

The State of Clinical Pharmacy Practice in Family Practice Residency Programs

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Background: Clinical pharmacists have been involved with family practice residencies for more than 20 years. This survey was designed to evaluate the current state of clinical pharmacy services in the family practice residency program (FPRP) in the United States. **Methods:** All FPRPs were contacted to identify clinical pharmacists involved with their programs. These pharmacists were directed to a password-protected Web address where the survey was posted. Completed surveys were submitted on-line, and data were retrieved for analysis. **Results:** Of the 579 residencies, 155 (26.7%) acknowledged 174 clinical pharmacists working within their program. Responses were received by 130 of the pharmacists (74.7% response rate). These pharmacists held academic appointments in both their institution's school of pharmacy (80%) and the school of medicine (53.2%). The mean age of the respondents was 36.5 ± 8.2 years, and the mean salary was \$66,000 (range \$46,000–\$125,000). A majority of the pharmacists received their funding from a single source, and 32.2% received full salary support from the FPRP. The respondents spent more than half of their time with the residency program. Overall, their time was divided into teaching responsibilities (42.7%), patient care activities (37.1%), research (12.1%), administrative functions (11.8%), and drug distribution (<5%). **Conclusions:** Pharmacists are actively involved in 26.7% of FPRPs. This survey demonstrates increased salary support from the FPRP in comparison to past surveys. Additionally, more pharmacists hold academic appointments within schools of medicine.

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Clinical pharmacy services in family practice residencies have been in existence for more than 20 years.¹ The value of pharmacists in the training of family physicians was first described in the early 1980s.²⁻⁵ Since that time, there has been increasing involvement of clinical pharmacists, as teachers, within the family practice residency program (FPRP).⁶⁻⁷ This has been facilitated by the adoption of the multidisciplinary approach to training family physicians and the increasing focus on clinical pharmacy training programs in schools of pharmacy. Within family practice residencies, clinical pharmacists have been shown to improve medication prescribing,⁸⁻¹⁰ patient satisfaction,¹¹ and patient outcomes.^{12,13} In other ambulatory care environments, clinical pharmacists have been shown to improve patient

outcomes in many clinical conditions (ie, anticoagulation, asthma, diabetes, heart failure, and hypertension).¹ This information has helped support the role of clinical pharmacists as teachers in FPRPs, to increase residents' ability to prescribe and manage complex medication regimens.

Two surveys have described the extent of clinical pharmacists' involvement with FPRPs in the United States. In 1981, 29% of the 323 responding programs had at least one pharmacist involved with the FPRP.⁴ As a follow-up in 1990, Shaughnessy and Hume conducted a similar survey to determine how pharmacy involvement with FPRPs had changed.⁶ The directors of 325 programs responded to the 1990 questionnaire, and 24% indicated that a pharmacist was directly involved with their FPRP. Of the programs with a pharmacist, 80 completed a separate survey describing their function and responsibilities with the FPRP. In both the 1981 and 1990 surveys, most pharmacists had an academic appointment with a school of pharmacy or school of medicine, and many held a doctor of pharmacy degree. Most pharmacists were funded from academic or

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hospital sources. Reported activities and responsibilities also did not change over the years, with pharmacists providing primarily teaching and patient care services.

With the recent formation of the Society of Teachers of Family Medicine (STFM) Group on Pharmacotherapy, members decided that a current survey of pharmacists in FPRPs was needed for several reasons. First, the increasing number of residency programs in the 1990s may have influenced the number and activities of clinical pharmacists. In addition, previous surveys included residency programs approved by the Accreditation Council for Graduate Medical Education (ACGME) but not programs approved by the American Osteopathic Association (AOA). Also, the changes in schools of pharmacy (the entry-level doctor of pharmacy degree and increasing focus on clinical pharmacy residency programs) and increased need for training sites may have changed the population of pharmacists who are teachers in family medicine. Therefore, this survey was designed to evaluate the current state of clinical pharmacy services in FPRPs.

Methods

A 30-item survey was designed to collect demographic information and to assess the educational, clinical service, research, and administrative activities of clinical pharmacists in FPRPs. The survey was pilot tested among members of the STFM Group on Pharmacotherapy and revised accordingly. The completed survey was incorporated in a Web page and posted on the Internet. A linked database was created in which entries from the Web page were stored.

