





Internal medicine pharmacy residency programs: Residents' pursuit of post-residency positions and job market perceptions

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Abstract

Introduction: Postgraduate year 2 (PGY2) internal medicine (IM) pharmacy residency programs have significantly grown over the past several years, and there is a perception that the IM clinical pharmacist job market is saturated. Thus, there is a need to confirm that the job market can support these graduates.

Objectives: To characterize PGY2 IM pharmacy residency programs and PGY2 IM residents' pursuit of post-residency positions.

Methods: A cross-sectional, online, anonymous, and voluntary survey was developed, pilot-tested, and sent to PGY2 IM pharmacy residency graduates from 2015 to 2019 across the United States. Specific aims were to identify and characterize initial jobs PGY2 IM-trained clinical pharmacists obtained post-residency and to describe residents' perceptions of the job market and how it influenced the positions they applied for.

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Results: Of the 96 PGY2 IM pharmacy residency graduates who received the survey, 62 residents completed the survey (64.6% response rate). All residents accepted a job within 3 months post-residency. Additionally, 82% of residents agreed that their initial job matched the skills learned during their PGY2 IM pharmacy residency program. Almost half of the residents perceived that the IM clinical pharmacist market had equal supply and demand. Thirty-nine residents (62%) disagreed or strongly disagreed that overall, they had difficulty finding a job. The top four areas of focus for PGY2 IM pharmacy residency programs were academia, infectious disease, cardiology, and critical care. The areas of focus during residency influenced initial job applications for more than half of the residents.

Conclusion: Among a cohort of PGY2 IM pharmacy residency graduates from 2015 to 2019, most were successful in finding employment in a job that matched the skills obtained during residency. Residents perceived that job market supply and demand were equal.

KEYWORDS

employment, internal medicine, pharmacy residencies

1 | INTRODUCTION

Postgraduate pharmacy residency programs have significantly grown over the past several years, and more residents are graduating from these programs every year. The American Society of Health-System Pharmacists (ASHP) match results from the 2022 cohort showed 1633 available postgraduate year 1 (PGY1) programs with 4242 positions compared with 1229 and 3075, respectively in 2015, and 1197 available postgraduate year 2 (PGY2) programs with 1585 positions compared with 701 and 912, respectively, in 2015.^{1,2} Most of these positions were matched and the number of programs and positions have increased from the years prior.³ The impetus for this increasing number of programs is not well established in the literature. One likely contributing factor is the 2006 position statement from the American College of Clinical Pharmacy (ACCP) that recommended postgraduate residency training as a prerequisite for all pharmacists who provide direct patient care by 2020.⁴ A steady increase in residency programs would be required to fulfill this recommendation. Currently, evidence of pharmacist oversupply exists, inviting concern over the availability of well-matched, post-residency jobs.⁵

PGY2 internal medicine (IM) pharmacy residency programs provide clinical pharmacists with advanced training to care for a variety of acutely ill medical patients and have significantly grown over the past few years. In 2015, 31 PGY2 IM pharmacy residency programs with 40 positions existed, and by 2022 had grown to 54 programs with 60 positions.^{1,2} The role of clinical pharmacists in IM, specifically ward-based hospital pharmacists, has continued to expand to help decrease adverse drug events, reduce drug costs and readmissions, and improve length of stay in adult hospitalized patients; however, it is difficult to quantify the change in demand for IM-trained

pharmacists.⁶ There is a need to confirm the job market will support PGY2 IM pharmacy residency program graduates.

