

# ACCP COMMENTARY

## Minimum Qualifications for Clinical Pharmacy Practice Faculty

American College of Clinical Pharmacy

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The American College of Clinical Pharmacy 2013 Educational Affairs Committee was charged with developing recommendations for the minimum qualifications required for clinical pharmacy practice faculty in United States colleges and schools of pharmacy with respect to education, postgraduate training, board certification, and other experiences. From a review of the literature, the committee recommends that clinical pharmacy practice faculty possess the following minimum qualifications, noting that, for some positions, additional qualifications may be necessary. Clinical pharmacy practice faculty should possess the Doctor of Pharmacy degree from an Accreditation Council for Pharmacy Education–accredited institution. In addition, faculty should have completed a postgraduate year one (PGY1) residency or possess at least 3 years of direct patient care experience. Faculty who practice in identified areas of pharmacotherapy specialization, as identified by American Society of Health-System Pharmacists postgraduate year two (PGY2) residency guidelines, should have completed a PGY2 residency in that area of specialty practice. Alternatively, faculty should have completed a minimum of a PGY1 residency and 1 additional year of practice, with at least 50% of time spent in their area of specialization, which is documented in a portfolio, or 4 years of direct patient care in their area of specialization, which is documented in a portfolio. Fellowship training or a graduate degree (e.g., Ph.D.) should be required for research-intensive clinical faculty positions. All faculty should obtain structured teaching experience during or after postgraduate training, preferably through a formal teaching certificate program or through activities documented in a teaching portfolio. A baseline record of scholarship should be obtained before hire as clinical pharmacy practice faculty through exposure in postgraduate programs or previous employment. Faculty should be board certified before hire or attain board certification within 2 years of hire through the Board of Pharmacy Specialties (BPS) or, if appropriate for the practice area, through a nonBPS-certifying agency. If no certification exists in the area of specialty, the faculty member should develop a portfolio with evidence of excellence in clinical practice, teaching, and scholarship.

**KEY WORDS** pharmacy faculty qualifications, pharmacy education, residency training, board certification, fellowship training.

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The American College of Clinical Pharmacy (ACCP) Educational Affairs Committee was charged with providing recommendations for the minimum qualifications required for clinical pharmacy practice faculty in United States colleges and schools of pharmacy with respect to education, postgraduate training, board certification, and other experiences. Establishing minimum qualifications is important to ensure that newly hired clinical faculty members are well prepared to teach in didactic and experiential settings, provide direct patient care, and conduct meaningful scholarship. This commentary summarizes the committee's recommendations.

This commentary is focused on clinical pharmacy faculty, not on faculty with nonclinical positions in pharmacy practice departments such as tenure-track faculty members focused primarily on research. The commentary will center on minimum qualifications with the caveat that some faculty positions may require additional qualifications or training.

### Degree Requirements

The committee recommends that the minimum degree qualification for clinical pharmacy faculty to deliver the content required in the contemporary pharmacy education system be a Doctor of Pharmacy (Pharm.D.) degree. This recommendation is consistent with the policy of the American Association of Colleges of Pharmacy (AACCP) that supports a single entry-level educational program (Pharm.D.) of at least 4 professional academic years.<sup>1</sup>

In the 1990s, there was a transition to the Pharm.D. as the sole professional practice degree for pharmacy in the United States. This was further endorsed by the Accreditation Council for Pharmacy Education (ACPE), which had made changes to its accreditation standards in 1997 to reflect a single degree.<sup>2</sup> Although a 2008 survey of the pharmacy faculty workforce showed that most faculty members (95%) within the pharmacy practice discipline possessed a pharmacy professional degree (B.S. and/or Pharm.D.),<sup>3</sup> the hiring criteria among pharmacy schools have slowly changed to require a Pharm.D. degree.<sup>4</sup>

Requirements in advertisements for pharmacy practice faculty positions were reviewed over a 5-year period beginning in 2002.<sup>4</sup> The review encompassed both tenure-track and non-tenure-track non-administrative pharmacy practice positions at all ranks except for lecturer or

instructor. The majority of advertisements expected the candidate to possess at least a Pharm.D. degree, with 1.4% of advertisements expressing that a B.S. degree in pharmacy was an acceptable alternative to a Pharm.D. degree.