The list of ACGME-approved FPRPs was obtained by reviewing the ACGME and American Academy of Family Physicians (AAFP) directory of residency programs. The list of AOA-approved FPRPs was obtained by reviewing the AOA directory of residency programs. All residencies were contacted in September 1999 by telephone or fax to identify clinical pharmacists directly involved with the programs. The name, telephone number, and e-mail address of each pharmacist was recorded, and each was assigned an individual password to protect confidentiality of responses. Each subject was contacted in January 2000 via e-mail, with an explanation of the survey, the survey Web address, and their individual password to complete the survey. Nonrespondents were contacted again in April and August 2000 by e-mail and telephone to encourage completion of the survey. Data was exported into Microsoft Excel[®] for descriptive analysis. The survey was approved by the Institutional Review Board at the Medical University of South Carolina.

Results

A total of 579 FPRPs were identified from the residency program directories (468 ACGME and 111 AOA programs). Most programs were contacted (95.8%), and 155 residencies (26.7%) indicated that a clinical pharmacist was directly involved with the program (29.9% of ACGME-approved and 13.5% of AOA-approved programs). A breakdown based on AAFP program structure for ACGME-approved programs is found in Table 1. Pharmacists are located in diverse geographic regions, as noted in Table 2.

Subjects

More specifically, the residency programs identified 174 clinical pharmacists involved with their programs. Responses were received from 130 of these pharmacists (75% response rate). They had with a mean age of 36.5 ± 8.2 years (range 25–59 years). Table 3 shows other demographic characteristics and education of the respondents.

Certification

Board certification, approved by the Board of Pharmaceutical Specialties, is not required for licensure and is optional for clinical pharmacists. Certification can be obtained in pharmacotherapy, psychiatry, oncology, nutrition, and nuclear medicine, but most pharmacists in FPRPs are board-certified pharmacotherapy specialists (BCPS). Academic appointments in the schools of pharmacy and medicine were held by 80.0% and 52.3% of pharmacists, respectively (Table 4). Respondents held administrative titles within the FPRP, including director of research (n=4) and assistant residency program director (n=2).

Salary

The mean salary for all respondents was \$66,600 (range \$46,000–\$125,000). Salaries varied according

Table 1

Breakdown by AAFP Program Structure
for ACGME-approved Residency Programs
With a Clinical Pharmacist

<i>AAFP Program Structure</i>	<i>% of Programs With a Clinical Pharmacist on Faculty</i>
All community-based programs	29.7%
Community based, unaffiliated with a university	15.4%
Community based, university affiliated	31.4%
Community based, university administered	29.0%
University-based programs	36.5%
Military programs	6.7%

AAFP—American Academy of Family Physicians

ACGME—Accreditation Council for Graduate Medical Education

Table 2

Geographic Representation of Clinical Pharmacists and FPRP by AAFP Designated Regions

Region	% of Clinical Pharmacists	% of All FPRPs
East North Central (Illinois, Indiana, Michigan, Ohio, Wisconsin)	20.0	20.9
South Atlantic (Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia)	18.9	15.4
West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota)	14.1	9.3
Middle Atlantic (New Jersey, New York, Pennsylvania)	11.9	14.4
Pacific (Alaska, California, Hawaii, Oregon, Washington)	10.3	12.7
West South Central (Arkansas, Louisiana, Oklahoma, Texas)	9.2	11.2
Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming)	8.1	6.7
East South Central (Alabama, Kentucky, Mississippi, Tennessee)	4.3	5.9
New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont)	3.2	3.5

FPRP—family practice residency program
 AAFP—American Academy of Family Physicians

to academic rank (Table 5). Sources of salary primarily included the FPRP, the school of pharmacy, and the hospital pharmacy department (Figure 1). Respondents reported a single source of salary in 70% of cases; nearly half of these (46% of the 70%) received full salary support from the FPRP. Most pharmacists (89.3%) with full salary support from the FPRP were located in community-based programs, whereas pharmacists in university-based programs more often had salary support from the school of pharmacy. Fourteen percent of respondents reported an increase in funding from the FPRP during their tenure in the position.

