A Deeper Reflection on the Integration of the Pharmacists’ Patient Care Process

Teresa A. O’Sullivan, Aleda M.H. Chen, Margarita V. DiVall, Michael J. Gonyeau, Robin Zavod, Mary E Kiersma, Adeola Balogun, Haylee Moser

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A Deeper Reflection on the Integration of the Pharmacists’ Patient Care Process

Teresa A. O’Sullivan, Aleda M. H. Chen
A University of Washington School of Pharmacy
terrio@uw.edu
B Cedarville University School of Pharmacy
amchen@cedarville.edu

Margarita V. DiVall
Faculty Affairs, Diversity, Equity, and Inclusion, Northeastern University, Bouvé College of Health Sciences, School of Pharmacy
m.divall@northeastern.edu

Michael J. Gonyeau
Curriculum and Assessment | Clinical Professor | Northeastern University | Bouvé College of Health Sciences | School of Pharmacy
m.gonyeau@northeastern.edu

Robin Zavod
Midwestern University College of Pharmacy
630-515-6478, rzavod@midwestern.edu

Mary E Kiersma
Accreditation Council for Pharmacy Education (ACPE)
mkiersma@acpe-accredit.org

Adeola Balogun, PharmD Student
Cedarville University School of Pharmacy

Haylee Moser, BSPS, PharmD Student
Cedarville University School of Pharmacy

Corresponding Author Address, Email and Phone Number:
Aleda M. H. Chen, PharmD, PhD, FAPhA
Cedarville University School of Pharmacy
251 N. Main St, Cedarville, OH 45314
Phone: (937) 766-7454
Email: amchen@cedarville.edu

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ABSTRACT

Objective: Given the importance of developing student understanding and application of the Pharmacists’ Patient Care Process (PPCP), programs may be able to utilize successful approaches from other institutions to enhance their curricular and experiential learning as well as assessment of student outcomes. The study objective was to explore successful methods of integrating the PPCP and outline areas of challenge.

Methods: This study employed a qualitative study design using semi-structured interviews to gain insight from participant’s lived experiences. Pharmacy faculty members participating in a national survey or who were authors of articles about PPCP initiatives were recruited to provide greater detail about building successful and innovative curricula. Thematic analysis identified commonalities and differences amongst interviewed participants.

Results: A total of 10 interviews were conducted. Four overarching themes arose from the data: discussions around intentional integration of the PPCP across multiple core courses may foster innovations in teaching strategies, intentional integration alone doesn’t equate to PPCP integration across the curriculum, intentional integration may enhance program assessment, and PPCP data from experiential coursework may not be widely used in curricular continuous quality improvement.

Conclusions: Pharmacy programs will ideally involve the entire faculty, including experiential and basic and social/ administrative science members, in weaving the PPCP throughout the curriculum. Rigorous assessment can better inform interventions related to student competency in various steps of the PPCP.
Pharmacy programs should also clarify how data obtained from preceptors observing student performance in each of the PPCP steps are used to assess student mastery of this critical skill.

1. INTRODUCTION

The Pharmacists’ Patient Care Process (PPCP), developed by the Joint Commission of Pharmacy Practitioners (JCPP) and a component of the Accreditation Council for Pharmacy Education (ACPE) Standards 2016, is a required framework that has been integrated into pharmacy curricula. The PPCP structure helps students provide a consistent level of care to patients, and in the process, demonstrate the pharmacists’ contributions to patient care as part of the healthcare team. While it may initially appear to be a process taught only by practice or clinical faculty and preceptors, all disciplines within pharmacy should ideally contribute to teaching the PPCP. Since the introduction of the PPCP, programs have published various approaches to integrating and assessing the PPCP. Notable integrations include utilizing the PPCP with electronic health/medical records, case-based learning, longitudinal case assignments and course series, medicinal chemistry concepts, collaborative interprofessional cases, and skills labs, while assessment approaches include authentic assessments, reflections, validated self-efficacy scales, and rubric-based assessments.

