

RESEARCH

Implementation and Use of the Pharmacy Curriculum Outcomes Assessment at US Schools of Pharmacy

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Objective. To describe how schools and colleges of pharmacy use the Pharmacy Curriculum Outcomes Assessment (PCOA) in relation to student assessment and curricular feedback.

Methods. A survey was distributed to all programs that have implemented the PCOA. The survey was designed to assess 3 domains regarding the use of the PCOA: rationale for use, logistics of administration, and performance data review and distribution.

Results. A 79% response rate (41/52) was obtained. The mix of responses was 93% current PCOA users and 7% past users. The most common reasons for PCOA use were for programmatic assessment and benchmarking. The examination was most frequently administered during the P3 year, with minimal stakes attached to performance. Significant differences in responses based on public vs private institution were seen with respect to length of accreditation of current PCOA users, messaging to students regarding performance, inclusion of results in student advising, and distribution of results to stakeholders.

Conclusion. Programs were using the PCOA primarily as an assessment in the P3 year for reasons related to programmatic and curricular assessment. Some differences existed between public and private institutional PCOA use and examination-related processes and results distribution.

Keywords: Pharmacy Curriculum Outcomes Assessment, student assessment, summative assessment, curricular assessment, educational outcomes

INTRODUCTION

The Accreditation Council for Pharmacy Education (ACPE) states in their revised 2007 standards that all “colleges should incorporate periodic, psychometrically sound, comprehensive, knowledge-based and performance-based formative and summative assessments that allow comparison and benchmarks with all accredited and peer institutions.”¹ This is further supported in the ACPE 2016 Standards, which include specific references to standardized and comparative assessments on required documentation in Appendix 3.²

Incorporating such assessments into a pharmacy curriculum allows students to continually review material, identifies students potentially requiring remediation, and allows schools to monitor their program for areas

requiring curricular improvement in comparison to their peers.^{3,4} As a result, some schools of pharmacy developed their own curricular assessments.⁵⁻⁹ The challenge in doing so is the complexity of validating examinations and the faculty time commitment associated with examination development, administration, and evaluation of outcomes.⁴ In addition, home grown examinations cannot be systematically compared across schools for benchmarking, which is a key element for the use of standardized assessments in higher education.

In 2008, the National Association of Boards of Pharmacy (NABP) developed the Pharmacy Curriculum Outcomes Assessment (PCOA), a validated evaluation tool available for schools of pharmacy to administer in recognition of the need for a standardized assessment.¹⁰ PCOA question items are developed by item writers whom are subject matter experts and pharmacy faculty members from across the United States. Item writing for this assessment is a structured, standardized process led by a trained psychometrician.¹¹ The examination blueprint originated from results of a curriculum survey NABP sent to

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US schools of pharmacy to inquire about national trends in pharmacy education and ACPE's Accreditation Standards, which details content that programs must cover throughout the pharmacy curriculum.^{1,2} Pharmacy schools are required to map program learning outcomes to ACPE 2016 Standard's Appendix 1 to demonstrate the depth and breadth that respective curricula are covering in the required content and knowledge areas.

The PCOA has 4 major content areas including the basic biomedical sciences, pharmaceutical sciences, social/behavioral/administrative pharmacy services, and clinical sciences. The same examination can be administered to all professional years, at \$75 per student. If programs administer the PCOA annually to each cohort, they can document student performance progressively through the professional years. Institutions receive individual student performance and cohort data with comparative national reference data. Individual examinees receive a report with a total scaled score comprised of the 4 content areas (score 0-700) and a scaled score (0-700) in each content area. Examinees are also given a report on the percentage of questions answered correctly within subdomains of the 4 content areas. In addition, institutions receive their examinees average scaled scores in the 4 major content sections and percentages of questions correct in each subdomain. An example score report can be found on the NABP website.¹²

Little information is published on how schools of pharmacy are incorporating the PCOA into their curricula and how they are using it for student or curricular assessment. There is growing interest in the PCOA in light of the ACPE 2016 Standards, which outline the need for student performance assessments and specifically names the PCOA.² Therefore, we conducted a survey of both current and past users of the PCOA to determine how they incorporated the PCOA so the academy could better understand how results of this examination are being used across the country. The survey addressed 3 domains: (1) rationale for using the examination; (2) approaches to examination administration and student effort; and (3) performance data evaluation and results distribution.