### Postgraduate Training – PGY1 Residency Training

The committee recommends that all full-time clinical pharmacy practice faculty, as well as all adjunct clinical faculty with direct patient care responsibilities and all actively precepting students, complete a PGY1 residency or possess equivalent experience.<sup>5</sup>

The American Society of Health-System Pharmacists (ASHP) and ACCP have each released resolutions or policy statements regarding the goal of having all entry-level pharmacists who wish to provide patient care be residency trained by 2020.<sup>6-8</sup> In its 2004 report, AACCP recommended that residency training be a prerequisite for all full-time clinical pharmacy practice faculty.<sup>9</sup> In 2007, the AACCP Council of Deans also stated its position that all full-time pharmacy practice faculty engaged in teaching and direct patient care services shall have earned a postgraduate credential, such as a residency, relevant to the areas in which the faculty member teaches and practices. The specific recommendation is that full-time practice faculty complete a PGY1 residency and either a postgraduate year two (PGY2) residency or a fellowship. The task force went one step further and recommended that all part-time and adjunct faculty also possess at least a PGY1 residency or equivalent experience.<sup>10</sup> The 2011 ACPE Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree Version 2.0 also state in Standard No. 25, Guideline 25.1, that pharmacy practice faculty should have additional professional training (residency, fellowship, or equivalent experience).<sup>2</sup>

Current hiring practices reflect the residency recommendations of these organizations (i.e., ACCP, ASHP, AACCP, and ACPE). In the faculty advertisement study, 77% of the advertisements for clinical pharmacy practice faculty members required a residency, a fellowship, or equivalent experience.<sup>4</sup> This percentage had increased since an earlier study in 1996, which stated that only 40% of positions required advanced training or experience.<sup>11</sup>

Faculty members also perceive the residency requirement to be important. In 2009, a survey of faculty members from all AACP academic sections regarding required postgraduate pharmacy residencies was published.<sup>12</sup> The majority of respondents (56%) agreed that a PGY1 residency should be a prerequisite for a graduate entering a position in which he or she provided direct patient care. Half of the respondents agreed that full-time clinical faculty members at the clinical assistant professor rank should be required to have completed at least 2 years of residency training. Almost two-thirds of respondents (64%) also agreed that a PGY1 residency should be required for an appointment as an adjunct clinical faculty member or preceptor of student pharmacists. A 2006 ACCP position paper recommended PGY1 training both as a minimum requirement for entry into pharmacy practice with direct patient care and as a minimum requirement for an academic appointment as an adjunct clinical faculty member or preceptor.<sup>8</sup>

#### Postgraduate Training – PGY2 Residency Training

The committee recommends that faculty who practice in identified areas of pharmacotherapy specialization, as identified by the ASHP PGY2 residency guidelines, have completed a PGY2 residency or possess equivalent experience.

The purpose of PGY2 pharmacy residency is to increase the resident's depth of knowledge, skills, attitudes, and abilities as well as to raise the level of expertise in both drug management and clinical leadership within a specific area of practice. The PGY2 resident is expected to meet standard criteria and to develop accountability, practice patterns, and habits to deepen his or her ability to provide care for complex patient cases.<sup>13</sup> Currently, ASHP has 21 PGY2-designated categories in specialized areas for accredited PGY2 residencies.