Several studies have evaluated pharmacy residents' job market perceptions. One study evaluating both PGY1 and PGY2 residents' perceptions of employment trends showed that 71% of all residents accepted a full-time position; however, 17% were still looking for positions.⁷ Eighty-five percent of PGY2 residents reported accepting a position in the same specialty as their PGY2 residency. The top three areas that residents considered in accepting a position were geographic location, practice/specialty area, and work schedule.⁷

Two studies evaluated the job perspectives and trends for PGY2 critical care (CC) and emergency medicine (EM) pharmacy residency graduates.^{8,9} One study showed that although PGY2 CC pharmacy residency program directors (RPDs) saw an increase in the applicant pool for their programs, RPDs did not expect an increase in the job market over the next 5 years.⁸ Despite this, the perception of the CC pharmacy practice job market reflected a balance between supply and demand. Another study evaluated PGY2 EM pharmacy RPDs' perceptions of the job market for their graduates and the results were similar to the previous study.⁹ RPDs reported an increase in applicants to their programs; however, the number of EM clinical pharmacist positions was expected to remain constant over the next 5 years. Overall, PGY2 EM RPDs reported that their graduates generally found it easy to find EM pharmacy positions and that supply and demand were balanced in the EM clinical pharmacist market.⁹

The purpose of this study was to characterize PGY2 IM residents' pursuit of post-residency positions. There is a lack of data assessing the job market or the perceptions of PGY2 IM residents on employment opportunities post-residency. This data would be useful to strategize how to support these residents and plan for current and future PGY2 IM pharmacy residency programs.

2 | METHODS

This study was a cross-sectional cohort survey conducted with PGY2 IM pharmacy residency graduates across the United States. The specific aims were to identify and characterize initial jobs obtained post-residency and to describe residents' perceptions of the job market and how it influenced the positions they applied for. This study was deemed exempt from regulation by the Institutional Review Board at Virginia Commonwealth University in Richmond, Virginia.

The authors developed a three-section, 30-item electronic survey consistent with the study aims. Section one contained questions related to the post-residency jobs that residents applied for and obtained, including 13 multiple choice, four yes/no, and one fill-in-the-blank related to time spent on job activities. Section two included questions about residents' job search methods, perceptions of the job market, and how those perceptions influenced their job application process, including one multiple choice, one select-all-that-apply, two free responses, and two Likert-scale. Several questions in section two were adapted from a study by Bishop and colleagues that examined the pharmacy residency experience and job search process.⁷ Section three collected descriptive data on the residency program including two multiple choice, two yes/no, one select-all-that-apply, and one fill-in-the-blank related to time spent on residency activities. Before distribution, the survey was pre-tested by 10 PGY2 IM pharmacy residency graduates not eligible for the study based on the inclusion timeframe. Based on the feedback received, minor changes including sentence structure edits to clarify the intent of the question and deletion of duplicative questions to decrease survey time were proposed and implemented. This process provided face and content validity of the survey.

An email was initially sent to all PGY2 IM RPDs identified on the ASHP and ACCP residency directory web pages to solicit contact information of residents who had completed their programs from 2015 through 2019. Two reminder emails were sent over a 4-week period. The responses made up the cohort of residents to which the study survey was sent. The survey was administered using Qualtrics software (Qualtrics LLC, Provo, UT) and disseminated via email. The survey was open for 7 weeks with two reminders sent during the time period. The survey was voluntary and all residents gave permission to use their anonymous data.

Descriptive (means, standard deviations, percentages), bivariate (Fisher's exact and Wilcoxon rank), and multivariate (ANOVA and Tukey's test) statistics were used to assess the pre-specified aims. Statistical significance was indicated with a *P*-value of <.05. All statistical analyses were conducted using STATA 2013 (StataCorp LP, College Station, Texas). The free responses were assessed using thematic analysis.

3 | RESULTS

Of the 54 residency program directors emailed, 23 responded with the names and email addresses of their residents. A total of 96 PGY2

TABLE 1 Job characteristics following PGY2 internal medicine pharmacy residency training (*n* = 65)

Characteristic	<i>n</i> (%) ^a
Initial job offers	
1	33 (51)
2	11 (17)
3	13 (20)
4	6 (9)
5+	2 (3)
Employment status following residency ^b	
Full-time position	63 (98)
Flex/PRN position	1 (2)
Part-time position	0 (0)
Time spent in initial job ^c	
< 6 months	5 (8)
6 months to 1 year	19 (29)
1–3 years	30 (46)
3–5 years	11 (17)
Gross income during first year of initial job	
<\$100 000	5 (8)
\$100 000–109 999	25 (39)
\$110 000–119 999	27 (42)
>\$120 000	8 (12)
Faculty position	
Full-time	11 (17)
Adjunct/affiliate position	8 (12)
Not faculty	46 (71)
Extent initial job matched skills learned during residency	
Very well matched	30 (46)
Well matched	23 (35)
Somewhat matched	10 (15)
Not well matched	2 (3)

Abbreviations: PGY2, postgraduate year two; PRN, as needed.

