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EXPERIENTIAL EDUCATION

Impact of Advanced Pharmacy Practice Experience Placement Changes in Colleges and Schools of Pharmacy

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Objective. To document the annual number of advanced pharmacy practice experience (APPE) placement changes for students across 5 colleges and schools of pharmacy, identify and compare initiating reasons, and estimate the associated administrative workload.

Methods. Data collection occurred from finalization of the 2008-2009 APPE assignments throughout the last date of the APPE schedule. Internet-based customized tracking forms were used to categorize the initiating reason for the placement change and the administrative time required per change (0 to 120 minutes).

Results. APPE placement changes per institution varied from 14% to 53% of total assignments. Reasons for changes were: administrator initiated (20%), student initiated (23%), and site/preceptor initiated (57%) Total administrative time required per change varied across institutions from 3,130 to 22,750 minutes, while the average time per reassignment was 42.5 minutes.

Conclusion. APPE placements are subject to high instability. Significant differences exist between public and private colleges and schools of pharmacy as to the number and type of APPE reassignments made and associated workload estimates.

Keywords: experiential training, advanced pharmacy practice experience, administration, preceptor, workload, collaboration

INTRODUCTION

Pharmacy educators face a variety of challenges in experiential education including securing adequate and qualified preceptors and sites, training qualified preceptors, ensuring consistency among practice sites, and obtaining adequate financial support for experiential education.[1-6] These challenges are further compounded by pharmacy enrollment expansion, faculty shortages, and pharmacy workforce and economic factors, as well as the increased emphasis on experiential education.

Within pharmacy education, there continues to be a trend toward increased student enrollment by expansion of existing campuses and through creation of new pharmacy programs. As of June 2011, there were 120 accredited colleges and schools of pharmacy in the United States. Five additional programs had been granted pre-candidate status.[7] This represents a 20% increase in accredited colleges and schools of pharmacy since January 2008, when there were only 100 accredited programs and 6 programs with pre-candidate status.[1] Between 2008 and 2010, the number of pharmacy students enrolled nationwide in first doctor of pharmacy (PharmD) programs increased 7.9% from 52,685 to 56,841.[8] Within this same period, the number of PharmD degrees conferred rose 9.4%, from 10,500 to 11,487. Projections from the Accreditation Council for Pharmacy Education estimate that the number of graduates will continue to increase to 13,822 in 2014, a 31.6% increase since 2008.[7] Regional statistics from Georgia and Alabama illustrate a smaller percentage rise in degrees conferred but a greater acceleration in student enrollment. Between 2008 and 2010, combined

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pharmacy student enrollment in these 2 states climbed 10.3% (2,370 students to 2,613 students) while the number of PharmD degrees conferred rose only 5.9% (563 to 596).[8] Given the higher student enrollments over this time, the number of pharmacy students requiring placement in pharmacy practice experiences and will continue to accelerate in this region through 2014 and beyond.

A study conducted by Kawahara and colleagues in 1998 examined the reasons behind APPE reassignments among PharmD students and the associated workload for 1 public institution.[9] They found that 14.8% of traditional APPE placements were reassigned during the calendar year. Seventy percent of these reassignments were attributed to site or preceptor changes. Researchers identified the steps involved in the reassessment process and estimated an average of 3 hours of personnel time required per reassignment, which translated into 0.33 full-time equivalent faculty member time required for the APPE reassignment process in the study.

The colleges and schools of pharmacy within Georgia and Alabama formed the Southeastern Pharmacy Experiential Education Consortium (SPEEC) in 2002 as a means to cooperatively address experiential issues.[1,10,11] Between 68% and 91% of APPEs for SPEEC member institutions are taught by volunteer faculty members, and 55.8% of SPEEC preceptors are affiliated with more than one SPEEC institution.[1,11] Given the high dependence on preceptors and the large degree of institutional overlap at practice sites, the members of SPEEC designed a study to document the annual number of APPE changes, identify and compare the reasons for these changes, and estimate the time required to locate alternative sites/instructors and complete the corresponding administrative activities for these institutions.

METHODS

At the time of this study, only 5 institutions were official members of SPEEC: Auburn University Harrison School of Pharmacy, Mercer University College of Pharmacy and Health Sciences, Samford University McWhorter School of Pharmacy, South University School of Pharmacy, and the University of Georgia College of Pharmacy. Of these, 2 are categorized as public institutions (Auburn University and the University of Georgia), while the remaining 3 are private institutions (Mercer University, Samford University, and South University). Institutional characteristics related to APPE program management are presented in Table 1.