Job Description

When asked to quantify the total time directly involved with the FPRP, and the time distribution among various activities, clinical pharmacists reported spending an average of 61.4% of their time in the FPRP, and 23.3% were fully dedicated to the program. Specifically, respondents spent 42.7% of their time involved in teaching, 37.1% in patient care, 12.1% in research activities, 11.8% in administrative functions, and less

Table 3

Demographics of 130 Respondents

Variable	Percent
Male/female	46/54
Education	
BS in pharmacy	10.8
Doctor of pharmacy (entry level)	43.8
BS in pharmacy and doctor of pharmacy	45.4
Residency	68.5
Family medicine/ambulatory care	47.2
General (pharmacy practice)	41.6
Internal medicine	7.9
Other	3.3
Fellowship	12.3
Board certified	43.9
Pharmacotherapy	94.7
Other	5.3
Years since last degree	
<5 years	37.7
6–10 years	28.5
11–15 years	11.5
16–20 years	7.7
>20 years	14.6
Years working in family practice	
<5 years	58.4
6–10 years	23.1
11–15 years	10.0
16–20 years	4.6
>20 years	3.9

Table 4

Academic Appointments of Respondents

Academic Rank	School of Pharmacy (%)	School of Medicine (%)
Clinical instructor	12 (9.2)	13 (10.0)
Assistant professor	60 (46.2)	28 (21.5)
Associate professor	25 (20.0)	22 (16.9)
Professor	6 (4.6)	5 (3.9)
Did not indicate	26 (20.0)	62 (47.7)

than 5% in distribution of medications. There were no differences in the time spent by clinical pharmacists in specific activities between community- and university-based programs.

The time devoted to teaching was divided among teaching family practice residents (42.1%), medical students (10.6%), pharmacy students (36.7%), pharmacy

Table 5

Annual Salary by Academic Rank
in School of Pharmacy

Academic Rank	Mean Salary (\$)	Range (\$)
Clinical instructor	65,608	46,000–75,000
Assistant professor	61,336	51,000–94,000
Associate professor	75,435	58,200–125,000
Professor	76,500	68,000–90,000

residents (14.2%), physician assistants, and nurse practitioners (25.4%). Pharmacists in community-based programs spent more time teaching family practice residents (45.7% versus 30.7% in university-based programs) and less time teaching pharmacy students (33.1% versus 47.2%). Teaching was often delivered at the point of care (45.1%) through consultation or chart review (37.0%), during didactic presentations (23.3%), or through a newsletter (9.8%). Teaching occurred in the outpatient setting (58.8%), during inpatient rounds (37.9%), at the nursing home (5.2%), and in the classroom (17.7%). A formal pharmacotherapy curriculum was present in 38.5% of the respondents' programs, and these curricula were primarily coordinated by the clinical pharmacist (82.4%). One third of the clinical pharmacists reported active membership in STFM.

Clinical pharmacists were involved in patient care services, primarily in the outpatient setting (68.6%) through formal consults (37.5%) and specialty clinics (31.4%). Specialty clinics included anticoagulation and diabetes management, for example, and such clinics were more commonly found in community-based programs (35.2% versus 11.3% in university-based programs). Research activities included collaborative work within the FPRP (52.4%) and investigative drug trials (18.4%). Most pharmacists were involved in clinical research (72.8%) rather than educational research (38.0%). Respondents were involved in many administrative functions, including committee work (33.0%), inter-

Table 6

Trends in Clinical Pharmacy Practice
in Family Practice Residency Programs

Year	Number of Residency Programs	FPRPs With Clinical Pharmacist
1981 ⁴		
ACGME	359	26.1%
1990 ⁶		
ACGME	381	20.1%
2000		
ACGME	468	29.9%
AOA	111	13.5%
Total	579	26.7%

ACGME—Accreditation Council for Graduate Medical Education
AOA—American Osteopathic Association