METHODS

Survey items focused on the 3 domains and program demographics. The majority of items targeted current PCOA users. Past users of the PCOA were directed to a brief series of questions related to the discontinued use of the examination. Survey items were revised based on feedback from involved faculty members, a nonpharmacy survey reviewer, and colleagues at NABP. This research project was reviewed and determined to be exempt by the Wayne State University Investigational Review Board.

Survey items were loaded into the online survey system, SurveyMonkey (SurveyMonkey, Inc., Palo Alto, CA). All survey respondents answered items 1-4. Respondents were then directed into one of 2 pathways depending on their response to item 4. Current users of PCOA had an additional 16 items to complete, while past users had an additional 3. See Appendix I for final survey items.

The respondent pool was provided by NABP and included institutions and programs of current and past PCOA users. The survey was administered to individuals representing 52 institutions who had used the PCOA between 2009 and 2014. An initial e-mail included a description of the study and provided the electronic survey link. Respondents were informed that the survey was confidential and that the results would be used to describe the current status of the PCOA in schools of pharmacy in the United States regarding its use and interpretation of outcomes. Respondents were also notified of the intention to share information in aggregated format at professional conferences and in professional publications. Consent was implied through participation in the survey.

The survey was open from March to early May 2014. Two e-mail reminders were sent to encourage participation. In addition, respondents were solicited to participate through a verbal request by the researchers during the PCOA Forum held in April 2014 at NABP Headquarters.

Data was downloaded from SurveyMonkey and collated in Microsoft Excel. Wayne State University Information Technology provided guidance regarding cleaning the data to ensure that only one response was counted for each program. Respondents who listed their institution in duplicate were deleted as well as similar IP addresses. Data was analyzed using both descriptive and inferential statistics using SPSS, v22 (IBM, Armonk, NY). Chi-square analyses with post hocs were run to determine if responses were dependent on whether the PCOA user was a public or private school. Bonferroni adjustments were made for inflated type 1 error in the post hoc analyses when more than one comparison was made.¹³ Fisher exact value was reported if an expected frequency was <5. Effect sizes were evaluated with Cramer's V.

RESULTS

The overall survey response rate was 79% (41/52). Ninety-three percent (38/41) were current PCOA users and 7% (3/41) were past users. Of the overall sample, 22 (54%) public and 19 (46%) private schools were using PCOA or had used it in the past. Thirty-six (88%) schools reported a curriculum structure of 3 years of didactic coursework followed by 1 year of advanced pharmacy practice experiences, and the largest percentage of PCOA

users had a class size of 76-100 students (46%). A description of curricula structures and class size of PCOA users is shown in Table 1.

Information in the following paragraphs refers to schools that were using the PCOA at the time of the study (n=38). Several items listed in Appendix I included “select all that apply” and, therefore, yielded a variety of responses and percentages. Past users were directed to a brief series of questions related to why they discontinued using the PCOA with results detailed at the end of this section. Response frequencies are reported.

Data on accreditation status, years of PCOA use, student requirements, and funding was collected for current users. A breakdown of accreditation status is listed in Table 2. The largest percentage of current users, 17 (45%), were programs accredited for more than 50 years. A significant difference in length of accreditation was seen between public and private institutional status (Fisher exact, $p=0.02$, Cramer’s $V=0.65$). The post hoc with an adjusted residual analysis revealed a significant difference between institutions at the 6-10 year accreditation range with more users of PCOA seen among private institutions ($Z=2.7$, $p<0.01$) and more use of PCOA at public institutions in the more than 50 years of accreditation group ($Z=3$, $p<0.01$). The majority of pharmacy programs used the PCOA during the P3 year [35 (92%)] followed by P2 year [11 (29%)], P1 year [10 (26%)], and P4 year [3 (8%)]. Thirty-four (89%) schools required the PCOA for their students while 4 (11%) offered the PCOA to students on a voluntary basis. Finally, the majority of programs budgeted college funds to pay for students to take the PCOA [29 (76%)] and nine (24%) of schools incorporated its cost into student fees.

