’s Vacant and Lost Position database.¹⁴

Table 6 reveals the data reported to AACP by member institutions for 2006. AACP tracks 3 types of positions: those shared (with partnering university or hospital departments), those that are funded totally by the school (non-shared), and those positions that once existed but were “lost” due to budgetary or administrative decisions. According to AACP, three fourths of the nation’s schools and colleges of pharmacy reported vacant or lost faculty positions in 2006. Table 6 indicates that during 2006, schools and colleges of pharmacy reported a total of 427 vacant faculty positions. Twenty-one of these positions were “lost” during the year, which could be problematic for schools as they implement their curricular programs. Over half (53%) of the vacant positions were within the pharmacy practice discipline. These figures provide a sense of urgency regarding the unmet demand for faculty in the various disciplines within the academy.

The last column in Table 6 represents the relationship between the number of vacant positions and the number of full-time positions within each discipline. For example, currently there are 68 unfilled positions in pharmaceuticals and 503 full-time existing positions (from Table 1) for a total of 571 total possible positions. The 68 vacant positions represent 12% of the 571 possible positions. The natural steady state vacancy rate is unclear, but it appears that vacancy rates are more problematic for some disciplines than others. For example, in the Pharmaceuticals area, the number of vacancies represents a larger proportion of the workforce (12%) than in the biological sciences discipline (4%).

Task Force members reviewed the following data elements that were relevant to its research objectives:

- 91% of the 427 vacant positions were for full-time faculty members and only 9% for part-time;
- 14% were at the full professor level; 17%, associate professor; and 58%, assistant professor;
- 29% of the 427 vacant positions were newly created positions; 60%, existing positions; and 11%, reorganized positions;
- 47% of the positions had been open for at least 6 months; 12% between 6 months and 1 year; and 41% for longer than 1 year;
- Schools were no longer recruiting for 17% of the vacant positions

Task Force members also found that the most common reasons why positions were open were because a faculty member:

- moved to another school (18%)
- retired (11%)
- took a position in the pharmaceutical industry (5%)
- took a position in the private sector (5%)

Following analyses, the Task Force became especially concerned with those searches that had been open for over a year (41% of all openings) and with the 17% of schools that had given up on the search process. These findings indicated that current recruitment strategies were not working.

Preliminary analysis of future faculty demand.

In addition to reviewing current vacant positions, Task Force members attempted to predict future faculty demand (Figure 1). These estimates of full-time (FT) faculty demand for the next 10 years were based on the following assumptions:

- The current baseline number of FT faculty members necessary to provide quality professional training is 4,216 (Table 1).

Table 6. Number of Vacant Pharmacy Faculty Positions by Primary Discipline in 2006

Discipline	Non-Shared Only	Shared Only	Lost	Total	Proportion of All Vacant Positions	Proportion of Vacancies vs. Total Positions
Biological sciences	4	0	1	5	1.2	4
Continuing education	1	1	0	2	0.5	5
Liberal arts	0	0	0	0	0	-
Library	1	0	0	1	0.2	4
Medicinal chemistry	41	1	7	49	11.4	9
Pharmaceutics	62	4	2	68	15.9	12
Pharmacology	36	0	2	38	8.9	7
Social & admin sciences	28	4	3	35	8.2	10
Pharmacy practice	156	66	6	229	53.4	10
Total	330	76	21	427	100.0	9

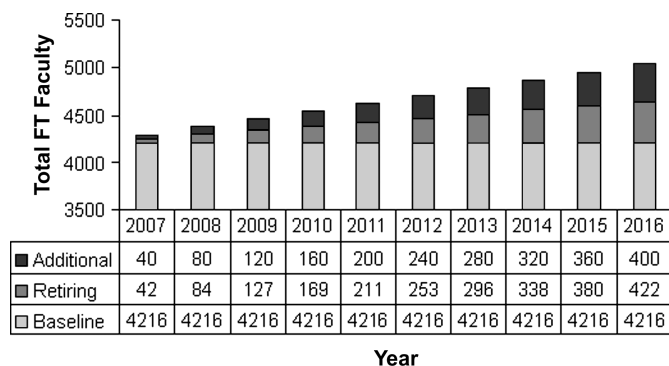


Figure 1. Projected growth in number of full-time pharmacy faculty members in the United States and the impact of retirement and increased demand.

