NOTE

Value of pharmacy residency training: A survey of the academic medical center perspective

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Purpose. The results of a survey assessing the views of pharmacy directors, medical center executives, and pharmacists on the value of residency programs to their institutions are reported.

Methods. In a two-phase survey entailing face-to-face interviews and the use of an electronic questionnaire, representatives of the pharmacy departments and executive staffs of eight academic medical centers were asked to rate the impact of pharmacy residency programs in areas such as educational and research innovation, quality-of-care and cost outcomes, and opportunities for revenue generation.

Results. Seven hospital administrators, eight directors of pharmacy, 122 pharmacists serving as residency preceptors, and 91 nonpreceptor pharmacists participated in the survey. The survey responses indicated that hospital administrators view pharmacy residency programs as important contributors to their institutions' prestige, academic success, and capacity for delivering educational programs. All directors of pharmacy surveyed were in agreement that the costs associated with conducting a pharmacy residency program are outweighed by the cost savings achieved through resident contributions to patient care and medication error prevention. A large majority (90%) of preceptor pharmacists agreed or strongly agreed that residents help reduce medication errors by educating prescribers and other activities that promote rational medication use; only about half of nonpreceptor pharmacists shared that view, although 65% of nonpreceptors acknowledged the contributions of residents to overall pharmacy department success.

Conclusion. All groups of survey respondents viewed residency programs as important assets to their institutions, especially in the areas of institutional prestige, staff recruitment, and professional development and education.

Index terms: Administration; Administrators; Costs; Data collection; Economics; Education, pharmaceutical; Pharmacists, hospital; Pharmacy, institutional, hospital; Preceptors; Quality assurance

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Postgraduate residency training is becoming more common in the pharmacy profession, a trend that is driven by a number of factors. The pharmacist shortage that was prevalent in the early to mid-1990s has been greatly diminished by the recent economic recession. Poor job availability has influenced graduating pharmacists to consider alternatives to directly entering the work force, with postgraduate training increasingly seen as an attractive option.

In addition to a lack of available jobs in the current market, another factor driving increased interest in residency programs is the advocacy of professional pharmacy organizations for the completion of a residency as the "gold standard" of basic training for pharmacy school graduates. The American Society of Health-System Pharmacists (ASHP) envisions a profession in which 90%

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of pharmacists entering health-system practice by the year 2015 will have completed residency training.[1] Similarly, the American College of Clinical Pharmacy (ACCP) advocates a vision calling for all pharmacists planning to be involved in direct patient care to complete a pharmacy residency by the year 2020.[2]

Pharmacy students have responded to these changes in job availability and professional vision by applying to residency programs in record numbers. Applicants to pharmacy residency programs now far outnumber the available positions each year. Commensurate with this rising demand is a growing need for well-trained pharmacists to manage increasingly complex medication regimens and perform medication management services as the profession moves toward further integration of pharmacists into direct patient care roles.

The ASHP and ACCP visions of residency training will not be achieved unless current residency programs expand their capacity and new programs are developed. To that end, the profession is challenged to demonstrate that pharmacy residency training is beneficial in terms of financial, patient care, and educational advantages in order to justify the cost and time necessary to establish and maintain residency programs.

The value of conducting pharmacy residency training has been described in the literature from both financial and service-enhancement perspectives.[3-5] The purpose of the survey described in this article was to determine the benefits realized by academic medical centers that host pharmacy residency programs, as identified by pharmacy department staff and senior medical center executives.

Methods

In accordance with the "points of justification," or central themes of value, introduced in a 2010 ACCP white paper on the value of residency training by Smith et al.,[3] our investigation probed elements of the value of residency training to hosting institutions in the following categories: staff recruitment, development, and satisfaction; support of innovation; contributions to quality and cost indicators; increased capacity to deliver education and scholarship; expanded revenue opportunities; indirect revenues; and external funding. The two-phase survey, which was conducted in the spring of 2010, was approved by the institutional review board at each participating site.