Respondents stated a variety of reasons for using the PCOA in their overall student assessment plan and the

college curriculum assessment plan. The most common reasons for administering the PCOA were programmatic assessment [29 (76%)] and benchmarking [28 (74%)]. The distribution of responses to PCOA use is shown in Figure 1 and individual comments if respondents checked “other” in Table 3. The most common response for incorporation of the PCOA into the student assessment plan was that institutions were using results to document and provide feedback on individual student performance [22 (62%)]. Institutions varied regarding how it was incorporated into the student assessment plan, with 13 (34%) using the PCOA as the only summative examination, 8 (21%) using the PCOA some years and internal assessment alternate years in the curriculum, and 11 (29%) using a combination of the PCOA and clinical skills-based assessments. One institution stated that the PCOA was used for curricular assessment along with a high-stakes skills-based examination. For college curriculum assessment, few institutions were using the PCOA as their primary method of college curriculum assessment [5 (13%)]; the majority were using its results in conjunction with other assessments including student self-assessment data [19 (50%)], student course evaluation [22 (58%)], and faculty course evaluation [21 (55%)]. Respondents provided a variety of individual comments on the incorporation of the PCOA in the college curricular assessment plan as listed in Table 3.

Stakes assigned to PCOA performance and strategies used to encourage student performance varied amongst institutions. Twenty-three (61%) stated that no stakes were attached to student performance. This was followed by 10 (26%) respondents attaching “low stakes” (eg, a development plan for students), 3 (8%) assigned “medium stakes” (eg, course grade), one (3%) was using it as “high stakes” (eg, impacts progression), and one (3%) as both high and low (high one year; low another). Regarding strategies to encourage student performance, 24 (63%) schools reported conveying to students that performance is reflective of their program. A significant difference was seen between public vs private institutions when asked if there was “messaging that performance is reflective of the program.” More private schools answered “yes” (14 vs 10 public; “no:” private 3, public 11; $X^2(1)= 4.87$, $p=0.027$), with a strong effect size (Cramer’s $V=0.36$). Post hoc analysis revealed a significant difference between public and private status, as well as between responses (did or did not use messaging relating to performance as stated above) within the individual public and private groups ($Z = 2.2$, $p<0.025$). Other strategies reported including results during advising [14 (37%)], recognizing high performers [11(29%)], and messaging focusing on the stakes of the examination [8 (21%)].

Table 1. Demographics of All PCOA^a Users (N=41)

Description of School/College Data	Public	Private
Types of Institutions Represented	22	19
Number of Students Admitted		
50-75	4	4
76-100	10	9
101-125	6	1
126-150	-	1
>150	2	4
Curriculum Model		
3 years didactic + 1 year experiential	20	16
2 years didactic + 2 years experiential	1	-
3 yr, year-round accelerated	1	1
Others: - 2.5 didactic+ 1.5 experiential; 0-6 program	-	2

^aPharmacy Curriculum Outcomes Assessment

Table 2. Length of Accreditation of Current PCOA^a Users (N=38)

Type of School	Candidate status	1 to 5 years	6 to 10 years	11-20 years	21-50 years	>50 years
Public	1	3	0	1	2	14
Private	3	3	5	3	0	3

*Pharmacy Curriculum Outcomes Assessment

Additional comments related to stakes and strategies used to encourage performance are listed in respondent comments in Table 3.

When asked who reviewed PCOA results prior to student result distribution, a majority of respondents, 32 (84%), had an administrator (such as a dean, associate dean, or assistant dean) review results. Other included a committee [16 (38%)], student faculty advisors [8 (21%)], and department chair [1 (3%)]. A description of how PCOA performance data is shared with faculty members and students is shown in Figure 2. A significant difference was observed between public and private institutions regarding how they released PCOA results; private schools responded more often with reporting and disseminating results to multiple stakeholders simultaneously at a college-wide meeting (Fisher exact $p=0.013$) with a very strong Cramer's $V (=0.44)$. The post-hoc analysis showed a significant difference within the individual public and private groups on whether they presented PCOA data at an institution-wide meeting that included faculty members, students, and other stakeholders ($Z=2.7, p<0.01$). In addition, with respect to how institutions incorporated review of student results into faculty-student advisor meetings, a significant difference was found between public and private institutions, with more private institutions incorporating PCOA results into advising [$X^2(1)=6.45, p=0.01$] and a very strong Cramer's V effect size ($=0.41$). Finally the post hoc analysis found a significant difference between public and private institutions on whether they had faculty advisors meet with individual students to review results, with private reporting to having these meeting more often ($Z=2.5, p<0.01$).