- Educational expansion (assuming 400 new students per year in new and existing PharmD programs; and assuming that a realistic target student-to-faculty ratio is 10:1) will require 40 new faculty FTEs each year. (This estimate compares well with the Bureau of Health Professions Pharmacist Supply Model for the growth of new graduates. The 10:1 student to faculty ratio was chosen in this model to represent a conservative estimate of future faculty demand in today’s environment. The ratio is not an official position of AACP or ACPE, nor is it based on empirical evidence. It serves as a starting point for this particular model and was derived following the Task Force’s “environmental scan” of related issues.)
- The ages of the 592 “age unknown” faculty members, as seen in Table 4, are distributed in the same proportions as “age known” faculty members. For example, this assumption places 476 instead of 461 faculty members in the 60-69 age group.
- The separation rate from the 60-69 age group to the 70 and above age group, which is 89% in Table 4, distributes evenly with about 10% of the retirement group leaving each year over a 10-year period.

As noted in Figure 1, approximately 822 new faculty members will likely be needed over the next 10 years given that the current baseline level of 4,216 faculty members remains fixed. Approximately 422 faculty members will be lost to retirement and 400 new positions will be created due to program expansion. Thus, for the 10-year period, faculty demand will increase by about 20% from 4,216 to over 5,000. This level of growth would not appear to be overwhelming except that it must occur in the face of a current vacancy rate of 10% (427 positions as seen in Table 6). If this vacancy rate continues to grow, faculty shortages will escalate even further beyond the demand curve illustrated in Figure 1. Thus, the Task Force urges that the academy monitor both future vacancy rates as well as demands due to program expansion and retirement.

Supply Dynamics

In addition to studying the demand for pharmacy faculty members, Task Force members analyzed several factors that impact the number of individuals entering the workforce. It is imperative that the supply of faculty members increases to address the unmet demand described above. To that end, the Task Force collected information from a variety of sources to gain a better understanding of the potential supply of pharmacy faculty members.

Graduate program contribution to the workforce. Because many pharmacy faculty members enter from pharmacy-based graduate programs, Task Force members reviewed the number of graduates in each of the disciplines over the past 3 years using AACP’s Profile of Students database.¹⁵ Table 7 reveals an increase in the number of graduate students receiving their PhD degrees in each of the past 3 graduating classes. Unfortunately, Task Force members could not discern how many graduates actually accepted faculty positions or how many entered postdoctoral training that may eventually lead to faculty positions. However, it is encouraging that the number of graduates is increasing because this indicates

Table 7. Number of Graduates from PhD Programs by Discipline

Discipline	2004	2005	2006	Change from 2004 to 2006	Percent Change
Medicinal chemistry	82	105	117	35	43
Pharmaceutics	165	185	170	5	3
Pharmacology	55	71	70	15	27
Social & admin sciences	29	47	48	19	65
Pharmacy practice	4	7	10	6	150
Other	-	14	27	27	92
Total	335	429	442	107	32

that the number of potential faculty members might be increasing.

The Task Force made the following observations during its analysis of these graduate program data. The potential for continued shortages within pharmaceuticals is high because, as discussed earlier, numerous vacancies exist within the discipline but the number of graduates has only increased by 3% in recent years. In regards to pharmacology, the supply may be underestimated because medical school programs graduate many more PhD pharmacology students than do pharmacy schools. The main concern within the social and administrative sciences (SAdS) is that the number of graduates is relatively small given that ACPE guidelines call for about 17% of the curriculum to be SAdS material. In regards to pharmacy practice, the miniscule number of pharmacy practice PhD graduates is a major concern in light of the high demand for interdisciplinary, clinically-oriented scientists to serve in positions within government, industry, and the academy.

Partnership programs. One possible strategy for increasing the number of graduate students is to develop partnerships between schools/colleges with graduate programs in the pharmaceutical sciences and those institutions that do not have graduate programs but may have PharmD students interested in advanced training. To review the current status of these partnership programs, the Task Force created an online survey for AACP member institutions. After receiving approval from the AACP, the survey was launched in early November 2006 and 39 institutions responded:

- Thirty were public institutions and the remaining 9 were private; 36 offered 1 or more graduate programs and 3 did not.
- Of the 36 that offered graduate programs, 13 reported participating in an academic partnership, 16 responded that they have not participated, and 7 did not respond to this item.
- Fourteen of the schools that reported having an academic partnership stated that an academic partnership existed within their own institution; 5 reported a partnership with another school/college of pharmacy; and 2 reported a partnership with another institution of higher education.
- Eighteen of the 36 schools with graduate programs reported definite interest in developing 1 or more academic partnerships in the future. Ten reported that they were somewhat interested and 2 were either definitely not interested or did not know about these types of programs. Nineteen reported the availability of a combined professional/graduate degree program. Ten reported

that this was not available. Most of these programs were within the school of pharmacy or within the larger institution. The most frequently cited incentives for student participation included being able to obtain a tuition waiver and a shortened timeline for training.