^aPercentages may not equal to 100% due to rounding.

^b*n* = 64; not all survey participants completed every question.

^cTime from starting job up to completion of the study survey.

IM residency graduates were included in the study cohort. Of those, 71 initiated the survey and 62 completed the survey, resulting in a 64.6% response rate. Data from three residents who completed at least 60% of the survey were included, where applicable. The number of residents who completed the survey ranged from 11 to 15 each graduating year from 2015 to 2019.

All residents secured at least one job interview, and the majority (89%) had two or more interviews. Five residents (8%) reported that none of the jobs they interviewed for involved practicing in IM. Nineteen residents (29%) accepted a job at the same institution as their PGY2 residency program. Of those residents who stayed at their institution, 17 (89%) responded that the job was their first choice. All residents accepted a job within 3 months post-residency, and most

TABLE 2 Perception of match between initial job by title or work setting with skills learned during residency ($n = 65$)

	<i>n</i> (%) ^a	Job was first choice/preference, <i>n</i> (%)	Match of job with skills learned in residency, <i>n</i> (%)	
Initial job title				
Internal medicine clinical specialist	24 (37)	22 (92)	Very well	21 (88)
			Well	2 (8)
			Somewhat	1 (4)
			Not well	0 (0)
Clinical specialist in other specialty	13 (20)	11 (85)	Very well	2 (15)
			Well	8 (62)
			Somewhat	3 (23)
			Not well	0 (0)
Faculty/academia with a clinical practice	12 (19)	10 (83)	Very well	7 (58)
			Well	3 (25)
			Somewhat	2 (17)
			Not well	0 (0)
Unit-based/decentralized clinical pharmacist	11 (17)	9 (82)	Very well	0 (0)
			Well	6 (55)
			Somewhat	4 (36)
			Not well	1 (9)
Staff clinical pharmacist	5 (8)	4 (80)	Very well	0 (0)
			Well	4 (80)
			Somewhat	0 (0)
			Not well	1 (20)
Initial job work setting				
Academic medical center	44 (68)	39 (89)	Very well	23 (52)
			Well	11 (25)
			Somewhat	8 (18)
			Not well	2 (5)
Community hospital	21 (32)	17 (81)	Very well	7 (33)
			Well	12 (57)
			Somewhat	2 (10)
			Not well	0 (0)

^aPercentages may not equal 100% due to rounding.

(88%) accepted a job during residency. For most residents, the accepted job was their first choice (86%) and they were still in their job at the time they completed the survey (65%). Furthermore, 53 residents (82%) agreed that their initial job matched the skills learned during residency. Of the nine residents that said their initial job was not their first choice, most of them (78%) were still working in their initial job, and they all indicated that the job was well matched or very well matched with the skills learned during residency. Of those still in their initial job, 62% reported first year gross incomes of at least \$110 000 compared with 39% of those not in their initial job. Additional job characteristics are included in Table 1.

Table 2 describes perceived matching between skills learned during residency with residents' initial job based on job title and work setting. Residents taking IM specialist jobs felt that skills learned during

residency were better matched to their job than those who took a unit-based position ($P = .007$). While more residents accepted jobs in an academic medical center compared with a community hospital, in both work settings, more than 75% felt that skills learned in residency were well or very well matched to their jobs.