When asked about student remediation plans, 25 (66%) schools responded they were "not in use." Four (11%) noted they "required plans if the student performed below a certain threshold." Four (11%) answered "other" and responses included that plans were developed by the individual students, remediation was often person-specific (eg, done on a case-by-case basis) and was managed by individual faculty advisors, or that remediation plans were still in development.

Three respondents had used PCOA in the past but were not currently using it; two of those 3 answered the questions addressing timing of the examination and

reasons for discontinuing its use. Two respondents had used the PCOA during the past 5 years. One of these 2 used it during all 4 years of the curriculum, and the other only used the PCOA in the P3 year. The most frequently selected reason for no longer using the PCOA was not understanding how to interpret it. Additional reasons for not using the PCOA included its cost (1), and that curriculum was assessed using an internally developed examination or assessment method (1).

DISCUSSION

PharmD programs across the country, including public and private institutions, programs with a range of class sizes, and long-standing and newly developed programs, are using the PCOA. Diverse programs find this standardized national assessment useful. Moreover, the number of programs using the PCOA increased from 15 programs in 2009 to 38 programs in 2014.¹⁴ Although further interpretation is needed, a significant difference was seen with

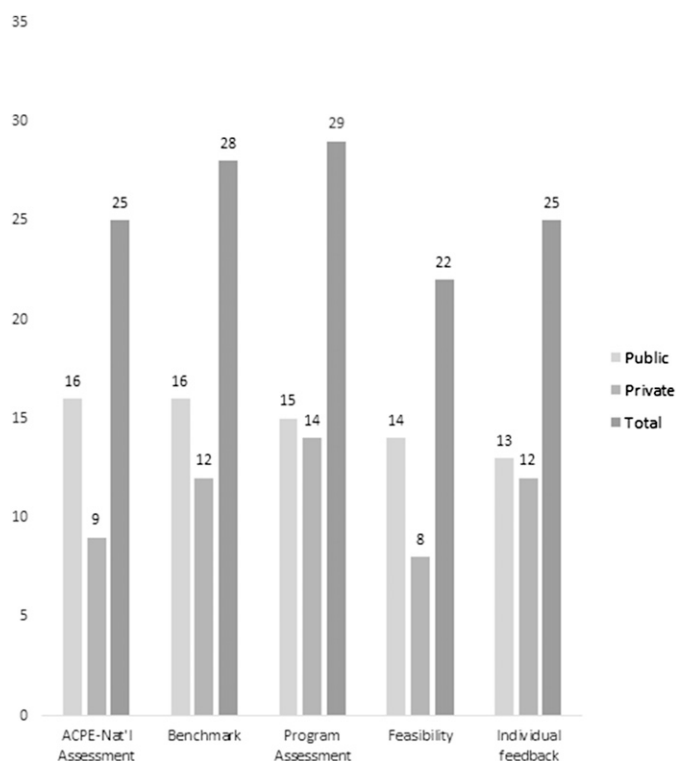


Figure 1. Institutional Reasons for Using Pharmacy Curriculum Outcomes Assessment (Current User N=38).

Table 3. Respondent Comments on Specified Topics/Questions

Parameter for comments	Comments
Reasons for using the PCOA ^a	<ul style="list-style-type: none"> ● Practice taking standardized tests ● Assist students in self-assessing to focus preparation for the NAPLEX^b ● Previously had an internal capstone examination and chose to pilot the PCOA ● Utilize the information in cases of academic dismissal/suspension ● External check on internal curricular coverage
Comments about PCOA in the College Assessment Plan	<ul style="list-style-type: none"> ● College also uses objective structured clinical examinations ● College also uses student evaluations of ratings of the curriculum ● Did not use for curricular reform as not psychometrically powered in subsections ● Use for information only; not part of our plan ● Not given sufficient data to assess curriculum ● It is used in conjunction with performance on NAPLEX/(MPJE^c), acceptance to residencies, and course evaluation.
Comments about stakes associated with the PCOA	<ul style="list-style-type: none"> ● Low stakes in years 1 and 2 and high in year 3 ● The stakes will increase every year ● Has consequences but doesn't affect academic progression ● Currently evaluating the possibility of moving to a high stakes model between end of didactic and beginning of advance pharmacy practice experiences
Additional strategies noted to encourage student performance	<ul style="list-style-type: none"> ● Messaging that it provides comparison to other students nationally ● Messaging that it helps students identify strengths and weaknesses ● NAPLEX preparation ● Competition between the classes ● Tiered bonus points that can be used in any class ● Scholarship money for high performers ● Included in a class grade ● "Motivational survey" to link performance with results