ACPE Guideline 25.1 states that faculty in pharmacy practice should have additional professional training relevant to their practice.<sup>2</sup> The 2006 ACCP position paper recommended requiring PGY2 training for clinical pharmacists practicing in specialized settings or working with specialized patient populations.<sup>8</sup> Other studies and surveys have recommended that clinical specialist positions, including those in academia in pharmacy practice, have PGY2 training in a specialty area.<sup>12, 14</sup>

#### Postgraduate Training – Fellowships

The committee believes that fellowship training (or an advanced degree) should be required only for research-intensive clinical faculty positions. However, all clinical faculty should be provided opportunities to develop their research skills.

Introduced in the early 1970s, fellowships have historically been an important training ground for pharmacy practice faculty, especially those whose positions are research intensive.<sup>15</sup> Fellowship training is, however, on the decline. In 1985, 91 fellowships were available for pharmacists, and this number had decreased to 78 programs by 2004.<sup>15</sup> Currently, fewer than 50 fellowships are listed annually in the ACCP Directory of Residencies, Fellowships, and Graduate Programs.<sup>16</sup> Reasons for the declining number of fellowship programs are likely multifactorial, but a key factor may be the recent endorsement by ACCP and AACP of advanced degree programs (e.g., Ph.D. programs) as the preferred route for developing clinical scientists.<sup>17, 18</sup> The few fellowship offerings may partly explain why fellowship training was a required training element in less than 1% of position postings for clinical pharmacy practice faculty.<sup>4</sup>

Scholarship should be a required element for all pharmacy practice faculty.<sup>2</sup> A baseline record of scholarship should be obtained before hire as clinical pharmacy practice faculty through exposure in postgraduate programs or previous employment. However, the relative importance of scholarship and its specific requirements varies greatly, depending on the institution and the type of faculty position. Recent survey data show that less than half of junior pharmacy practice faculty whose positions include a research requirement for promotion and tenure feel confident that they will be able to meet their departments' research expectations.<sup>19</sup> Fellowship training, by definition, is designed to prepare independent researchers and thus may be a valuable option to prepare faculty for positions with significant research and scholarship components.<sup>15</sup> Although with the increasing number of pharmacy practice faculty and the declining number of fellowship positions, additional opportunities are needed to help faculty fulfill scholarship requirements in clinical positions. Some programs exist, such as the ACCP Focused Investigator Training Program,<sup>20</sup> the ACCP Research and Scholarship Academy,<sup>21</sup> and the ASHP Foundation Research Boot Camp.<sup>22</sup>

Advanced degree programs such as the M.S. degree in clinical and translational science or the Ph.D. degree also provide a valuable training option to prepare faculty for positions with significant research and scholarship requirements in addition to clinical practice. These programs provide structured and robust research training and advanced course work in statistics and related fields. In addition, many incorporate clinical practice experiences or require advanced clinical training as a prerequisite.<sup>17</sup>

### Evaluation of Equivalent Experience

The committee recommends that equivalent experience for PGY1 residency training be a minimum of 3 years of direct patient care, which is documented in a portfolio. This recommendation is consistent with the Board of Pharmacy Specialties (BPS) requirement for specialty certification in pharmacotherapy for candidates who have not completed a PGY1 residency.<sup>23</sup> The committee further recommends, based on BPS requirements for the ambulatory care specialty – the only specialty that defines equivalent experience for a PGY2 residency<sup>24</sup> – that equivalent experience for a PGY2 residency be a minimum of 4 years' practice experience with at least 50% of time spent in the area of specialization or, for those who have completed a PGY1 residency, 1 additional year of practice with at least 50% of time spent in the area of specialization, which is documented in a portfolio. We recognize that for other areas of specialization, the minimum amount of practice time considered equivalent to PGY2 training is controversial. Although no guidelines exist to measure experience equivalent to fellowship training, the committee recommends that individuals with an established record of scholarship and grantsmanship be considered to have experience equivalent to fellowship training.