- The most frequently cited benefits derived from academic partnerships included: an increase in scholarly activity, increase in collaboration, and enhanced ability to attract students into the school's professional degree programs.
- The most commonly stated barrier to the development of academic partnerships was an inadequate number of students interested in pursuing graduate school (18 of the 30 responders). In addition, 10 respondents stated that the institution was unable to offer significant incentives to students to participate in graduate programs.

While these partnerships certainly are helpful in identifying promising professional pharmacy students for graduate programs, they will likely have little impact on the development of new pharmacy-educated faculty members unless "best practices" are identified and implemented to channel professional "potential graduate" students towards academic careers.

Residency and fellowship contributions to the workforce. To study the potential supply of practice faculty, Task Force members collected data from the American Society of Health-System Pharmacists (ASHP)¹⁶ and from the American College of Clinical Pharmacy (ACCP)¹⁷ to study trends in the number of residents and fellows being trained. According to ASHP data, 872 accredited residency programs existed in 2007 (573 PGY1 and 299 PGY2 programs). In addition, the number of individuals who participated in the ASHP matching program increased over 27% during the past 3 years (940 in 2003, 1075 in 2004, and 1194 in 2005). As with graduate programs, Task Force members could not discern how many of these individuals actually entered the academy. However, it is encouraging that the number of residents is increasing because this indicates that the number of potential practice faculty members may also be increasing.

According to ACCP, 87 fellowships and 8 residency/fellow programs are listed in their 2006-2007 residency and fellowship directory. The Task Force was unable to collect longitudinal data to determine how many individuals completed a fellowship and subsequently actually entered the academic workforce over the past 2 decades. Data from an ACCP Research Institute survey of graduates from these fellowship programs suggest that this modality of education and training is a viable contributor to future

workforce needs. As of June 2007, 47 of the 84 respondents hold faculty positions in pharmacy or medical schools; 33 are employed in industry; and 4 are employed primarily in clinical practice. Of the 20 individuals in faculty positions who completed fellowship training between 1984 and 1996, nine (45%) have received NIH funding as PIs. Another 40 individuals are participating in ACCP's Academy of Teaching and Learning program, which was initiated in 2006 to prepare practitioners to become better educators. Continued tracking of this important group is warranted as the contribution of this new initiative will only become evident as the first cohort of individuals completes the program in 2009.

Experiential learning initiatives. In order to recruit potential faculty members from current professional students, schools and colleges of pharmacy need to expose PharmD students to elements of academic pharmacy using special experiential rotations. To further study this recruitment strategy, Task Force members surveyed member institutions to discern the level of activity in this area. Based on responses from over three fourths of the nation's schools and colleges, the Task Force found that 81% of respondents offered some type of advanced experiential learning program centered on teaching and education, and an additional 4% indicated that they plan to develop such experiential rotations. In addition, Task Force members found that 37% of responding schools currently offer certificate programs for residents, fellows, or post-doctoral students who complete a structured program centered on education; and an additional 2% indicated that they are planning to start a similar program. This level of activity is encouraging. However, when asked, very few of these schools were tracking the career placement of participants and none were evaluating the effectiveness of their programs. Thus, new experiential learning programs need to be established and existing programs need to evaluate their programs and track their participants in order to promote recruitment into the academy.

Internal and External Influences on Supply and Demand

In addition to analyzing data regarding the supply and demand of pharmacy faculty members, Task Force members compiled a list of important factors that appeared to influence the supply and demand of pharmacy faculty members. To prepare this list, Task Force members participated in 3 activities: first, we performed an "environmental scan" to identify contemporary workforce issues; second, we reviewed the previous works cited earlier,¹⁻¹² and third, we presented our preliminary findings to the AACP's COD and COF members during forums con-

ducted at the 2006 AACP Annual Meeting in San Diego and also at the 2007 Interim Meeting in Arlington, Virginia. During and following these sessions, Task Force members received valuable comments from association members that were eventually incorporated into the list. The Task Force divided the various factors into *internal* influences (those issues originating within the academy) and *external* influences (those issues involving organizations or groups outside the academy). Examples of internal factors included: implementation of ACPE's 2007 standards, expansion of pharmacy programs, increased need for assessment and accountability, and enhancement of faculty members' quality of life. External factors impacting on pharmacy education included: the changing financial climate of higher education, changing demographics of the student population, and changes advocated by various groups, such as the Institute of Medicine's healthy people curriculum, the National Institute of Health's roadmap on translational research, and the Commission on the Future of Higher Education's various reports. The list of factors and suggested strategies to deal with these factors is quite extensive, and thus, not included in this manuscript. Interested readers are referred to the Task Force's 2007 report to the COD and COF for further exploration of these important issues.¹⁸