^aPharmacy Curriculum Outcomes Assessment

^bNorth American Pharmacist Licensure Examination

^cMultistate Pharmacy Jurisprudence Examination

more frequent responses of PCOA use in public institutions accredited greater than 50 years and of private institutions in the 6-10 year accreditation range. One potential reason for the significant difference in the 6-10 year range among private institutions may be the increase in pharmacy school accreditations.^{15,16} In 2000, there were 80 accredited schools; as of July 2014, there were 130. Since the PCOA release in 2008, an increase in the private institution market may have occurred.

A greater emphasis on PCOA student performance was demonstrated by private institutions compared to public institutions. This theme was consistent in both messaging to students that their performance reflected on the school and in the release of performance data to stakeholders. In addition, an increased emphasis on students discussing results with a faculty advisor was observed in private institutions, potentially increasing individual student accountability during the process. This suggests an increased engagement of individual stakeholders of PCOA at private institutions. This could be a result of differences in student advising models between private and public institutions, as well an

increased pressure to provide benchmarking against other programs given the greater involvement of stakeholders.

The majority of respondents noted that the PCOA is included in their curricular evaluation plan, but 2 institutions stated they did not use it for curricular evaluation, and one noted it "did not use PCOA for curricular reform as not psychometrically powered in subsections." Since the number of questions can be low in some of the smaller PCOA examination subsections, inferences from performance at this level should be judicious. In contrast, the 4 major content areas that contain the subsections are psychometrically powered for such analysis. Given that information, users may want to focus their curricular interpretation on the performance in the 4 main sections. A possible use of the PCOA would be to evaluate the outcomes among the 4 major sections over the professional years and note trends in student retention of information in the basic and pharmaceutical sciences, social/administrative/behavioral, and clinical sciences to ensure that "bulimic learning" is not occurring.¹⁷

The ability to provide direct student feedback was a common reason schools included the PCOA in the

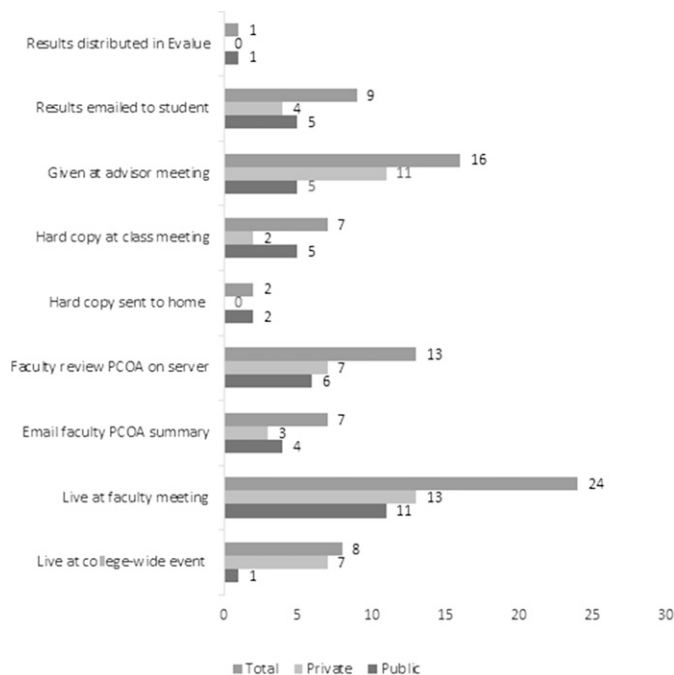


Figure 2. Pharmacy Curriculum Outcomes Assessment Performance Data Shared with Stakeholders.