In 2020, we performed a national survey to identify the depth and breadth of PPCP implementation and describe successful practices and opportunities for improvement in teaching and assessing PPCP. The inherent structure of a survey facilitates data summation, but at the expense of a deeper exploration into questions of how and why. For example, in the survey results, over a third of respondents indicated that collaboration occurred across disciplines, and we wanted to better understand how that process worked and what might be benefits and challenges of integration. In another example, only 17% of respondents to the national survey made changes to their curriculum in response to
competency assessment and it was unclear what kinds of changes had been made and what was found. It seemed a logical next step to learn in greater detail how some programs had integrated the PPCP into their program. Thus, the objective of the current study was to further explore successful and innovative methods of integrating the PPCP and outline areas of challenge.

2. METHODS

To address the objective, a qualitative study design using a phenomenological approach was selected to obtain information from key informants in their own words. This design allowed participants to describe their lived experiences and observations with curricular and experiential design and initiation as well as assessment and identification of successes and challenges related to the PPCP.

A semi-structured interview guide was developed to examine processes or characteristics that had enabled successful integration of the PPCP in didactic and/or experiential curricula, as well as assessment plans/processes. The research team (AC, TO, MDV, MG, MK, RZ) discussed proposed wording and intent of each question in the interview guide until consensus was reached. All members of the research team received training on conducting structured interviews from the most experienced team member on qualitative research (TO). The initial interview guide was then piloted with two institutions (with a planned inclusion in the study) to provide training to the interviewers and to identify where adjustment or further clarification of the questions was needed. No changes were made to the interview guide; the final version can be seen in Appendix 1. Questions not on the interview script were allowed only to clarify or expand on participant responses to questions on the interview guide. The Institutional Review Board of Cedarville University examined and approved the study protocol.

Purposeful sampling was used to select participants. Two methods were used to identify potential participants. First, the prior national survey conducted by the research team contained an option for respondents to indicate their willingness to be contacted for further information; a list of those who were willing to be contacted was compiled from the survey data (n=82). Additionally, a review of the literature was undertaken to identify published articles related to the PPCP. Search terms focused around
“Pharmacists Patient Care Process” in PubMed, as well as searches using the same term within the *Currents in Pharmacy Teaching and Learning* journal due to its shorter time being indexed.

Corresponding authors for articles about integrating the PPCP were added to the list. Potential candidates for recruitment were further narrowed based on those who represented integration of multiple disciplines, integration across the curriculum, unique integrations, discussed experiential integration, various geographic locations, public and private institutions, or “legacy” and “new” programs (pre-2000 vs post-2000). The research team iterated candidates until a final list was achieved, and a recruitment email was sent to identified faculty at 19 institutions, who were chosen because of their role related to the PPCP.

Participants provided informed consent prior to beginning the interview. A brief summary of the interview goals were shared in advance with participants, and they were asked to bring any additional individuals who could provide information to the meeting or have discussions with these individuals in their program prior to the meeting to ensure their understanding of PPCP integration. Interviews were conducted remotely via Zoom® by research team members, with most interviews completed in 30 to 45 minutes. All interviews were recorded, and transcription was enabled during the interviews. A student research assistant who had not been present at the interviews edited the electronically-derived transcripts by listening to the recordings and correcting errors in the electronically-derived transcripts.

### 2.1 Data Analysis

Thematic analysis was then performed by 2 student research assistants to identify major themes within the interviews. Each research assistant performed their analysis independently, then met to compare impressions, reconcile differences, and improve coding descriptions. One of the investigators (TO) did a separate rapid content analysis of the transcripts, with the result compared to the results found by the pharmacy student research assistants, noting areas of overlap and identifying an additional (fourth) theme. A final description of the themes and identification of supporting quotes was created and reviewed by the entire research team to ensure agreement with the coding.