Many institutions include “or equivalent experience” in recruitment materials for clinical faculty who do not have postgraduate training. Many pharmacists have engaged in practices that require “clinical maturity” but lack the specific qualifications of having completed a PGY1 and/or PGY2 residency.<sup>25</sup>

The definition of experience that is equivalent to residency training varies from one institution to another, with no single definition broadly accepted. In 2006, ACCP convened the Task Force on Residency Equivalency to define the experience and documentation that could serve

as a PGY1 equivalent.<sup>26</sup> The task force recommended a minimum of 5 years' experience in both direct patient care and practice management activities, with documentation in a residency equivalency portfolio of the qualifications gained through experience. The BPS accepts 3 years of practice with at least 50% time spent in pharmacotherapy activities in lieu of a PGY1 residency.<sup>23</sup> Pharmacists without a PGY1 residency can still apply for a PGY2 residency. For such pharmacists to be eligible for a PGY2 residency, ASHP requires 3 years of experience, with documentation of how that experience meets PGY1 outcomes and goals.<sup>27</sup> Although some descriptions exist regarding PGY1 residency equivalency, there are no consensus statements on practice and project experience equivalency to PGY2 residency training.

Clinical faculty positions sometimes require postgraduate training in a specific specialty. This could cause institutions to exclude experienced and clinically mature candidates because they did not complete PGY2 training in a specialty that may not have existed at the time they entered practice. A portfolio of experiences and accomplishments could be used to evaluate equivalent experience and to predict future success in another specialty area. The portfolio should include evidence of direct patient care activities, generation of new knowledge and practices, publications of activities and/or findings, and education of various constituencies within and outside pharmacy. Documentation of experience that meets the outcomes and objectives of PGY2 accreditation standards could also serve to demonstrate PGY2 equivalency.<sup>13</sup> Pharmacy schools and colleges should work to carefully define “equivalent experience” and develop criteria for portfolios that demonstrate clinical maturity for use in evaluating clinical pharmacy practice faculty applicants without PGY1, PGY2, or fellowship training.

### Postgraduate Training – Teaching Certificates

The committee recommends that clinical pharmacy practice faculty have prior teaching exposure through their postgraduate programs in a formalized teaching certificate program or, if a formal program is not available, through focused, mentored teaching activities and opportunities as documented in a teaching portfolio.

Teaching certificates are being offered with increased frequency during PGY1 and PGY2

postgraduate training. However, in their current form, they lack standardization or accreditation at the national level. Most teaching certificate programs have typical components such as participation in formal teaching seminars, presentation of didactic and small-group lecture presentations, clinical teaching to pharmacy students in practice settings, and development of a teaching philosophy and portfolio.<sup>28, 29</sup> Participants in teaching certificate programs are able to develop and refine their teaching skills through mentored learning activities.<sup>30</sup> Completion of a teaching certificate program should be preferable to a required credential until such training is provided in all residency programs or until all residents have the ability to complete online programs or other courses such as the ACCP Academy Teaching and Learning Certificate Program.

Residents who have completed a teaching certificate program state that the process helped them obtain their clinical faculty position.<sup>31</sup> Although the successful completion of a teaching certificate program does not necessarily produce expert teachers, it may help new faculty ease into the academic demands of teaching.<sup>29, 32, 33</sup>

### Board Certification

In concordance with previous statements published by ACCP and others as well as ACPE Guideline 25.1, the committee recommends that board certification be attained before hire, or within 2 years of hire, of new clinical pharmacy practice faculty members.<sup>2, 7, 13, 34–37</sup>

The specialties currently recognized by BPS include nuclear pharmacy (established 1978), nutrition support pharmacy (1988), pharmacotherapy (1988), psychiatric pharmacy (1992), oncology pharmacy (1996), and ambulatory care pharmacy (2011). In 2013, specialties in critical care and pediatrics were approved by BPS.<sup>38</sup> Added Qualifications in cardiology and infectious diseases pharmacotherapy are also available for qualified pharmacists, and BPS may consider these practice areas for specialty certification in the future. The BPS envisions that a subspecialty recognition process will replace the current BPS Added Qualifications program.<sup>39</sup> The recently recognized specialties and petitions for additional specialties are in response to increased demand for board certification. More pharmacists are seeking board certification, and the number of board-certified pharmacists continues to rise each year.<sup>40</sup>