For each institution, study data were captured using an online experiential tracking form within the Educational Management Systems software and databases (ROI Solutions Group, Inc., Peoria, AZ). Data collection commenced on the date the 2008-2009 APPE schedule was considered finalized at each institution and continued through the last date of the 2008-2009 APPE calendar, varying between 32 and 40 weeks. Because of operational differences, specific data collection dates differed between the various institutions. Student data for any APPEs completed after the final date of the 2008-2009 academic year were excluded from the institutional data set. An example of this would include APPEs for students with progression issues that resulted in delayed graduation. Reasons for APPE placement changes were categorized as either administrator initiated (college or school), student initiated, or site/preceptor initiated. Examples of each category are listed in Table 2. Site- and preceptor-initiated issues were grouped together as it is often difficult to discern the exact reason for placement reassignment requests in this category.

The administrative workload required to complete individual placement changes was estimated in minute increments of 0, 10, 20, 30, 40, 50, 60, 90, or 120 minutes. The increments recorded were based on the best estimate of the time involved in accomplishing the following tasks: researching replacement APPE options; contacting replacement preceptors; reassigning the experience within the database; confirming the placement change with the

Table 1. Advanced Pharmacy Practice Experience Program Data by Institution

Institution	APPE Students, N	APPE Length, Weeks	No. of APPE's Completed per Student	Faculty FTEs for APPE Program Management	Administrative Staff FTEs for APPE Program Management
Auburn[a]	114	5	8	1	1
Mercer[b]	140	5	7	1	1
Samford[b]	125	4	8	1	1
South[b]	92	5	7	1	1
Georgia[a]	123	5	8	4	1.5

Abbreviations: FTE = full-time equivalent.
[a] Public Institution
[b] Private Institution

Table 2. Examples of Advanced Pharmacy Practice Experience Placement Change Categories

Placement Change Category	Examples
Administrative Initiated	Lack of signed affiliation agreement Student academic or professionalism issues Preceptor performance issues APPE courses categorized incorrectly in database requiring correcting availability and reassigning APPEs to same preceptor
Student Initiated	Change in living arrangements Change in career path desires Address strength of schedule for residency-bound students Personal issue (injury, medical illness (self or immediate family) or death in family)
Site/Preceptor Initiated	Preceptor employment change (left site, duties reassigned at site) Preceptor leave of absence Preceptor overbooked by students from >1 institution Site suffers pharmacy staff workforce reduction (economic) Site undergoing renovation / construction processes Site ceases to exist or requests to no longer participate in program

student, preceptor, and site; and modifying any institutional enrollment records (ie, course drop/add changes). The zero minute option was used when less than 10 minutes was required to complete the individual placement change.

Data were reported at the institutional level and compared between public and private institutions. A variety of statistical tests were used to evaluate the data. A simple *t* test was used to compare the proportion of APPE changes made per institution and evaluate differences in the initiating reasons for the APPE changes. A multinomial variable analysis was used (one for public institutions and one for private institutions) and the simultaneous confidence intervals for the differences in multinomial proportions between public and private institutions were estimated. For comparing the time required to complete APPE changes, the data were tested for normality using the Shapiro-Wilk test. Once this hypothesis was rejected, the Wilcoxon rank sum test or Mann-Whitney test for nonparametric data was used for analysis. Significance was set at $p < 0.05$.

RESULTS

For the 2008-2009 APPE year, 4,494 APPEs were initially scheduled for the 5 SPEEC institutions (Table 3). Of these, 1,433 APPEs were reassigned which resulted in a 32% change rate for all scheduled experiences. Comparatively, the reassignment rate between institutions varied from 14.0% to 52.5%. When the data were evaluated based on institution classification type, public institutions had a significantly lower proportion of APPE reassignments than private institutions (20.7% vs. 40%; $p < 0.001$) (Table 4).

Table 3 outlines the initiating reasons for APPE changes for each participating institution. Collectively, 56.8% of APPE changes were site/preceptor initiated, 23.2% were student initiated, and 20.0% were administrative-initiated changes. Table 5 compares the APPE reassignment reason by institutional classification. Site/preceptor issues were the initiating reason for 82.3% of APPE changes in public institutions vs. 47.3% for private institutions ($p < 0.001$). Student initiated reasons comprised 11.0% of reassignments for public institutions vs 27.8% for private institutions ($p < 0.001$). Finally, 6.67% of APPE changes in public institutions resulted from administrative reasons, while 24.93% of APPE changes in private institutions were reported in that category ($p < 0.001$).