### 3. RESULTS
A total of 10 interviews were conducted. Data saturation appeared to be reached after the sixth interview, with the 4 subsequent interviews confirming and clarifying identified themes. Of the 10 interviewees, they represented public (n=5) and private institutions (n=5), varying program lengths (4-year: n=8, 3-year: n=1, 6-year: n=1), and varying years of operation (≥20 years: n=8, ≤20 years: n=2). The participants’ self-described role in their pharmacy program and recruitment source are outlined in Table 1.

Four overarching themes arose from the data: intentional integration of the PPCP may lead to innovations in teaching strategies, intentional integration of the PPCP does not equate to incorporation of PPCP across the curriculum, integration may enhance program assessment, and PPCP data from experiential coursework may not be widely used in curricular continuous quality improvement.

3.1 Theme 1: Intentional integration of PPCP by groups of faculty stakeholders may lead to creation of innovative strategies to teach the PPCP.

Most participants described a curriculum that was intentionally integrated. Intentional integration is defined as purposeful incorporation across multiple courses in the curriculum with multiple instructors teaching, reinforcing, and assessing PPCP. Seven participants who described intentionally integrating the PPCP across courses beyond just pharmacotherapy courses also described innovative strategies they developed for incorporating the PPCP into the curriculum.

“As part of their training in the PPCP…for staff development [they watch the] video, our point being everyone within the pharmacy school should at least have an understand of what pharmacists are supposed to do…especially pharmaceutical sciences, who may not be a practicing pharmacist [or] have an understanding of what the pharmacy practice is supposed to be. And we’ve done one that also can be used with preceptors and other pharmacists in the community, and then the pharmacy technician one…” (Participant 1a)

A description of the integration as provided by program participants and the innovations they described can be found in Table 2. Participants from the three programs who didn’t describe integration outside of
the therapeutics coursework also didn’t identify strategies for incorporating the PPCP that were deemed innovative.

3.2 Theme 2: Intentional integration doesn’t equate to incorporation of PPCP throughout the curriculum.

All participants spoke of intentionally teaching PPCP elements in therapeutics-related coursework, particularly the skills courses, often through cases.

“We do integrated cases where we encompass a patient case but also hit some of the pharmaceutical science pieces—so the med chem, the pharmacology, pathophysiology…The pharmaceutical science faculty have questions and components through those integrated cases.” (Participant 6)

The PPCP was not integrated uniformly across other curricular areas. Integration of PPCP into non-therapeutics coursework was a direction in which some but not all of the interviewed participants indicated they were moving. Incorporation of the PPCP into preceptor evaluation of student experiential learning is probably widespread but not uniform. Another area where the PPCP was only reported being used in one out of the ten programs was in the area of interprofessional education. Most participants reported that preceptors for their program had received training in the PPCP, with a few participants reporting that this training was part of onboarding for all new preceptors. Table 3 provides information on these elements as reported by the participants in this study.

Although participants were not queried directly about when or if curricular revision had occurred for their program, some participants described curricular revision efforts occurring around the time Standards 2016 were released. Revision as described by these participants ranged from high-level brainstorming by the entire faculty on how to anchor all core courses in the PPCP to changes that were relatively modest in scale, for example adding a new therapeutics course in the first year of the program to conceptually introduce the PPCP.
3.3 Theme 3: Incorporation of PPCP throughout the curriculum can inform program assessment.

Most participants could articulate ways in which student performance on PPCP elements was measured. Participants spoke of quizzes, exam questions, scoring in laboratory skills assessment and capstone testing. Most participants used summarized data from these assessments to inform program assessment.

“Every year the curriculum and assessment committee requires a report of how we’re doing related to the Pharmacist Patient Care Process, so we provide that specific data obtained from ExamSoft tagging as part of our assessment report. All faculty are required to tag exam- and rubric-based assessments. Our committee can then take action or they can continue to monitor, depending on student progression in the PPCP domains. After monitoring for several years, plan was a big element that identified as a challenge—they did pretty well with assess, actually really well with assess. Implement also was fine. The other area that was challenging was follow-up and monitoring.”