student assessment plan, but how it was incorporated varied, with less than 40% using it as the sole evaluation. A hybrid approach seemed to be more common. Moreover, approximately one-third of respondents used the PCOA alone; another third used the PCOA some years and internal assessment others; and a final third used it in combination with a skill-based assessment. Thirty-three (87%) schools responded that the PCOA was used in a “no stakes” or “low stakes” fashion at their institution. Therefore, while the PCOA was being used as a student’s curriculum assessment, the majority of respondents seem to be using PCOA individual student results in a more formative manner. This is similar as to how physician assistant (PA) schools are using the PACKRAT, or the Physician Assistant National Certifying Examination.¹⁸ The PACKRAT is a 225 multiple-choice assessment whose blueprint is patterned after their PA licensure examination, the Physician Assistant National Certifying Examination (PANCE).¹⁸ Like the PCOA, it can be used to document a student’s progress through a curriculum, and the students receive a detailed report on their performance in specific content areas. The PACKRAT is often given by PA schools at the end of year 1 and year 2, and it has shown a correlation with student’s performance on the PANCE.^{19,20} While the use of PCOA is similar to the use of the PACKRAT, PCOA’s use seem to greatly contrast with the profession of medicine, which uses summative assessments, the United

States Medical Licensing Examination (USMLE) step examinations, to determine student progression through medical school.²¹

The majority of schools noted that college administrators were directly involved in the review of individual student results on the PCOA (94%) and individual faculty members were typically presented with outcomes of the students’ performance. However, only about half of respondents noted that faculty members were involved in individual student score report distribution through faculty advising. Given the increased emphasis on fostering a culture of continuous professional development and self-evaluation for students, the objective evaluation data the PCOA provides on individual student performance may be useful during the student advising process.²²

Little is published regarding how pharmacy schools interpret and use PCOA data. Waskiewicz described how their program utilized student incentives along with statistical manipulation of the examination results, using a student opinion scale, which filtered for lack of motivation when administering the PCOA to P3s as a low stakes examination.^{23,24} The authors noted that when students were incentivized, less filtering of the examination results was needed. Scott et al described the use of the PCOA as a curricular evaluation tool and also compared scores to GPA and national PCOA averages.²⁵ They found that the PCOA scores most closely related to GPA in the P3 group ($r=0.71, 0.46, 0.26$) with inconsistency among years offered. For P1 and P2 years, relationships ranged between $r=0.25$ to 0.46 , and a strong relationship was found between scores in each class year and the national scores. Finally, Naughton et al conducted a study to determine if there was a relationship between students’ perceived competency and actual competency utilizing the PCOA in third-year pharmacy students.²⁶ They used a 5-point Likert scale and developed a perceptions’ combined score for each content area that matched with the 4 major sections of the PCOA. They found that students’ perceptions of competency significantly correlated with their actual scores on biomedical sciences ($r=0.208$) and pharmaceutical sciences ($r=0.264$).

Strengths of this PCOA survey study include the organization of the study (2 schools of pharmacy joining efforts) and the respondent pool. The largest portion of the pool included 38 current users. Through NABP correspondence, we knew that 38 schools were registered to administer the examination in 2014, so the data was reflective of what was occurring in the academy at the time.²⁷ While the survey instrument was reviewed by content experts at NABP to ensure accuracy and clarity,

a possible limitation of this study was the lack of extensive pretesting prior to survey launch.

Given the limited literature on the topic, many unanswered questions regarding use of the PCOA remain such as how schools could more effectively use data for curricular improvement and student assessment; how institutions could use it and increase student stakes; and what benefit students perceive from its administration. Institutions lack uniformity in how PCOA information is being utilized; perhaps through research, several institutions can combine efforts and evaluate this aspect of the PCOA. Finally, given the 2016 ACPE Standards, conversation will continue in the academy and with NABP regarding the most appropriate use and potential as a pre-advanced pharmacy practice experience assessment tool.²

CONCLUSION

Schools and colleges of pharmacy are using the PCOA primarily for P3 assessment. The most common characteristics among users are being institutions with more than or equal to 50 years accreditation and class size of 76-100. Significant differences in survey responses related to institutional type (public vs private) were seen regarding the length of accreditation of users, messaging to the students, inclusion in student advising, and distribution of results to stakeholders. That more than 75% of respondents stated they were using institutional (not student) funds to pay for it, suggests the PCOA has recognized value for use in curricular and student assessment. However, given that no or low stakes were associated with student performance at most institutions, the academy is still evaluating the best way to utilize results and more research is needed.