Time associated with completing APPE changes was evaluated as total time required to complete all APPE

Table 3. Data Reported by Institutions Participating in a Survey to Determine the Impact of Advanced Pharmacy Practice Experience Placement Changes

Institution	APPEs (N)	Total APPE Changes, No. (%)	Administrative Changes, No. (%)	Student Changes, No. (%)	Site/Preceptor Changes, No. (%)	Total Time, mins	Total Time per Change, mins
Auburn[a]	908	253 (27.9)	5 (2.0)	39 (15.4)	209 (82.6)	3130	12.37
Mercer[b]	975	186 (19.1)	39 (21.0)	39 (21.0)	108 (58.1)	10530	56.61
Samford[b]	994	522 (52.5)	133 (25.5)	112 (21.5)	277 (53.1)	22690	43.47
South[b]	640	335 (52.3)	88 (26.3)	139 (41.5)	108 (32.2)	22750	67.91
Georgia[a]	977	137 (14.0)	21 (15.3)	4 (2.9)	112 (81.8)	1810	13.21
Total	4494	1433 (31.9)	286 (20.0)	333 (23.2)	814 (56.8)	60910	42.51

[a] Public Institution
[b] Private Institution

Table 4. Proportion of Advanced Pharmacy Practice Experience Reassignments by Institution Type

Institution Type	Total Number of APPEs	Total Number of APPE Changes	Proportion of APPE Changes[a]
Public institution	1885	390	0.206897
Private institution	2609	1043	0.39977

[a] $p<0.0001$

changes and as average time per APPE change. As outlined in Table 3, the total time involvement for APPE changes varied dramatically between institutions, from 1,810 minutes (30.2 hours, or 0.8 weeks) to 22,750 minutes (379.2 hours, or 9.5 weeks). When data from all institutions were pooled, the average total time required for APPE changes per institution was 12,182 minutes (203.0 hours, or 5.1 weeks), while the average time required per APPE change was 42.5 minutes. Between institutions, however, the average time required per APPE change ranged from 12.4 minutes to 67.9 minutes. When evaluating the data based on the institution classification type, public institutions had a significantly lower average time requirement per APPE change compared with private institutions (12.7 minutes vs. 53.7 minutes; $p<0.001$) (Table 6).

DISCUSSION

Since the study by Kawahara and colleagues was conducted, the landscape of experiential education has changed through nationwide adoption of the first-professional PharmD degree, required expansion of introductory pharmacy practice experience programs (IPPEs), and implementation of minimum APPE hour requirements.[9,12,13] Not surprisingly, many of the challenges facing experiential offices have remained unchanged over the years. Harralson's survey of experiential directors in 2001 identified the top 4 concerns of managing APPE programs as: finding, developing, and maintaining sites and preceptors (73%); having an adequate number and quality of sites and preceptors (38%); ensuring and maintaining site consistency (28%); and securing adequate financial and staff support (18%).[4] While the timing of these responses corresponded with transition to the PharmD degree, experiential offices continue to struggle with identifying, developing, and maintaining adequate quality sites.[1-3]

When comparing our multicenter data to that of Kawahara and colleagues, the 32% average APPE reassignment rate for SPEEC institutions was 210% higher than the rate at the single center, public institution. However, when SPEEC public institution data alone were compared, the 20.7% APPE reassignment rate remained 40% higher than the Kawahara dataset value of 14.8%. Because only 5 institutions were included in this study, results obtained upon stratification by public or private institutional type may not be completely generalizable due to the wide variations seen in certain variables. However, given the large, overall APPE sample size, the collective results should provide credible comparisons with historic data.

Administrative practices used by some SPEEC institutions may have contributed to higher APPE reassignment rates in our study. First, in instances where programs had insufficient availability to fill open slots in student practice experience schedules, programs often created "to be scheduled" placeholders until availability at an actual APPE site was secured. Situations in which this process was used included instances when completed affiliation agreements for new sites were needed and when new availability had to be located to satisfy specific practice experience requirements within defined geographic areas. As a result of these placeholder "assignments," one practice experience change could result in 2 APPE assignments: first to placeholder status, and then to the finalized placement. Also, policies governing practice experience change requests varied among SPEEC institutions. Those institutions with more restrictive polices, such as the University of Georgia, tended to have lower incidences of APPE reassignments.