(Participant 2)

Some participants identified use of software to map quiz or test questions to specific learning objectives and could thus identify the percent of courses that had PPCP-related learning objectives. The software was also used to generate progress reports that could be shared with students and measure whether students were meeting a program-specific benchmark.

“…primarily through strengths and opportunities reports for students and then in terms of exam reviews…[we have] hundreds of questions that are mapped to the PPCP…[which has allowed us to] make changes to the course series when we know that students struggle not with collect, not with assess, but more with the plan, implement and follow-up/monitoring.”

(Participant 4)

Participants describing assessment activities generally tended to have a role in formal program assessment at their institution. Participants without such a role were less familiar with assessment and better able to speak to their experiences teaching the PPCP.
3.4 Theme 4: Experiential data on student performance of the PPCP steps in the practice setting are not widely used to inform program assessment.

Participants from almost all programs could not identify how data collected from preceptors about student performance on APPEs were used to determine curricular success and areas needing improvement. Most participants (Table 3) knew that preceptors were being asked about each of the steps of the PPCP in the student performance assessments filled out by the preceptors but weren’t certain what these data showed.

“So it’s the experiential piece that I’m less—I just don’t know where we’re at with it.”

(Participant 8a)

Participants from one program did speak of examining data from experiential education and feeding it back to didactic instructors but did not provide an example of what the didactic instructors did with that information.

3.5 Challenges

Challenges identified by participants included getting non-pharmacist faculty to support integration of the PPCP, how and to what extent the PPCP was incorporated into experiential education and promoting use of PPCP terminology outside of the classroom. Five participants expressed student, faculty or preceptor terminology or concept confusion, particularly between the PPCP and the subjective, objective, assessment and plan (SOAP) format for writing care notes.

“It’s very hard for [the students] to see that SOAP is a communication tool and not how you should go about caring for patients.” (Participant 3a)

3.6 Support

When asked what type of support would be helpful to aid integration of the PPCP, several participants identified that they would like to know more about strategies, resources and examples that had been used successfully in other programs, particularly for integration across all portions of the curriculum. Even though most participants could name an innovation that they had made in their program, they wanted more ideas from other programs.
“[It would] be nice to know what approach the schools are taking, in terms of the quality improvement that you mentioned.” (Participant 7)

4. DISCUSSION

We set out to explore in greater depth how programs designed integrated approaches to teaching the PPCP, assessing student performance in elements of the PPCP, and conducting program assessment. We found that highly integrated programs seemed to generate innovative teaching and assessment approaches, that there was a spectrum of integration in the programs as they were rolled out that varied from cross-disciplinary teaching of the PPCP to instruction and performance assessment done mainly by pharmacy practice faculty, and that a few programs were monitoring overall student performance of PPCP elements well enough to detect which areas were working well and which areas needed further refining. We also found that relatively few of the participants we engaged appeared to be using APPE performance data in program assessment processes, however, it is possible that not all participants were fully aware of all aspects of experiential assessment.

The richest descriptions of innovations in PPCP teaching and student assessment came from programs where it appeared that integration was intentional and arose from faculty identifying integration challenges and designing solutions to address those challenges. Programs that invited pharmaceutical and social/administrative faculty to identify where material they taught fit into the PPCP process seemed to have the most robust integration. This observation is consistent with other examples in the literature, where faculty across disciplines intentionally highlight their role in the PPCP and student understanding is improved. Many of the participants also indicated that incorporated changes in teaching occurred as a result of curricular redesign, most often occurring in response to changes in accreditation standards. The draft of ACPE Standards 2025 speaks to a requirement for programs to map each APPE to Curricular Outcome and Entrustable Professional Activity (COEPA) learning outcomes, including Provider, which incorporates the PPCP. This requirement will provide an opportunity for programs to discuss intentional integration of PPCP throughout the curriculum.
One innovation that was particularly notable was the program that developed a micro-credentialing process for their students. Many insurers will be requiring some kind of credentialing before they will pay for care provision by any health care provider, and micro-credentialing can introduce students to this concept. Micro-credentialing has been noted as a potential future tool to enhance student learning.\textsuperscript{21} It is also notable that most participants identified that a list of strategies and examples would be supportive to them; this project enabled compilation of strategies as the beginning of such a list. Strategies further outlined in the literature include integration within skills and lab-based courses;\textsuperscript{15,22} grounding and alignment with case-based, comprehensive medication management, or pharmacotherapy courses;\textsuperscript{7,10,18} providing training and resources to faculty for easier course integration;\textsuperscript{10} creating PPCP-related assignments, activities, and cases;\textsuperscript{8,18} or utilizing adaptive learning.\textsuperscript{23}