The survey targeted pharmacists and executives at member institutions of the University HealthSystem Consortium (UHC), a collaboration of U.S. nonprofit academic medical centers and affiliate programs. Representatives of eight UHC member institutions were invited to participate.

Phase 1 of the survey consisted of a face-to-face, scripted interview with the director of pharmacy at each institution, as well as a separate interview with the hospital administrator to whom the director reported (chief executive officer, chief operating officer, or person in an equivalent position). The interview sessions were conducted by members of the research team, who entered the interview responses into a common data collection form.

Phase 2 of the study assessed the value of pharmacy residency training from the perspective of two cohorts within each institution's department of pharmacy: pharmacists who serve as residency preceptors ("preceptor pharmacists") and pharmacists not involved in preceptorship programs ("nonpreceptor pharmacists"). All staff pharmacists employed by the participating institutions for at least two years were invited to participate in the survey through an e-mail message containing a link to an electronic questionnaire. Through a subsequent e-mail message, invited participants were reminded to provide their responses.

Both the scripted interviews and electronic questionnaires consisted of open-ended and structured (i.e., multiple-choice) questions designed to elicit information about residency program characteristics, the specific contributions of residents to the institution, the integration of residents into departmental activities, and the depth of the survey respondents' engagement with residents. Statements regarding the value provided by the residency program were also posed; respondents rated the degree of agreement with each statement on a 5-point Likert scale, with possible responses ranging from "strongly disagree" (a score of 1) to "strongly agree" (a score of 5). Individual questionnaires and interview scripts ranged from 17 questions (nonpreceptor pharmacists) to 26 questions (directors of pharmacy). Informed consent (for the phase 1 survey) or documentation of assent or declination of participation through the response to the e-mail survey invitation (for the phase 2 survey) was obtained at each site, as requested by the institutional review board. The collected data were analyzed using descriptive statistics. Responses to open-ended questions were categorized by themes. The respondents' level of agreement with the value statements was expressed as a mean score on a scale of 1–5.

Results

In phase 1 of the survey, eight directors of pharmacy and seven hospital administrators consented to participate (response rates of 100% and 87.5%, respectively). Six hundred pharmacists were invited to participate in phase 2 of the survey; 91 nonpreceptor pharmacists and 122 preceptor pharmacists consented to participate (response rates of about 15% and 20%, respectively). All respondents did not answer every survey question. The survey questions are shown in Tables 1–4.

Table 1.
Hospital Administrator Ratings of Elements of Residency Program Value

Value Category/Element	Mean (Mode)[a]
Support of innovation	
Residency-trained pharmacists improve the quality of patient care at your institution.[b]	4.71 (5)
A pharmacy residency program increases the reputation of your institution.[b]	4.86 (5)
Finding innovative ways to provide patient care is vital to your institution's success.[b]	4.86 (5)
Contributions to quality and cost indicators	
The presence of pharmacy residents on medical team rounds (making recommendations at the time therapy decisions are made) helps to reduce drug errors and drug costs at your institution.[b]	4.43 (4)
To what degree do you believe that pharmacy residents in your institution impact the following quality and cost indicators?	
Adverse drug reaction or medication error reporting and prevention[c]	4.14 (4)
Education regarding medication use[c]	4.29 (4)
Elimination of duplicate therapy[c]	4.00 (4)
Pharmacotherapy consultations[c]	4.14 (4)
Medication-related cost savings[c]	3.86 (3)
Increased capacity to deliver education and scholarship	
Your capacity for educational programs (e.g., education of pharmacists, technicians, nurses, and physicians) is expanded by your pharmacy residency program.[b]	4.67 (5)
Expanded revenue opportunities	
Your pharmacy residency program provides an opportunity for expanding pharmacy services that generate revenue.[b]	3.71 (4)
Indirect revenues	
Pharmacy residents' contributions to clinical services help achieve performance benchmarks at your institution.[b]	3.60 (4)

[a]All respondents did not answer all survey items; data are mean (mode) of submitted responses for each item.
[b]Rated on 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.
[c]Rated on 5-point Likert scale: 1 = no impact, 2 = minimal impact, 3 = neutral, 4 = significant impact, 5 = extensive impact.