There is also an increase in pharmacy faculty seeking board certification. In a 2004 survey of U.S. colleges of pharmacy, 32% of public school faculty and 38% of private school faculty were board certified,<sup>33</sup> which is an increase from a 1993 survey, when only 9% of full-time faculty had taken a certification exam.<sup>41</sup> The 2004 survey showed progress in the number of colleges providing reimbursement for the exam (66% vs 41%), as well as in the number of schools using board certification for consideration in promotion and tenure (66% vs 31%), compared with the 1993 survey. It should be acknowledged that board certification, particularly in pharmacotherapy, was in its infancy at the time of this study; thus, the low result is not surprising. Perhaps of more interest is that in the 2004 survey, no school of pharmacy had incorporated this requirement into the hiring process.<sup>33, 41</sup> A survey of advertisements for clinical faculty positions from 2002–2006 revealed that only 0.9% of the advertisements required board certification, although around 12% noted that certification was preferred or that the candidate should be board eligible.<sup>4</sup>

Although few colleges of pharmacy are requiring board certification, several pharmacy organizations have called for board certification of pharmacy faculty. AACP, ACCP, and the Society of Infectious Diseases Pharmacists have all published statements urging pharmacy faculty to become board certified.<sup>14, 42</sup> The benefits of board certification include demonstrated knowledge in pharmacotherapy, distinction among the profession and other professions, professional and clinical opportunities, and increased salary.<sup>43, 44</sup> Barriers to certification for pharmacy faculty include lack of reimbursement for cost of the exam, lack of need for recertification, no perceived need or benefit to certification, and lack of representation of all specialties.<sup>45</sup> The committee believes that barriers for schools of pharmacy in requiring board certification are a lack of economic resources to reimburse exam fees for faculty unwilling to pay the fee and an insufficient number of board-certified candidates for recruitment.

### Other Certifications

The committee recommends that, if board certification through BPS is not available for a specific practice specialty area, faculty members possess the certification that best matches their practice or scholarship area, if such a certification exists. Certifications through agencies other than

BPS may be appropriate in some situations. The appropriateness of the certification for the practice area can be assessed by the school of pharmacy making the hiring decision.

In addition to BPS certification, several other areas of specialty certification are available for pharmacists. Examples include Certified Diabetes Educator (CDE), Certified Asthma Educator, Certified Anticoagulation Care Provider, Certified Geriatrics Pharmacist, and Board Certification in Advanced Diabetes Management.<sup>46</sup> Faculty members often possess these certifications in addition to a BPS certification, though some might pursue these nonBPS designations as their only certification. Pharmacists sometimes find value in these credentials in addition to BPS certification. These certifications are rigorous and exam-based, and they sometimes include a practice-experience requirement or are interdisciplinary. Such certifications are often a suitable substitute for a BPS certification in certain specialties that are recognized by other specialty providers. However, many of these certifications are highly specialized, whereas few clinical pharmacy practices are so limited in scope. Thus, the value of a broad-based certification such as those offered by BPS should be recognized.

A certification through BPS or another agency is common but is not held by all faculty members. One survey revealed that of the respondents who identified themselves primarily in a faculty position, 40% were certified by at least one agency.<sup>47</sup> Up to 54% of academia-based residency program directors and 40%–50% of adjunct-track faculty residency program directors were certified. In another survey, 52% of pharmacists with a CDE held faculty positions, most with clinical roles.<sup>48</sup> Only 3% of the CDE pharmacists said that certification was a position requirement, even though 13% said that certification resulted in a promotion or salary increase. These contributions may be assessed by the school or college making the hiring decision and should be reviewed and discussed during performance review and consideration for promotion or tenure.