Some programs appeared to have been more successful than others in getting faculty outside of pharmacy practice to incorporate the PPCP in some way into their teaching material and even into student assessment material. Programs where this happened created an environment where pharmaceutical sciences faculty took some ownership for teaching the PPCP, particularly tying it to “assess,” similar to the article by Alsharif and colleagues where integration of the PPCP occurred with medicinal chemistry.\textsuperscript{12} Not all programs were able to have this deep integration. Participants from some programs felt that it was all they could do to get the PPCP integrated into multiple pharmacy practice/skills courses; participants from one program noted that although they had high hopes initially for integration throughout the didactic curriculum, a lack of leadership and ownership meant that planned changes did not always happen and many faculty were relatively siloed in their courses.

Two challenges to implementing the PPCP in the practice setting were noted by participants. In the first, although preceptor training on the PPCP had been done by most programs, uncertainty existed as to how preceptors were using the material, indicating that this may be an area needing further study. In the literature, innovative approaches to educate preceptors have included escape rooms\textsuperscript{24} and continuing education webinars.\textsuperscript{25} Additionally, some participants noted situations where students, and possibly even preceptors, confused PPCP as an approach to performing patient care with SOAP notes (which are a
communication tool designed to document clinical reasoning in the patient’s health record). This is an area where pharmacy practice faculty can proactively introduce and clarify how the PPCP can culminate in the creation of a SOAP note, although SOAP notes are only one type of the many different kinds of notes written by pharmacists in the practice setting and they should perhaps instead be referred to as care notes. Students do struggle with applying the PPCP in electronic-based records, particularly for the “Collect” phase, which may require faculty to prepare them for utilizing that resource.⁷ Some educators have successfully used case study approaches in primary care and ambulatory care-based activities to enhance linkages between the PPCP and experiential learning.¹⁷,²⁶

Most participants appeared to be successful in summarizing student performance data obtained through mapping of course objectives to the PPCP and tagging of exam questions and other student assessments to the elements of the PPCP. Moreover, participants from two programs described using these data to assess overall student performance and identifying elements of the PPCP in which students were performing well (collect and assess) and areas where students were challenged (plan and follow-up/monitoring). They did not identify how faculty stakeholders responded to knowledge about these challenge areas which would allow them to “close the assessment loop.” More puzzling is why only one program participant spoke of how they were using APPE preceptor-derived student performance data to inform program assessment. Given the role of the participants as well as the information provided prior to the session on information gathering or the ability to add additional faculty addressing PPCP, participants should have been aware of APPE assessment practices. Experiential data is arguably the ultimate test of pharmacy student performance. It is possible that program data summary was done by experiential education faculty and not communicated outside of that team, but this scenario would not be a logical use of such valuable data. There is some indication that experiential data are not being widely used in pharmacy program assessment.¹⁹,²⁷ However, some notable publications have worked to develop the PPCP in the experiential setting and utilize assessment data to enhance student learning.²⁶ More work is needed to understand why experiential education data does not appear to be a significant driver of outcomes assessment in pharmacy programs, at least in the literature.
We included several steps in our study to increase trustworthiness of the results. Purposeful selection of participants enabled sampling of key informants who could best answer our study question. Interviewers worked from the same script, minimizing differences in questions asked of participants and enhancing consistency of information obtained. A second data analysis was performed by an author with formal training in qualitative research techniques in order to confirm themes identified by the student authors and also to check for themes missed in the initial analysis. Data saturation was examined and confirmed to occur before the final interview. Themes were derived solely from the data and not identified in advance of data analysis. The investigators included individuals with a variety of backgrounds, including pharmacy practice, social and administrative sciences, pharmaceutical sciences, experiential education, assessment, preceptors and students, and accreditation; the perspectives/lenses the investigative team brought to the creation of this study report is thus representative of many stakeholders in pharmacy education.