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Appendix 1. Survey on Pharmacy Curriculum Outcomes Assessment (PCOA) in US Colleges and Schools of Pharmacy

Please answer the following questions regarding the utilization and implementation of the Pharmacy Curriculum Outcomes Assessment (PCOA) to evaluate doctor of pharmacy (PharmD) curriculum and student learning at your college or school.

All survey responses will be confidential. Survey results will be used to describe the current status of the PCOA in colleges and schools of pharmacy in the United States. By completing this survey, you acknowledge understanding that the information will be shared for informational and research purposes development, in aggregated format, at professional conferences and in professional publications.

We appreciate your input regarding the assessment of student learning in pharmacy education. Completion of the survey should take no longer than 10 minutes. If you would like to receive the results of the survey, please contact Justine Gortney at jgortney@wayne.edu.

Purpose of this Study: To obtain information as to how colleges and schools are implementing and utilizing the PCOA examination for the assessment of student learning and/or for curricular assessment.

Section 1: Demographics / General PCOA Questions

- 1) Indicate the number of students admitted with each PharmD class at your college or school of pharmacy.
 - a. < 50
 - b. 50-75
 - c. 76-100
 - d. 101-125
 - e. 126-150
 - f. >150
- 2) Which of the following institutional settings best describes your college or school of pharmacy?
 - a. Public
 - b. Private, (PharmD program is offered; other schools such as medicine or dentistry may exist)
 - c. Private, stand-alone (PharmD program is the only degree offered at your institution, no other schools, such as medicine or dental are affiliated)
- 3) How is your institution's PharmD curriculum modeled?
 - a. 3 years didactic + 1 year experiential
 - b. 2 years didactic + 2 years experiential
 - c. 3 year, year-round accelerated program
 - d. Other (with text box to explain)
- 4) Does your program currently (within the current or previous academic year) utilize the Pharmacy Curriculum Outcomes Assessment (PCOA)?
 - a. Yes
 - b. No (skip to question tree XX on page 6)
- 5) For how many years has your program used the PCOA?
 - a. \geq 5 years
 - b. 4 years
 - c. 3 years
 - d. 2 years
 - e. 1 year
- 6) Indicate the reason(s) your pharmacy school or college decided to utilize the PCOA examination. Select all that apply.
 - a. Supports the ACPE recommendation for nationally standardized summative assessments

- b. To obtain a benchmark for school or college's performance compared to peer schools
 - c. For programmatic assessment
 - d. PCOA is more feasible when compared to developing and administering an internal summative examination
 - e. PCOA provides individual student assessment and feedback
 - f. Other: Add text box
- 7) How does the use of PCOA fit in your overall STUDENT assessment plan? Select all that apply.
- a. The PCOA examination is the only summative examination offered in the program
 - b. The PCOA examination is utilized in some years but internal assessments are used in other years
 - c. The PCOA examination is combined with clinical-skills based examination(s)
 - d. Results of this examination are used to document and provide feedback on student's individual performance in each domain
 - e. Other: Add text box
- 8) How does the use of PCOA fit into your overall SCHOOL or COLLEGE's curricular assessment plan?
- a. PCOA data is used as our primary method of curricular assessment
 - b. PCOA data is used in conjunction with student self-assessment data
 - c. PCOA data is used in conjunction with students' course evaluations
 - d. PCOA data is used in conjunction with faculty course evaluations or report
 - e. Other: Add text box
- 9) How long has your college or school of pharmacy been offering pharmacy degrees as a fully accredited member of the Accreditation Council for Pharmacy Education (ACPE)?
- a. Candidate status
 - b. 1-5 years
 - c. 6-10 years
 - d. 10-20 years
 - e. 21-50 years
 - f. > 50 years

Section 2: Specifics regarding PCOA administration at your college/school

- 10) During which professional year(s) or equivalent, is the PCOA administered to students at your institution? If administered during multiple years, select all that apply.
- a. PY1 – first professional year
 - b. PY2 – second professional year
 - c. PY3 – third professional year
 - d. PY4 – fourth professional year
- 11) Indicate if students are required to take the PCOA or if it is optional for your program.
- a. Required
 - b. Optional
- 12) Indicate the primary funding source for the PCOA examination for your PharmD program.
- a. Student fees
 - b. Budgeted college funds
 - c. Grants
 - d. Other – add text box
- 13) What “stakes” do you attach to performance on the PCOA examination?
- a. High stakes: Example - Impacts student progression through the program
 - b. Medium stakes: Example - Associated with percentage of a course grade
 - c. Low stakes: Example – Could result in remediation or student development plan
 - d. No stakes: Example – Does not impact progression, course grade, or create consequences that directly impact the student
- 14) What strategy(ies) have you used to encourage students to put forth their best effort on the PCOA examination? (Select all that apply)
- a. Recognition of high performers → (if chosen, branch to question iv below)
 - b. Inclusion of results in advising sessions between student and faculty advisor
 - c. Messaging that student performance reflects/represents the program