Table 3 shows the level of importance of job characteristics considered by the residents during the job application process. The top three characteristics rated either extremely or very important were practice/specialty area (81%), benefits (71%), and geographic location (65%). Characteristics rated as slightly important or not at all important by a majority of the residents included a job opportunity for a significant other (54%) and satisfying a loan or scholarship requirement (52%). The free response questions identified similar major themes regarding the factor that had the biggest impact on the decision to

TABLE 3 Importance of select job factors in job application process ($n = 63$)^a

Job factor	Level of importance, n (%) ^b				
	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Amount of time required to work evening, nights, weekends, and holidays	1 (2)	1 (2)	22 (35)	21 (33)	18 (29)
Benefits	2 (3)	1 (2)	15 (24)	29 (46)	16 (25)
Flexible hours or telecommuting	16 (25)	11 (17)	17 (27)	15 (24)	4 (6)
Geographic location	3 (5)	9 (14)	10 (16)	24 (38)	17 (27)
Job opportunity for significant other	31 (49)	3 (5)	7 (11)	15 (24)	7 (11)
Length of each work day	7 (11)	14 (22)	24 (38)	12 (19)	6 (10)
Practice/specialty area	0 (0)	1 (2)	11 (17)	20 (32)	31 (49)
Predictable start and end times each work day	6 (10)	9 (14)	21 (33)	19 (30)	8 (13)
Salary	2 (3)	6 (10)	24 (38)	21 (33)	10 (16)
Satisfy loan or scholarship requirement	26 (41)	7 (11)	12 (19)	9 (14)	9 (14)

^aNot all survey participants ($n = 65$) completed every question.

^bPercentages may not equal 100% due to rounding.

TABLE 4 Characteristics of job prospects based on resident perception of job market supply and demand ($n = 63$)^a

Characteristic	Supply/demand perception			P-value
	Low demand ($n = 21$)	Equal supply/demand ($n = 27$)	High demand ($n = 15$)	
Number of applications				0.984
≤ 3	9 (43)	11 (41)	6 (40)	
> 3	12 (57)	16 (59)	9 (60)	
Number of job offers				0.350
1	13 (62)	11 (41)	8 (53)	
> 1	8 (38)	16 (59)	7 (47)	
Job was top choice	16 (76)	25 (93)	14 (93)	0.179
Time of accepting job with respect to residency				0.002
During	14 (67)	27 (100)	14 (93)	
Within 1 month	4 (19)	0 (0)	1 (7)	
In 1 to 3 months	3 (14)	0 (0)	0 (0)	
Alignment of jobs with skills learned during residency				0.320
Very well/well	15 (71)	24 (89)	12 (80)	
Some/not well	6 (29)	3 (11)	3 (20)	

^aNot all survey participants ($n = 65$) completed every question.

apply for, and to accept, a job post-residency. A job within their specialty area was the biggest factor contributing to where residents applied and to which job they accepted (52% and 35%, respectively). Geographic location was the second most contributing factor when deciding which jobs to apply to, as identified by 27 residents (43%). Hospital/program reputation and geographic location were also factors in residents' decisions when accepting a job, as identified by 14 (22%) and 11 (17%) residents, respectively.

Characteristics of the residents' job search process were examined against their perceptions of the job market at that time.

Compared with those that perceived a low job demand for IM-trained pharmacists, residents that perceived an equal or high demand were significantly more likely to accept a job during residency (98% vs 67%, $P = .001$). More residents who perceived an equal or high demand for IM-trained pharmacists accepted a job which was their first choice (93% vs 76%, $P = .061$) and were still in their first job at the time they completed the survey compared with those who perceived a low demand. Paradoxically, a higher percentage of residents who perceived a low demand indicated having no major compromises in their initial position than those who perceived an equal or high demand

(33% vs 19%). Not captured by the survey were any compromises made that were not considered to be major. Despite differences in perceptions of the job market, a similar number of residents perceiving an equal or high job demand applied to more than three jobs compared with those who perceived a low demand (60% vs 57%, $P = .856$). The percentage of residents who perceived a low job demand varied from 9% to 46% among each graduating year; however, these differences were not statistically significant ($P = .289$). Table 4 describes these results among each of the three supply/demand perceptions.