The committee recommends that faculty who cannot identify an appropriate specialty certification demonstrate evidence of pharmacotherapeutic contributions to their specialty through activities that include evidence of clinical competence.

## Conclusion

After a review of the literature, the committee recommends that clinical pharmacy practice fac-

ulty have the following minimum qualifications, noting that, for some faculty positions, additional qualifications may be necessary:

- Pharm.D. degree.
- PGY1 residency training for all clinical faculty positions OR a minimum of 3 years of direct patient care experience.
- PGY2 residency training for specialty pharmacy practices OR a minimum of a PGY1 residency and 1 additional year of practice, with at least 50% of time spent in the area of specialization that is documented in a portfolio or 4 years of direct patient care in the area of specialization documented in a portfolio.
- Fellowship training (or an advanced degree) for research-intensive clinical faculty positions; an established record of scholarship and grantsmanship may provide experience equivalent to fellowship training.
- Structured teaching experience during postgraduate training, preferably through a formal teaching certificate program or documented in a teaching portfolio.
- A baseline record of scholarship should be obtained before hire as clinical pharmacy practice faculty through exposure in postgraduate programs or previous employment.
- Board certification before or within 2 years of hire through BPS or, if appropriate for the practice area, through a non-BPS-certifying agency; a portfolio documenting accomplishments may suffice if no certification exists in a specialty area.

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## References

1. American Association of Colleges of Pharmacy. Archived policies 1980–2011. Available from [www.aacp.org/governance/HOD/Documents/AACP\\_ARCHIVED\\_POLICY\\_1980-2011.pdf](http://www.aacp.org/governance/HOD/Documents/AACP_ARCHIVED_POLICY_1980-2011.pdf). Accessed June 5, 2013.
2. Accreditation Council for Pharmacy Education. 2009. Accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree version 2.0. Available from [www.acpe-accredit.org/standards/default.asp](http://www.acpe-accredit.org/standards/default.asp). Accessed June 5, 2013.
3. Beardsley R, Matzke GR, Rospond R, et al. Factors influencing the pharmacy faculty workforce. *Am J Pharm Educ* 2008;72:Article 34.
4. Murphy JE, Hawkey L. Education, postgraduate training, board certification, and experience requirements in advertisements for clinical faculty positions. *Am J Pharm Educ* 2010;74:Article 73.