- d. Messaging that focuses on the stakes attached to the exam
- e. Other: Add text box
- iv. How do you recognize high performers? (Select all that apply.)
 - Celebration at a college/school event such as a luncheon
 - Send a letter from the Dean's Office or Dept. Chair
 - Highlighted on college/school website
 - Financial incentive
 - Grade incentive (bonus points)
 - Other: add text box

Section 3: Performance data evaluation and distribution

- 15) Who reviews the individual PCOA results PRIOR to distribution to the students? (Select all that apply)
 - a. A committee (such as assessment committee, curriculum committee or student performance committee)
 - b. An individual student's faculty advisor
 - c. Department chair
 - d. An administrator (such as a dean, associate dean or assistant dean)
 - e. Other:
- 16) How is the overall college or school PCOA performance data shared with the faculty? (Choose A or B; or both with drop down menus for other)
 - a. Live Presentation
 - i. At a college or school-wide meeting (includes faculty, staff and students)
 - ii. At a full faculty meeting
 - iii. At individual department meetings
 - iv. Other: add text box
 - b. Electronic only
 - i. Email PCOA summary report
 - ii. Data made available via college server
 - iii. Other: add text box
 - c. Both live presentation and electronic methods are used to share PCOA performance data with faculty and other stakeholders.
- 17) How are the PCOA results distributed to the students? Select all that apply.
 - a. Individual printout (hard copy) is mailed to the student's home.
 - b. Individual printout (hard copy) is distributed and discussed during a class meeting.
 - c. Individual printout (hard copy) is provided at a personalized academic meeting (advisor).
 - d. Individual results are e-mailed as an attachment to individual student e-mail addresses.
 - e. Via electronic portfolio such as EValue within curricular requirements.
 - f. Other: add text box
- 18) Based on the student's performance, please describe any remediation plans that may occur
 - a. Remediation is not consistent with our college/school goals for examination use
 - b. Remediation plan is required by the student if they score at or below a certain threshold. (describe threshold; ex: +/- 2 SDs below college mean) Add text box
 - c. Our remediation plan can be described as the following: XXX Add text box
 - d. Other: add text box

Do the students complete reflections or document in student portfolios on their performance?

- Yes (continue to questions XXXX)
- No

XXXX. What is the type of reflection that is completed regarding their performance on the PCOA?

- Students reflect on their level of competence in each given content area for the examination.
- Students reflect on their performance in each given content area as to whether they have mastered the material, are still developing or only have the foundation in each given content area.
- Students only reflect by providing their thoughts and experience of the examination.
- Other: Add text box

American Journal of Pharmaceutical Education 2015; 79 (9) Article 137.

19) The name of your college or school of pharmacy is: XXXXXXXXXXXXXXXXXXXXXXXXXX (Optional, not required to fill out for participation)

Official End of Survey

BELOW—CONTINUED FROM #4 IF ANSWERED “NO”

Questions listed below if respondent states that they are no longer using the PCOA but have used in the past 5 years:

XX. question tree for yes within past 5 years: How many times over the past 5 years did your PharmD program utilize the PCOA?

- a. 5 years
- b. 4 years
- c. 3 years
- d. 2 years
- e. 1 years

XX2. During which professional year (s) was the PCOA was administered to students at your college of school of pharmacy?

If administered over multiple years, check all that apply.

- a. PY1 – first professional year
- b. PY2 – second professional year
- c. PY3 – third professional year
- d. PY4 – fourth professional year

XX3. Indicate the reasons your PharmD program is no longer utilizing the PCOA. Select all that apply.

- a. PCOA is cost prohibitive
- b. Curriculum is assessed using an internally developed exam or assessment method
- c. Do not understand how to interpret the results of the PCOA
- d. Leadership/ administration at my program is not supportive
- f. Other: Insert text box for people to free text in their rationale.