DISCUSSION

It is quite humbling to realize that many of the issues identified by the Task Force also appeared in the previous literature cited within this paper. The academy would be in a different place today if it would have been more responsive to these earlier warnings. Members of the academy should have more clearly defined the various issues. We should have implemented the proposed strategies articulated by groups within the academy.

Overall, unmet demand is the most important finding in this study. If the number of unfilled positions remains relatively constant, then total unmet demand will be over 1200 faculty members by the year 2016. This figure was derived by adding the vacant positions (about 400, see Table 6) to the projected new faculty needed (822, see Figure 1) due to program growth and retirements. Twelve hundred new faculty members within the next 10 years is not a number to be taken lightly. The Task Force urges that the strategies proposed in this report be implemented, evaluated, and disseminated as quickly as possible in order to ensure an enhanced supply of well qualified faculty members.

In addition, the existence of 427 currently unfilled positions cannot be overstated. These current openings, many of them long standing, constitute a more immediate

and bigger challenge than the long-term issues related to future retirements and continued growth. Member institutions must take action to critically analyze why they cannot fill these vacant positions and must develop successful strategies immediately before the situation worsens.

Task Force members urge the academy to pay special attention to emerging external factors. While the internal factors have been discussed in a variety of pharmacy education venues, many of the external factors are relatively new to pharmacy and have not been studied in great detail. Many of these external issues are just coming to the attention of pharmacy faculty members and administrators. The academy must now respond to an increasing number of external factors as it attempts to deal with the persistent internal factors that tend to plague it as well. Thus, the combination of recurring internal issues and emerging external factors makes dealing with faculty recruitment and retention issues even more difficult. In addition, because societal and governmental perceptions of the academy are at the crux of many of these external factors, the academy must work hard to alter societal and governmental views regarding pharmacy education specifically and higher education in general.

Review of Recommendations

This paper contains numerous analyses and recommendations about the pharmacy faculty workforce. The Task Force offers the following summary of its recommendations.

Recommendations regarding recruitment strategies. In order to respond to workforce issues effectively, the Task Force recommends that the following be adopted by member schools and colleges of the academy:

- Expose professional students, graduate students, fellows, and residents to the attractive aspects of the academy. For example,
 - Build more flexibility into PharmD, graduate, and residency programs that expand opportunities for students and residents to develop a personal perspective on academic pharmacy as a career option.
 - Develop strong mentoring programs that encourage exposure to positive elements of academic pharmacy and reward faculty members for participating in these mentoring programs.
 - Develop honors programs with a focus on practice, education, and research within professional programs.
 - Expand programs that expose PharmD students to academia, including dual-degree programs, such as PharmD/PhD or PharmD/Masters in Education or Instructional Design.

- Offer proven incentives, such as stipends or tuition remission, to encourage participation of PharmD students as teaching assistants in the academic enterprise to expose them to academic life.
- Expand scholarship programs, such as the Wal-Mart Scholars Program or the AFPE scholarships, to acquaint students with the breath of opportunities in academy.
- Expand pharmacy-based PhD programs.
- Advocate for the creation of loan forgiveness programs (through federal agencies, such as NIH or AHRQ) for students willing to commit to entering pharmacy academia as a career.
- Initiate new, as well as expand existing, clinical scientist programs.
- Expand 1- and 2-year postgraduate pharmacy residency programs.
- Develop innovative professional practice plans and research incentive plans to recruit faculty members.
- Develop alternative appointment structures within pharmacy institutions, such as having 2 individuals share 1 FTE position.
- Conduct exit interviews with professional students, graduate students, fellows, and residents to assess their level of excitement for and perceived barriers to academic careers.
- Recruit well-qualified practitioners to serve as part-time or adjunct faculty members for specific curricular purposes.

Recommendations regarding retention strategies.