The mean ± S.D. capacity of the responding institutions was 510 ± 245 licensed beds. The mean ± S.D. number of preceptor pharmacists at the participating medical centers was 34.6 ± 10.7; the mean ± S.D. number of preceptor pharmacists was 38.8 ± 24.6. The mean ± S.D. number of postgraduate year 1 (PGY1) residency positions offered by the medical centers annually was 6.6 ± 2.1; the mean ± S.D. number of postgraduate year 2 (PGY2) positions was 5.3 ± 4.1.[6]

Phase 1 survey results. The medical center executives and directors of pharmacy who participated in the first phase of the survey indicated important resident contributions in all value categories evaluated.

Staff recruitment, development, and satisfaction. The directors of pharmacy indicated that a median total of 43 residents graduated from their respective programs in the preceding five years (median of 9 residents per year). Of those residents, a median of 6 were retained as staff or clinical pharmacists each year. The directors reported numerous advantages of hiring a graduating resident, including ease of training and integrating former residents into pharmacy systems; former residents' familiarity with the organizational culture and values, strong clinical knowledge base, and confidence gained from training, as well as their established relationships with interdisciplinary teams; and their own understanding of the former residents' training and quality of work.

Six of the eight pharmacy directors and all seven hospital administrators surveyed indicated that they would like to expand pharmacy residents' involvement in the area of staff development. There was general agreement in both groups that pharmacy residency programs increase their institutions' capacity for delivering educational and scholarship programs, primarily by providing continuing education to pharmacists and pharmacy technicians. A majority of hospital administrators (four of seven) indicated support for pharmacy residents taking an active role in interdisciplinary education, including in-service education and didactic teaching.

Support of innovation. The directors of pharmacy who participated in the survey cited myriad resident contributions to departmental innovation ranging from research projects, participation in staff development, and patient care activities to involvement in interdisciplinary committees and projects and safety enhancements. The directors of pharmacy agreed that residency programs al-

Table 2.
Director of Pharmacy Ratings of Elements of Residency Program Value

Value Category/Element	Mean Score[a]
Contributions to quality and cost indicators	
Publishing on innovative ways of caring for patients at your institution is important.[b]	4.75
The costs of having a resident (or a residency program) are outweighed by the amount of savings residents contribute through prevention of drug errors and other interventions.[b]	4.38
The pharmacy residents at your hospital participate in or provide clinical services that are associated with significant cost savings to the pharmacy department.[b]	4.63
Increased capacity to deliver education and scholarship	
To what extent are you involved in the education of pharmacy residents at your institution?[c]	3.38
Your capacity for educational programs (e.g., education of pharmacists, technicians, nurses, and physicians) is expanded by your pharmacy residency program.[b]	4.86
The engagement of your staff pharmacists and/or pharmacy preceptors in residency projects maintains or develops their own research skills.[b]	4.25
Pharmacy residents allow for more research and/or scholarship activities to be performed within your department.[b]	4.63
Expanded revenue opportunities	
Pharmacy residents assist in administrative tasks that are geared toward generating revenue and/or cost savings.[b]	4.00

[a]All respondents did not answer all survey items; data are mean of submitted responses for each item.
[b]Rated on 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.
[c]Rated on 5-point Likert scale: 1 = not involved, 2 = somewhat involved, 3 = neutral, 4 = significantly involved, 5 = extensively involved.

low for an expanded departmental capacity for research and scholarship activities and that the involvement of pharmacists in residency research projects helps to maintain and develop their own research skills.