When asked to choose areas of compromise needed to accept their initial job, 15 residents (24%) indicated that they had no major compromises. Of the 48 residents who indicated that they had to compromise, the most common compromise was made for geographic location (38%) followed by the shift/schedule worked (35%). The residents were asked to rate their level of agreement with four statements to identify areas of difficulty with their initial job search. The four statements were regarding difficulty finding a job: (a) in their preferred geographic location, (b) in their preferred practice/specialty area, (c) with the salary/benefits they were seeking, and (d) overall. There was no statement with which a majority of the residents agreed or strongly agreed. However, 30 residents (48%) agreed or strongly agreed with having difficulty finding a job in their preferred geographic area. Thirty-nine residents (62%) disagreed or strongly disagreed that overall, they had difficulty finding a job.

Most residents completed their PGY2 program at a teaching institution or institution affiliated with a college/school of pharmacy (89%). A higher percentage of residents in this type of PGY2 program accepted a job in academia compared with those whose program was not linked to a teaching institution (33% vs 14%, $P = .422$). The programs focused most of the residents' time on direct patient care (50%), followed by precepting (10%), and research/scholarship (10%). Nearly all programs offered precepting and teaching experiences to residents.

Forty-eight residents (77%) had at least one area of focus during their PGY2 IM residency program. The top four areas of focus were academia (65%), infectious disease (58%), cardiology, and CC (50% each). The areas of focus influenced initial job applications for more than half of the residents. For the 13 residents whose initial job was in a specialty other than IM (Table 2), six of them took a clinical specialist position in an area that they indicated was a focus of their program, five took a clinical specialist position in an area not indicated as a focus of their program, and two did not identify an area of focus. For the top-rated focus area, academia, a higher percentage of residents with a focus in academia accepted a job in academia than those with a non-academic focus (48% vs 13%, $P < .001$). All residents who accepted a full-time job in academia identified academia as a focus of their PGY2 program.

4 | DISCUSSION

Our study is the first to characterize PGY2 IM pharmacy residents' pursuit of post-residency positions. The majority of residents reported

participating in three or more job interviews, and all residents secured a job within 3 months post-residency. For most residents, the job was their first choice and they were still in their job at the time they completed the survey. There are anecdotal concerns that the job market cannot support the growth in PGY2 IM pharmacy residency programs; however, these findings suggest that the job market for IM clinical pharmacists is favorable and that PGY2 IM pharmacy residents are satisfied with their first job. The growth of the ACCP Adult Medicine Practice and Research Network, which has doubled in size from the mid-2000s to 2019, also supports an increasing role of IM pharmacists.

Finding a job within their practice/specialty area was the most important factor for residents during the job search process. Geographic location was a factor that residents rated highly when making decisions on applying to and accepting a job. It was also the most identified compromise when accepting a job. It is interesting that geographic location was rated in the top three job characteristics by the residents and it was also a factor in which they had to compromise the most, although by absolute numbers, most residents did not compromise on location. This suggests that geographic location is an important factor in the job search process that can be difficult to satisfy. Three-quarters of the residents made a compromise when accepting their job; however, most did not report difficulty finding a job. From this study, we see that post-residency jobs are obtainable and residents should expect some sort of compromise in their initial job. This helps to shed light on the job search process for future graduating PGY2 IM phareidents, and RPDs may use this data to mentor their residents through the process.

The survey suggests job acquisition may be tied to job market perceptions. Two-thirds of residents perceived an equal (supply and demand) or high demand for IM clinical pharmacist positions when applying for a job. More of these residents accepted a job sooner, and said the job was both their first choice and very well or well matched to their training compared with residents who perceived a low demand. However, despite 33% of residents perceiving a low demand for IM clinical pharmacist positions, most residents accepted their top choice of jobs (87%) and felt that the job was well or very well matched for their skills (81%).