5. American College of Clinical Pharmacy. Board of Regents commentary. Qualifications of pharmacists who provide direct patient care: perspectives on the need for residency training and board certification. *Pharmacotherapy* 2013;33:888–91.
6. American Society of Health-System Pharmacists. ASHP policy position; education and training. Available from [www.ashp.org/DocLibrary/BestPractices/EducationPositions.aspx](http://www.ashp.org/DocLibrary/BestPractices/EducationPositions.aspx). Accessed June 5, 2013.
7. ASHP Council on Education and Workforce Development. ASHP long-range vision for the pharmacy work force in hospitals and health systems: ensuring the best use of medicines in hospitals and health systems. *Am J Health Syst Pharm* 2007;64:1320–30.
8. Murphy JE, Nappi JM, Bosso JA, et al. American College of Clinical Pharmacy's vision of the future: postgraduate pharmacy residency training as a prerequisite for direct patient care practice. *Pharmacotherapy* 2006;26:722–33.
9. Lee M, Bennett M, Chase P, et al. Final report and recommendations of the 2002 AACP task force on the role of colleges and schools in residency training. *Am J Pharm Educ* 2004;68:Article S2.
10. Nelson A, Godwin H, Gourley D, et al. Final report: deans' council task force on post graduate pharmacy (residency) education, July 2007. *Am J Pharm Educ* 2007;71(4Suppl. S06):1–14.
11. Wieland LD, Murphy JE. Academic and training requirements in advertisements for pharmacy management and clinical positions. *Am J Health Syst Pharm* 1996;53:289–93.
12. Leiker LL, Mehta BH, Rodis JL, et al. Assessment of pharmacy faculty members' opinions regarding required postgraduate pharmacy residencies. *Am J Health Syst Pharm* 2009;66:378–88.
13. ASHP accreditation standard for PGY2 pharmacy residency programs. Available from [www.ashp.org/DocLibrary/Accreditation/ASD-PGY2-Standard.aspx](http://www.ashp.org/DocLibrary/Accreditation/ASD-PGY2-Standard.aspx). Accessed June 5, 2013.
14. Ernst EJ, Klepser ME, Bosso JA, et al. Recommendations for training and certification for pharmacists practicing, mentoring, and educating in infectious diseases pharmacotherapy. *Pharmacotherapy* 2009;29:482–8.
15. American College of Clinical Pharmacy Research Affairs Committee, Fagan SC, Touchette D, et al. The state of science and research in clinical pharmacy. *Pharmacotherapy* 2006;26:1027–40.
16. American College of Clinical Pharmacy directory of residencies, fellowships, and graduate programs. Available from [www.accp.com/resandfel/search.aspx](http://www.accp.com/resandfel/search.aspx). Accessed June 5, 2013.
17. Dowling TC, Murphy JE, Kalus JS, et al. Recommended education for pharmacists as competitive clinical scientists. *Pharmacotherapy* 2009;29:236–44.
18. Blouin RA, Bergstrom RF, Ellingrod VL, et al. Report of the AACP educating clinical scientists task force. *Am J Pharm Educ* 2007;71:Article S05.
19. Lee KC, El-Ibiary SY, Hudmon KS. Evaluation of research training and productivity among junior pharmacy practice faculty in the United States. *J Pharm Pract* 2010;23:553–9.
20. ACCP Research Institute. Focused Investigator Training (FIT) Program. Available from [www.accpri.org/fit/](http://www.accpri.org/fit/). Accessed August 12, 2013.
21. ACCP Research Institute. Research and Scholarship Academy. Available from [www.accpri.org/investigator/research.aspx](http://www.accpri.org/investigator/research.aspx). Accessed August 13, 2013.
22. ASHP Foundation Research Boot Camp. Available from [www.ashpfoundation.org/MainMenuCategories/ResearchResourceCenter/FosteringYoungInvestigators/ResearchBootCamp](http://www.ashpfoundation.org/MainMenuCategories/ResearchResourceCenter/FosteringYoungInvestigators/ResearchBootCamp). Accessed November 11, 2013.
23. Board of Pharmacy Specialties eligibility requirements for pharmacotherapy. Available from [www.bpsweb.org/specialties/pharmacotherapy.cfm](http://www.bpsweb.org/specialties/pharmacotherapy.cfm). Accessed June 13, 2013.
24. Board of Pharmacy Specialties. Ambulatory care. Available from [www.bpsweb.org/specialties/AmbulatoryCarePharmacy.cfm](http://www.bpsweb.org/specialties/AmbulatoryCarePharmacy.cfm). Accessed August 12, 2013.