Specific clinical services provided by residents, as reported by the pharmacy directors, included pharmacokinetic monitoring, antimicrobial stewardship, core-measure compliance, i.v. waste monitoring, and the development of protocols addressing issues such as ventilator-associated pneumonia, sedation in the intensive care unit, and the use of high-cost and high-risk medications. Furthermore, the surveyed directors indicated that residents were providing clinical pharmacy services in ambulatory care clinics in which pharmacists had not previously provided direct patient care. Six of the eight directors of pharmacy variously estimated that 21–40% of program implementation in their department was attributable to resident involvement.

All hospital administrators surveyed indicated that their pharmacy residency programs benefit the advancement of innovation at their institution; they cited specific projects they would like to see implemented by residency-trained pharmacists, including involvement with the introduction of new pharmacy dispensing technology, anticoagulation clinic expansion, and formulary management. When asked how residency-trained pharmacists contribute to innovation at their institutions, the hospital administrators provided examples such as resident participation in streamlining process improvements, developing interdisciplinary models of care, advancing patient interaction and education, and performing drug-use evaluation projects. In addition, all the hospital administrators agreed or strongly agreed that residency-trained pharmacists improve the quality of patient care; they also agreed that pharmacy residency programs increase their institution's reputation and that pharmacy residents contribute to the fulfillment of their institution's academic mission.

Contributions to quality and cost indicators. In aggregate, the directors of pharmacy reported that residents completed a mean ± S.D. of 9.2 ± 4.8 projects per year related to achieving cost savings or quality improvements. Although resident roles in such projects vary, the vast majority of respondents reported that residents typically serve in the role of primary investigator or coinvestigator.

All directors of pharmacy surveyed were in agreement that the costs of operating a residency program are outweighed by the cost savings residents help achieve through clinical interventions and error prevention. A majority of the hospital administrators indicated that pharmacy residents have a significant impact in the areas of reporting of adverse drug reactions or medication errors, education regarding medication use, elimination of duplicate therapy, pharmacotherapy consultations, and medication-related cost savings.

All hospital administrators surveyed agreed or strongly agreed that the presence of pharmacy residents during medical team clinical rounds helps to reduce drug errors and drug

Table 3.
Nonpreceptor Pharmacist Ratings of Elements of Residency Program Value

Value Category/Element	Mean Score[a]
Staff recruitment, development, and satisfaction	
The staffing component of a pharmacy residency is a benefit for the resident.[b]	4.37
The staffing component of a pharmacy residency is a benefit for the hospital.[b]	4.08
I view having pharmacy residents as a burden.[b]	2.10
Staffing support by the residents allows for more schedule flexibility, ability to take vacation, or ability to work fewer weekends.[b]	3.27
Pharmacy residents' staffing requirements help secure pharmacist shift coverage throughout the pharmacy department.[b]	3.38
Pharmacy residents assist in staff pharmacist development (e.g., in-services, seminars).[b]	3.56
Support of innovation	
Pharmacy residents contribute to innovative ideas at your institution.[b]	3.60
You have knowledge of the types of projects pharmacy residents are working on.[b]	2.90
You have time to assist pharmacy residents on projects.[b]	2.60
A residency program is a vital component of the success of a pharmacy department.[b]	3.60
Contributions to quality and cost indicators	
To what extent are pharmacy residents involved with departmental cost savings or quality-improvement initiatives?[c]	3.11
Pharmacy residents provide increased flexibility in performing project development and/or formulary review work that financially benefits your institution.[b]	3.58
When staffing, pharmacy residents make a significant contribution to decreasing drug errors and increasing appropriate drug utilization.[b]	3.35
Increased capacity to deliver education and scholarship	
Training pharmacy residents is viewed as a teaching opportunity[b]	3.91
Expanded revenue opportunities	
Pharmacy residents allow your department to expand revenue-generating pharmacy services offered in your institution (e.g., warfarin clinic, smoking cessation, patient education, medication therapy management).[b]	3.15
Indirect revenues	
The presence of a pharmacy resident helps to improve workflow and allows for more efficient use of personnel.[b]	3.14

[a]All respondents did not answer all survey items; data are mean of submitted responses for each item.
[b]Rated on 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.
[c]Rated on 5-point Likert scale: 1 = no involvement, 2 = minimal involvement, 3 = neutral, 4 = significant involvement, 5 = extensive involvement.

costs at their institution. Six of the eight hospital administrators were aware that some pharmacy services, including inpatient order verification and on-call services, were being performed by pharmacy residents. Half of the administrators believed there were no drawbacks of pharmacy residents providing such services; the other respondents cited potential patient safety concerns during the initial training of residents and during the annual transition from one residency class to the next.