Our study differs from previous examples in its focus and survey audience. Two separate national survey studies described job market perceptions among RPDs and directors of pharmacy in PGY2 CC and EM residency programs, respectively.^{8,9} Each clinical pharmacy specialty has its own job market that cannot be directly compared. The studies also reported post-residency job obtainment. By surveying RPDs and not the residents directly, as our study did, there may be differences in reporting job obtainment. A national survey study by Bishop and colleagues that evaluated the job market in pharmacy residency graduates affords some areas for comparison with our study.⁷ The study targeted PGY1 and PGY2 pharmacy residents to gather data on their residency experience, job search, and future career plans. For PGY2 residents entering the job market, 83% indicated that they accepted a full-time position and 57% described their position

(full-time or otherwise) as a clinical specialist. These numbers are lower than those of our study, although direct comparisons should be made with caution given the difference in time periods and PGY2 specialties. PGY2 residents in both studies identified practice/specialty area and geographic location as the most important job characteristics. Slightly more residents in the Bishop and colleagues study reported overall difficulty finding a position compared with the residents in our study (28% vs 19%), although they represented a minority of the populations.⁷ Overall, this suggests that jobs are being created at the same time that the number of PGY2 IM positions is increasing. In terms of PGY2 residency graduates' job compromises, the most common compromise was made for geographic location in both the Bishop and colleagues study and our study (41% vs 38%, respectively).⁷ Twenty-eight percent of PGY2 residents in the Bishop and colleagues study reported no major compromises, compared with 24% in our study, even though most did not have trouble finding a job in our study.

The majority of residents in our study completed training at an academic or academic-affiliated institution and had required didactic teaching and precepting activities. This is consistent with the entirety of PGY2 IM pharmacy residency programs, where 49 of the 54 programs (91%) are documented in the ASHP directory as academic medical centers, teaching institutions, or are part of a college of pharmacy.¹⁰ Academia was also the most identified area of focus by the residents. Greco and colleagues surveyed RPDs of PGY2 pharmacy residency programs with a self-identified emphasis on academia.¹¹ Fourteen programs were identified through the ACCP and ASHP residency directories as having a secondary specialty in academia, education, or teaching. Half of the programs identified ambulatory care as their primary specialty, with IM being the second most common. Most RPDs reported requiring teaching activities such as precepting pharmacy students and delivering didactic lectures, and participating in a teaching certificate program.¹¹ Our study included PGY2 programs without an academic focus, but those with an academic focus identified similar required activities, offered participation in a teaching certificate program, and had similar success in obtaining academic positions. This should be reassuring to PGY2 IM residents who have an interest in academia.

Our study has several strengths. It was national in scope, included similar representation from residents over five graduating years, and had a strong response rate for a survey study. Residents graduating from 2015 to 2019 were included and no major change in practice or the job market occurred during this time to suggest that data should not be analyzed in aggregate. This demonstrates consistency of the results over time. By surveying residents, this study provided information about the job search process and market perceptions from those directly affected rather than indirect information coming from others involved in the programs.

Our study also has several limitations. One limitation is the potential for recall bias from residents who graduated earlier in the time frame included. It is conceivable that residents who graduated earlier and had to give information on their job search process and market

perceptions years later might have less accurate recall than those who graduated closer to the survey year. Results were not analyzed by graduating year; therefore, there is no way to know if recall bias was different between such groups. In the few instances where data was analyzed by graduating year, no statistically significant differences were found. While the resident response rate was strong, not all of the RPDs provided resident information, limiting the initial pool of potential responders. There is currently no publicly available resource for resident contact information once they graduate from a program, leaving the study to rely on RPD responses. There is always the potential for non-response bias, and therefore results may not be representative of those who did not complete the survey. Finally, the survey questions attempted to include the most likely factors influencing the job search process but may have omitted items not considered by the authors. The factors listed in the survey closely aligned with those included in similar studies, and the free response questions allowed for reporting of factors not initially considered.

5 | CONCLUSION

Postgraduate year two IM pharmacy residents who graduated from 2015 to 2019 were able to find jobs within their scope of practice and all residents obtained jobs post-residency. Most residents accepted their first choice job and thought that it matched their learned skills well. Most residents have a positive outlook on the IM clinical specialist job market. This is encouraging for pharmacists interested in pursuing a PGY2 IM pharmacy residency and for those who are considering creating new PGY2 IM residency programs in the future.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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