When examining reasons for initiating APPE changes, category order remained constant regardless of whether data were viewed collectively or stratified by institutional

Table 5. Comparison of Advanced Pharmacy Practice Experience Reassignment Reasons per Institution Type

APPE Reassignment Reason	Public Institution, No. (%)	Private Institution, No. (%)	Difference, %	*P*
Site/preceptor	321 (82.3)	493 (47.3)	-35.0	<0.0001
Student	43 (11.0)	290 (27.8)	16.8	<0.0001
Administrative	26 (6.7)	260 (24.9)	18.3	<0.0001

Table 6. Comparison of Time Required for Advanced Pharmacy Practice Experience Changes by Institution Type[a]

	Time for All APPE Changes (min)	Time in Minutes per APPE Change, Mean (SD)
Public institution	4,940	12.7 (11.4)
Private institution	55,970	53.7 (41.9)

Abbreviations: APPE = Advanced Pharmacy Practice Experience
[a] Wilcoxin-Mann-Whitney Test ($z = -23.43$; $p < 0.001$)

type. In both instances, category order from most- to least-frequent initiating reason was site/preceptor, student, and administrative. Because of limitations with the online experiential tracking form, we were unable to consistently identify the type of APPE that required changes or the type of faculty members involved in the reassignment process. Both factors will be important to isolate in future studies to determine which APPE types are most susceptible to changes and whether changes most commonly involve volunteer or paid faculty members. The higher incidence of student initiated changes seen in private institutions was not surprising as these institutions may feel additional pressure to cater to student placement desires due to higher tuition rates in most cases. Institutions, however, must account for the associated workload costs to evaluate whether such a policy is cost effective and sustainable.

In order to accommodate APPE reassignments, residual availability must remain after completing the APPE schedule. In a 2006-2007 multicenter study of SPEEC institutions conducted by Brackett and colleagues, surplus availability for non-community APPEs was projected to be only 2.7% above the total needs for the 2010-2011 APPE calendar year, assuming availability remained unchanged from 2006-2007 levels.[1] Because of revisions within the accreditation standards, 2 institutions have chosen to expand their APPE program to meet and/or exceed the new requirements.[13] Mercer University increased its APPE program from 35 to 40 weeks during the 2011-2012 APPE calendar, while Samford will increase its APPE program from 32 to 36 weeks in the 2012-2013 APPE calendar. These changes will likely affect the overall availability of other SPEEC institutions. Although our consortium deals only with Georgia and Alabama colleges and schools of pharmacy, we are also impacted by student enrollment and education trends in neighboring states. Since 2008, 5 new colleges of pharmacy and one branch campus have opened in Tennessee, South Carolina, and Georgia. As these new campuses matriculate students into introductory and advanced practice experiences, existing pharmacy programs have and will continue to see reduced site availability due to rising competition. One additional complexity deals with site specific requirements, which must be completed prior to an APPE. In some situations, residual availability cannot be used if practice experience changes occur too close to the needed start date.

One of the most interesting aspects of the study findings were differences found among institutions in total administrative time estimates for processing APPE reassignments, as well as the efficiencies seen between public and private institutions. In the study by Kawahara and colleagues, time was estimated based on the steps isolated in the APPE change process.[9] Within our study, time was estimated by individual faculty or staff members involved in each APPE reassignment process. These estimates may not accurately reflect the actual time spent in some cases. In looking at individual times required to complete reassignments, estimates varied from 0 to 120 minutes. An upper limit of 120 minutes was selected at the study outset as we believed that this would sufficiently cover all situations given the use of computerized experiential databases and e-mail communication. Although the 120-minute maximum was reached in only 1 case (0.2%) reported by 1 public institution included in the study, the 120-minute maximum was reached for 203 (19.4%) cases reported by the 3 private institutions. Had higher time limits been allowed within the study design, even higher workload assessments may have been seen within the dataset for the private institutions. Outside of identifying remaining availability, processing efficiencies could have been impacted by required site/preceptor paperwork, student clearance procedures, experiential office turnover, experiential office staffing levels, and administrative reporting requirements. In addition, for situations affecting multiple APPEs simultaneously, individual reassignments could require minimal processing time if 1 preceptor agreed to precept several additional students.