Expanded revenue opportunities and indirect revenues. A majority of the directors of pharmacy surveyed indicated that pharmacy residents assist in administrative tasks geared toward generating revenue and cost savings. They noted the potential for future resident expansion of revenue-generating services (e.g., warfarin clinics, smoking cessation clinics, medication therapy management services). A majority of the hospital administrators strongly agreed or agreed that pharmacy residents' contributions to clinical services help achieve performance benchmarks and that residency programs provide an opportunity for the expansion of pharmacy services that generate revenue.

External funding. Seven of the eight directors of pharmacy reported some level of external funding of their institution's residency program, although they noted that the proportion of program funding derived from external sources is difficult to quantify. Half of the directors of pharmacy reported the receipt of residency program funding from an affiliated school of pharmacy; they indicated that, in return for that support, residents participate in pharmacy school activities such as laboratory class facilitation, recitation teaching, and service as preceptors to students on clinical rotations.

Table 4.
Preceptor Pharmacist Ratings of Elements of Residency Program Value

Value Category/Element	Mean (Mode)[a]
Staff recruitment, development, and satisfaction	
The staffing component of a pharmacy residency is a benefit for the resident.[b]	4.45 (5)
The staffing component of a pharmacy residency is a benefit for the hospital.[b]	4.38 (5)
Staffing support by the residents allows for more schedule flexibility, ability to take vacation, or ability to work fewer weekends.[b]	3.48 (4)
Support of innovation	
Assistance from residents helps you to be more productive in your research.[b]	3.70 (4)
The pharmacy residents need more guidance in the research process.[b]	3.18 (4)
Contributions to quality and cost indicators	
Pharmacy residents contribute to medication cost savings during patient care activities.[b]	4.18 (4)
To what extent are pharmacy residents involved with departmental cost savings or quality-improvement initiatives?[c]	3.36 (4)
The interventions that pharmacy residents make contribute to a reduction in drug errors on your service.[b]	3.96 (4)
The presence of a resident on service with you increases cost-effective use of medications.[b]	3.88 (4)
Residents on service provide education to prescribers that contributes to an increase in rational utilization of medications at your hospital.[b]	4.13 (4)
Increased capacity to deliver education and scholarship	
Pharmacy residents allow for an increased capacity to precept pharmacy students.[b]	3.81 (4)
Your pharmacy students' rotation experiences are improved when a pharmacy resident is present.[b]	4.06 (4)
Pharmacy residents allow for more research and/or scholarship activities to be performed within your department.[b]	4.12 (4)
Expanded revenue opportunities	
Pharmacy residents increase flexibility in performing project development and/or formulary review work that financially benefits your institution.[b]	3.65 (4)
Indirect revenues	
Services provided by your pharmacy residents increase the efficiency of other providers (e.g., staff pharmacists, medical providers, nurses) in their respective clinical area by absorbing workload, answering questions, and aiding in distributive services.[b]	3.95 (4)

[a]All respondents did not answer all survey items; data are mean of submitted responses for each item.
[b]Rated on 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.
[c]Rated on 5-point Likert scale: 1 = no involvement, 2 = minimal involvement, 3 = neutral, 4 = significant involvement, 5 = extensive involvement.

Six of the seven hospital administrators surveyed were aware that PGY1 programs are funded by the Centers for Medicare and Medicaid Services (CMS). When the hospital administrators were asked to estimate how much external revenue for the pharmacy department is generated by residents in their programs each year, three put the amount at less than $5,000, one estimated $10,000–$20,000, and three estimated the amount at more than $25,000.