25. Ray MD. Clinical maturity in pharmacy. *Pharmacotherapy* 2006;26:594–6.
26. American College of Clinical Pharmacy, Jordan CJ, Wall GC, et al. Postgraduate year one pharmacy residency program equivalency. *Pharmacotherapy* 2009;29:399e–407e.
27. American Society of Health-System Pharmacists. ASHP PGY1 pharmacy residency exemption process. Available from [www.natmatch.com/ashprmp/pgy1exmp.pdf](http://www.natmatch.com/ashprmp/pgy1exmp.pdf). Accessed June 5, 2013.
28. Falter RA, Arrendale JR. Benefits of a teaching certificate program for pharmacy residents. *Am J Health Syst Pharm* 2009;66:1905–6.
29. Medina MA, Bouldin AS, Gonyeau M, et al. Report of the 2011–2012 Academic Affairs Standing Committee: the evolving role of scholarly teaching in teaching excellence for current and future faculty. *Am J Pharm Educ* 2012;76:Article S5.
30. Medina MA, Herring HR. An advanced teaching certificate program for postgraduate year 2 residents. *Am J Health Syst Pharm* 2011;68:2284–6.
31. Gettig JP, Sheehan AH. Perceived value of a pharmacy resident teaching certificate program. *Am J Pharm Educ* 2008;72: Article 104.
32. Boyce EG, Burkiewicz JS, Hasse MR, et al. Essential components of a faculty development program for pharmacy practice faculty. *Pharmacotherapy* 2008;28:245e–68e.
33. Romanelli F, Ryan M, Smith K. Board of Pharmaceutical Specialties-certified faculty: a survey of United States colleges of pharmacy. *Pharmacotherapy* 2004;24:395–400.
34. American College of Clinical Pharmacy, Shord SS, Schwinghammer TL, et al. Desired professional development pathways for clinical pharmacists. *Pharmacotherapy* 2013;33: e34–42.
35. American College of Clinical Pharmacy. Board of Regents commentary. Qualifications of pharmacists who provide direct patient care: perspectives on the need for residency training and board certification. *Pharmacotherapy* 2013;33: 888–91.
36. American College of Clinical Pharmacy. Board certification of pharmacist specialists. *Pharmacotherapy* 2011;31:1146–9.
37. Saseen JJ, Grady SE, Hansen LB, et al. Future clinical pharmacy practitioners should be board-certified specialists. *Pharmacotherapy* 2006;26:1816–25.
38. Board of Pharmacy Specialties. Establishment of pharmacy specialties. Available from [www.bpsweb.org/](http://www.bpsweb.org/). Accessed August 12, 2013.
39. Board of Pharmacy Specialties. Five-year vision for pharmacy specialties. Available from [www.bpsweb.org/pdfs/BPS\\_whitepaper\\_2013\\_final.pdf](http://www.bpsweb.org/pdfs/BPS_whitepaper_2013_final.pdf). Accessed August 12, 2013.
40. American College of Clinical Pharmacy. Pharmacists certified by the Board of Pharmacy Specialties. Available from [www.accp.com/docs/careers/bpschart2011.pdf](http://www.accp.com/docs/careers/bpschart2011.pdf). Accessed June 1, 2013.
41. Wagner ML, Wagner BKJ, Smith CL. Faculty have few incentives for becoming board certified in pharmacotherapy. *Pharmacotherapy* 1993;13:500–3.
42. Spinler SA, Bosso J, Hak L, et al. Report of the task force concerning board certification requirements for pharmacy practice faculty. *Am J Pharm Educ* 1997;61:213–6.
43. Board of Pharmacy Specialties. Certification making a difference. Available from [www.bpsweb.org/certification/difference.cfm](http://www.bpsweb.org/certification/difference.cfm). Accessed August 12, 2013.
44. Pradel FG, Palumbo FB, Flowers L, et al. White paper: value of specialty certification in pharmacy. *J Am Pharm Assoc* 2004;44:612–20.
45. Toussaint KA, Watson K, Marrs JC, et al. Prevalence of and factors that influence board certification among pharmacy practice faculty at United States colleges and schools of pharmacy. *Pharmacotherapy* 2013;33:105–11.
46. Koski RR. Identifying and locating pharmacist certificate programs, traineeships, and certification agencies. *J Am Pharm Assoc* 2008;48:405–12.
47. Daugherty NE, Romanelli F, Ryan M, Smith KM. Board certification of pharmacy residency program directors. *Am J Health Syst Pharm* 2007;64:1415–21.
48. Shane-McWhorter L, Fermo JD, Bultemeier NC, Oderda GM. National survey of pharmacist certified diabetes educators. *Pharmacotherapy* 2002;22:1579–93.