In the study by Kawahara, average workload estimates for completing APPE reassignments was 3 hours per reassignment, which translated into a 0.33 full time equivalent faculty member.[9] Within our study, the average reassignment time for all institutions collectively was 42.5 minutes per reassignment and represented 0.1 full-time equivalent faculty member. No differentiation could be made for the percentage of faculty or administrative personnel time involved at each institution. This would be critical to assess in future studies to determine the cost impact of performing APPE changes. In evaluating the differences between the Kawahara study and our findings, changes that have taken place in experiential education offices over the last decade should be considered. Based on trends seen in SPEEC institutions, we assumed that experiential offices would have more administrative/professional staff members than in 1997. These professional staff members

are often charged with effectively managing the daily operations of the experiential office, which includes handling new faculty paperwork and processing practice experience scheduling requests. In the 1998 study, probably fewer non-faculty administrative staff members were employed and their role may have been more limited.

Other time considerations center on technological advances over the past decade, such as increased reliance on online data management and scheduling systems. These processes, in combination with the widespread use of e-mail communication, could greatly speed the process of arranging and confirming APPE reassignments versus when Kawahara's study was published. Unfortunately, time saved through technological advances has been minimized by increased time requirements to manage site-specific prerequisites such as background checks, drug screens, fingerprinting, and other orientation requirements.

Most importantly, it is critical to put into perspective how the APPE reassignment process relates to the overall functions of experiential education offices. In 2005, the AACP Professional Affairs committee outlined academic leadership roles and responsibilities for experiential program directors.[6] Outside of teaching, service, and scholarship, these responsibilities include, but are not limited to, developing and maintaining IPPE and APPE placements, negotiating and managing affiliation agreements and site reimbursements, performing site visitations for quality assurance purposes, ensuring compliance with health records and other university and site requirements, evaluating consistency in external/distant practice experiences, developing online student portfolios, and maintaining effective communication with students, stakeholders and other constituents. Clearly there is limited time left to manage APPE changes.

Upon conclusion of our study, our consortium lost the ability to electronically track APPE changes within our system because of database platform modifications. As such, sequential data are unavailable to evaluate the impact of study results on subsequent APPE reassignment rates and workload estimates. Samford was the only institution to record practice experience changes in an offline format. They noted their absolute number of student-initiated requests increased from 112 (21% of all APPE changes) in 2008-2009 to 155 (38.1% of all APPE changes) in 2009-2010. Interestingly, the total administrative workload for APPE practice experience changes at Samford declined from 9.5 to 5.9 weeks in 2009-2010. Reasons for the reduction were unclear. Beginning with the 2011-2012 APPE class, Samford enacted a policy change designed to limit student-initiated changes. Under the new policy, student requests were allowed throughout the academic year provided they were needed to ensure future career choices or were because of student hardship cases.

Plans are in place to conduct a follow-up study during the 2012-2013 APPE cycle. Additional parameters will be included to identify the types of APPEs requiring changes (ie, acute care, outpatient, community, etc), determine whether the site/preceptor changes are due to issues with full-time or volunteer faculty members, and evaluate the actual costs associated with processing APPE changes. Institutions will also be able to quantify the workload assessments more precisely through use of an open-ended selection process rather than preselected time points.

One barrier to affecting change in the area of program management and workload issues in experiential education is related to high turnover rates for experiential faculty members and administrative staff members.[4] Since spring 2009, significant personnel changes have affected the APPE management structure for 4 of the 5 consortium schools. There have been 3 faculty APPE director changes (Samford, Mercer, and UGA) and 2 administrative coordinator changes (Mercer and South). As a result of the changes, knowledge gaps may exist regarding previously collected data which in turn could delay or prevent policies from being implemented to address programmatic or workload issues. Because personnel changes within the area of experiential education are common, our limited success in implementing post-study changes is consistent with real world dynamics.

CONCLUSION

This multicenter study highlights the wide variability that exists in the quantity, type, and impact of APPE student assignment changes at both public and private pharmacy institutions. When considered collectively, the placement change rate identified in this study was more than 2 times higher than previously reported. Because of increasing pharmacy enrollments and enhanced competition from both IPPE and APPE placements, securing reassignments will likely become increasingly difficult. Data from this study suggest that the use of more restrictive policies governing APPE change requests can reduce the amount of student-initiated placement changes.

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