CMS funding for PGY2 pharmacy residency programs was discontinued in 2003 and is no longer a source of external revenue. During interviews, the pharmacy directors cited several points to highlight in seeking health-system funding for additional PGY2 residency positions. Those points include the potential for resident involvement in specific programs (e.g., antimicrobial stewardship); likely cost savings from residents' clinical interventions, research projects, and involvement in quality-improvement projects and committees; an increased ability to expand service areas covered by clinical pharmacists; the potential for funding from sources outside the medical center (including funding from schools of pharmacy and grant support); and the growing need for specialty-trained pharmacists.

Phase 2 survey results. The staff pharmacists who responded to the survey questionnaire indicated that residents are making substantial contributions in all value categories evaluated in the survey.

Staff recruitment, development, and satisfaction. The preceptor and nonpreceptor pharmacists strongly agreed that the staffing component of residency training is of benefit to both the resident and the hosting institution. A majority of survey respondents from both groups agreed or strongly agreed that staffing requirements of residencies can facilitate consistent shift coverage and scheduling flexibility, allowing

for vacation time and fewer weekend shifts for pharmacy personnel.

Sixty-five percent (n = 48) of the nonpreceptor pharmacists who answered the relevant survey item (n = 74) agreed that a residency program is a vital component of the success of the pharmacy department, and 63% (n = 47) indicated that residents are involved in staff development through the provision of in-service sessions and seminars.

The preceptor pharmacists cited several other activities in which they would like residents to participate: providing continuing education through grand rounds, journal clubs, topic discussions, and reporting of "clinical pearls"; involvement in competency assessment; participation on the pharmacy and therapeutics committee; presenting at a monthly morbidity and mortality meeting; and providing basic and advanced cardiac life-support training. They also agreed or strongly agreed that residents increase their ability to serve as preceptors to pharmacy students while improving students' rotational experiences and allowing more scholarship activities to be performed in their department.

Support of innovation. Sixty-seven percent (n = 50) of nonpreceptor pharmacists who answered the relevant survey items (n = 75) were aware of the types of research projects in which residents are involved, but 48% (n = 36) indicated that they did not have time to assist pharmacy residents. The majority of preceptor pharmacists indicated that they spend from zero to two hours per week assisting residents with research projects. The preceptor pharmacists acknowledged the benefits of working with residents on research projects in facilitating their own contributions to innovation; 45% (n = 44) of preceptors who answered the relevant survey item (n = 98) agreed that resident assistance helps them to be more productive in their research.

Contributions to quality and cost indicators. About 35% of the nonpreceptor pharmacists and 47% of the preceptor pharmacists who completed the relevant survey items indicated that residents are significantly involved in achieving departmental cost savings or quality improvements. The responding pharmacists cited a number of resident activities in those areas, such as providing pharmacotherapy consultations; providing education on medication use, dosing medications, and antimicrobial regimen changes; medication error reporting and prevention; elimination of duplicate therapy; and medication cost control.

A large majority (90%) of preceptor pharmacists who responded to the relevant survey items (n = 98) agreed or strongly agreed that residents provide contributions to quality and cost indicators. Among other activities, resident participation in clinical rounds increases the cost-effective use of medications, contributes to medication cost savings related to patient care activities, contributes to a reduction in medication errors, and helps to provide education to prescribers that contributes to an increase in the rational use of medications.

With regard to resident staffing duties, over 50% (n = 38) of nonpreceptor pharmacists who answered the relevant survey item (n = 74) indicated that pharmacy residents make a significant contribution to decreasing drug errors and increasing appropriate drug use. Fifty-three percent of responding nonpreceptor pharmacists (39 of 73) and 64% of responding preceptor pharmacists (60 of 93) agreed or strongly agreed that pharmacy residents provide increased flexibility in project development and formulary review that results in a financial benefit to their institutions.