The Task Force recommends that the following be adopted to address retention issues:

- Revise the tenure process allowing for up to a 10-year period of evaluation rather than the traditional 6- or 7-year period.
- Develop a variety of model guidelines for the tenure and promotion process.
- Allow flexibility in the tenure process (eg, stopping the tenure clock for family and personal issues).
- Develop policies and procedures regarding continuing contracts that are more transparent and attractive to non-tenured faculty members.
- Develop innovative professional practice plans and research incentive plans to retain faculty members.
- Develop creative and novel benefit packages that are competitive with those offered in practice and scientific community market places.

- Develop networks of scholars within and across schools in the various disciplines to keep faculty members engaged and stimulated.
- Provide opportunities to assess faculty member skill sets **and** develop programs to strengthen skills in research, teaching, and interdisciplinary education. These assessments should start at the beginning of a faculty member's career (during orientation programs) and continue throughout it.
- Develop active mentoring programs and reward faculty mentors for participating in these programs.
- Offer innovative alternative models for sabbaticals, such as early career short-term leaves of 2-4 months so that junior faculty members can acquire key skills that will increase their likelihood of being promoted.
- Encourage mid-career or senior faculty members to routinely take sabbaticals to enhance and expand their educational and research contributions upon their return to their school/college.
- Develop programs that recognize excellence in the academy, such as the master educator, master preceptor, and master researcher programs used by some institutions.
- Develop comprehensive orientation programs for all new faculty members to enhance their understanding of pharmacy education, research, and practice, and thus, their potential for success as pharmacy faculty members.
- Hire back retired faculty members for teaching purposes (in didactic and laboratory venues).
- Respond to the different values held by the various generations within the academy. In general, individuals entering the workforce now have different views than mid-career or senior faculty members regarding many aspects of academic life, such as loyalty to an institution or reward orientation.

General recommendations. Based on its findings, the Task Force offers the following general strategies for academic pharmacy:

- Establish a work group to monitor and evaluate trends regarding the faculty workforce and determine projections of future demand and supply. This group should be charged to provide a comprehensive study of these data every 3 years. To determine the projections for this report, the Task Force made certain assumptions that could have been strengthened by additional information involving certain key factors that are needed in prediction models. Better tracking methods

are needed, in general, and tracking the demand for the individual disciplines is needed to derive the sense of urgency for each group. Analyses of longitudinal data are valuable in placing the current workforce need into perspective. For example, are we repeating past cycles of variances in supply and demand, or are we observing a new phenomenon? Additional empirical research is needed to confirm some of the findings described above.

- Study the impact of part-time faculty members on the academic environment due to the fact that more part-time faculty members are joining the academy. We need a better understanding about the needs and level of contribution of this important group of faculty members.
- Study the impact on the workforce of changes within the policies and procedures for tenure.
- Identify areas where non-academic pharmacy organizations can assist the academy with the recruitment and retention of faculty members, for example, sharing relevant information that they may have about the entire pharmacy workforce.
- Establish programs to recruit PharmD students into academia, such as mentoring, dual-degree, shadowing, or experiential learning programs. There is a need to evaluate these programs in an organized manner and track the career paths of participants. Expand partnership programs between schools having graduate programs and those that do not. In addition, AACP should develop programming to encourage further expansion of innovative programs and to highlight programs that appear to be effective as "best practices."
- Study the results of the recently completed work of the Academic Leadership Fellows group and further explore factors influencing the recruitment and retention of faculty members.
- Develop an ongoing survey vehicle to longitudinally assess the effectiveness of APPE programs that encourage students to consider and pursue careers in academic pharmacy.

Task Force members recognize that implementing the proposed strategies for change will not be easy and that addressing these issues in an efficient and effective manner will require the work of a variety of individuals and organizations. For example, model programs and "best practices" must be developed, implemented, evaluated, and shared with other member institutions. Administrators must display a firm commitment to implementing

and sustaining effective faculty development programs. Many have advocated for such programs, but sufficient resources have not been allocated to support these important programs. Academic leaders must also survey their academic environments to make sure that they reinforce the essential motivators and minimize potential detractors to academic life. In addition, AACP and other pharmacy organizations must address the broad practice and educational issues that impact the pharmacy faculty workforce. Based on its current review, the Task Force reaffirms the call to action echoed by previous individuals. Numerous challenges exist. However, the Task Force is somewhat encouraged by the fact that many of the proposed new strategies are fairly innovative, and that certain members of the academy are working on these issues. The time for contemplation has past; the time for action is now.

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