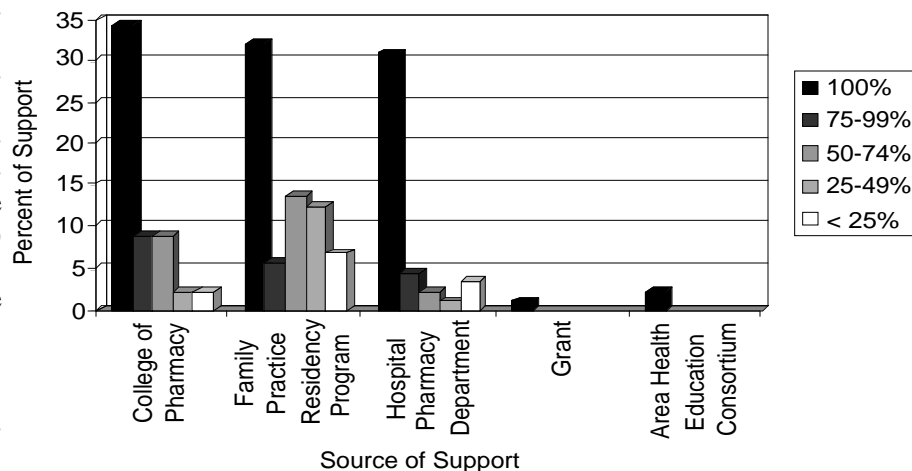
acting with pharmaceutical representatives (20.6%), procuring medications for indigent patients (19.2%), managing medication samples (13.6%), and participating in resident recruitment (14.2%).

Discussion

Clinical pharmacists were involved in approximately 25% of all FPRPs, a rate comparable to that reported in previous surveys (Table 6). The typical clinical pharmacist in an FPRP is 37 years old, holds a doctor of pharmacy degree, and has completed a residency pro-

Figure 1

Source of Salary Support



gram. Half the pharmacists have been working in family practice for less than 5 years and have a substantial portion of their time (> 60%) dedicated to the residency program. Pharmacists are located in both community- and university-based residency programs. This information is similar to that reported by Johnston and Heffron⁴ and Shaughnessy and Hume,⁶ though when evaluating just ACGME-approved programs, the proportion of clinical pharmacists has increased significantly from earlier surveys to about one third of the residencies ($P < .05$). Only one third of the pharmacists are members of STFM.

Some significant changes have occurred in the clinical appointments and funding sources of clinical pharmacists in FPRPs since the 1990 survey. Currently, pharmacists are more likely to have academic appointments in a school of medicine (52% versus 37% in 1990, $P < .05$) and as likely to have an academic appointment in a school of pharmacy (80% versus 76%). In the previous survey, the major sources of funding were the hospital pharmacy department (45%) and a school of pharmacy (30%), and only 24% of positions were funded in whole or in part by the school of medicine or FPRP.⁶ Currently, 32% of the pharmacists are fully funded by the FPRP, and an additional 40% have some salary support from this source ($P < .05$). This increase in financial support may indicate the perceived value of the clinical pharmacist from the perspective of the FPRP.

With respect to the activities of clinical pharmacists, little has changed over the past decade. The primary focus of the clinical pharmacist is as an educator—teaching family practice residents, medical students, pharmacy residents and students, and other learners in family practice. The majority of this teaching is done during patient care activities, rather than in a classroom setting. Many pharmacists coordinate and deliver a formal pharmacotherapy curriculum and provide structured rotations for residents to learn about drug therapy. Pharmacists are involved in direct patient care activities, through formal consultation and specialty clinics. Although research and administration occupy a minority of the daily activities of the pharmacists, some have extensive experience and have leadership roles in these areas.

This survey has limitations. For example, the results reflect the state of clinical pharmacy practice in FPRPs but do not address the attitudes of the faculty and residents toward the clinical pharmacist. In addition, this survey does not address the educational influence of clinical pharmacists in FPRPs. Information collected

on how pharmacists spend their time is based on the perception of time spent in different activities by the clinical pharmacist, rather than being based on a specific recording of daily activities and time allocations.

Conclusions

Clinical pharmacists continue to play a significant role in some FPRPs. Financial support from the residency programs has increased, and more pharmacists are recognized with academic appointments. FPRPs interested in bringing a clinical pharmacist into their department may solicit funding support from an affiliated school of pharmacy or hospital pharmacy department.

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