Expanded revenue opportunities. Less than one third (n = 28) of the nonpreceptor pharmacists who answered the relevant survey item (n = 72) agreed that pharmacy residents allow their department to expand revenue-generating pharmacy services (e.g., warfarin clinic, smoking cessation, patient education, medication therapy management). Over 80% of preceptor pharmacists (79 of 98 respondents) indicated that residents contribute to the quality of revenue-generating pharmacy services in the areas of therapeutic drug monitoring, patient education, warfarin dosing and monitoring, and medication reconciliation.

Discussion

Our survey of pharmacy directors, hospital administrators, and staff pharmacists was designed to help delineate the value of conducting a residency program from the perspective of program insiders. All of the individuals surveyed identified benefits of residency programs in all of the evaluated value categories. In general, the pharmacy directors and hospital administrators rated the value of residency training more highly than did staff pharmacists, and the residency preceptors rated the value of residency training more highly than did pharmacists not serving as preceptors.

The limitations of our study included the small number and similar characteristics of the hospitals represented in the survey; because of those limitations, the survey findings cannot be considered indicative of the views and experiences of other U.S. institutions conducting residency training (e.g., community hospitals, private hospitals, pharmaceutical industry organizations, Public Health Service and Veterans Affairs facilities). In addition, a respondent bias toward a more favorable view of the value of pharmacy residency training cannot be discounted, as the survey specifically targeted parties closely involved with and therefore more invested in the success of residency programs. Moreover, pharmacy resi-

dents are fairly well integrated into the practice model at all of the institutions represented in the survey; thus, our findings may not reflect the experience of institutions with residency programs that are fairly new or not well integrated into the organizational culture.

Support for residency programs is needed at all levels of health-system organizational structures. Administrator support is necessary to approve new positions for residents. The support of directors of pharmacy departments is needed to help justify residency program spending and to evaluate the value of new residency positions. Staff pharmacists and preceptors—whose commitment and passion are essential to the success of a residency program—need to perceive value in the addition of new residency positions. Our survey highlighted several areas in which additional support could be provided to bolster residency programs.

To help keep senior leadership informed of the benefits of hosting residency programs, a residency program "annual report" could be produced to summarize the accomplishments of each residency class, including the cost savings and quality enhancements achieved. The survey results reported here indicate that hospital leaders place a significant value on the education of the medical, nursing, and pharmacy staffs; therefore, a list of educational in-services, lectures, and learned competencies could be included in the annual report. Examples of resident activities that enhance the institution's reputation (e.g., presentations at national professional meetings), as well as services provided that would not be feasible without resident participation, should also be highlighted.

To further bolster support for residency programs, institutions could take steps to increase resident involvement in multidisciplinary education. This aspect of residents' contributions was highly valued by all groups of survey respondents. Preceptors and other staff pharmacists indicated that they would value even more involvement of residents in staff development. Hospital administrators indicated that they would value increased resident involvement in providing education to members of disciplines other than pharmacy. To prepare residents for such activities, a greater focus on the educational skills of the residents may be needed. Additional formal training in teaching and precepting may be of benefit for residents. To that end, residency program directors could explore the feasibility of providing a teaching certificate program to pharmacy residents.

New models of training may be needed to increase the capacity of existing residency programs. One aspect of residency programs highly valued by pharmacy directors is the ability to recruit residents for staff positions at the end of the residency year; however, all residents typically graduate at the same time each year. Directors' recruiting ability could be increased through the use of a staggered training schedule, with different starting dates for different groups of residents. In addition, current preceptor:resident ratios could be examined. Instead of viewing the preceptor–resident relationship as a one-on-one relationship, residency programs might explore a concept of establishing "learning teams" of residents with one supervising preceptor. A focus on developing preceptors' skills in supervising multiple residents would need to be explored if such a model were implemented.

Conclusion

All groups of survey respondents viewed residency programs as important assets to their institutions, especially in the areas of institutional prestige, staff recruitment, and professional development and education.

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