There are several limitations to this study. Although we detected saturation in the data, it is quite possible that interviewing more individuals might have revealed additional themes about PPCP integration. There were several individuals who interviewed participants; although these individuals were provided training in interviewing and used the same script, their perspective/lens may have influenced their clarification questions, leading to some incomplete data collection. Arising differences might have been minimized had a single individual conducted all interviews. There was limited opportunity for data triangulation—participants were not asked about responses they had given in the original survey and not all participants may have participated in the original survey.

5. CONCLUSION

It may be beneficial for pharmacy programs to consider intentional integration of PPCP throughout the curriculum if those discussions have not yet taken place. The process of intentional integration, which is purposeful incorporation across multiple courses in the curriculum with multiple instructors teaching, reinforcing, and assessing PPCP, may help to generate innovative teaching and assessment approaches. Intentional integration by itself will not anchor the PPCP across the curriculum.
unless steps are taken to ensure that it is integrated into non-therapeutics core coursework, experiential coursework, and even interprofessional education. Intentional integration may enhance collection of assessment data, helping to identify student competency at different steps in the curriculum and aid in refining coursework enhancing student ability to be a practice-ready pharmacist upon graduation. This study hinted that few programs may be using experiential performance data for assessment purposes, so is a potential area of inquiry for programs to explore during intentional integration. Intentional integration is an area to further explore and enhance within the academy.

ACKNOWLEDGEMENTS We wish to thank Jeannine M. Conway, PharmD, BCPS for her contributions to our work on the Pharmacists’ Patient Care Process.
References


### Table 1. Participants’ Described Roles at their Institution and Recruitment Source

<table>
<thead>
<tr>
<th>Interview Number</th>
<th>Number of Participants</th>
<th>Participant Number and Self-described Role at Institution</th>
<th>Recruitment Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1a. Faculty, Pharmacy Practice skills</td>
<td>Survey follow-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1b. Director of Assessment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2. Associate Dean for Assessment and Research</td>
<td>Survey follow-up</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3a. Chair of Assessment Committee and Director of Lab Skills course</td>
<td>Survey follow-up</td>
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<tr>
<td></td>
<td></td>
<td>3b. Coordinator for new Introduction to PPCP course</td>
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<tr>
<td></td>
<td></td>
<td>3c. Faculty Lead, Integrated Pharmacotherapy Course series</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>4. Assistant Dean, Academic Affairs and Assessment</td>
<td>Survey follow-up</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>5. Assistant Dean for Assessment</td>
<td>Pharmacy literature</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>6. Faculty, Pharmacy Practice and Residency Director</td>
<td>Pharmacy literature</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>7. Vice Chair, Academic Affairs and Administrator, Continuing Education</td>
<td>Survey follow-up</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>8a. Associate Dean for Education (oversees assessment)</td>
<td>Survey follow-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8b. Faculty, Pharmacotherapeutics</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>9. Faculty, Pharmacotherapeutics and Residency Director</td>
<td>Pharmacy literature</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>10a. Clinical Associate Professor, Interprofessional Education, and Practice Partnerships</td>
<td>Pharmacy literature</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10b. Clinical Associate Professor, Experiential Coordination</td>
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</tr>
<tr>
<td>Program #</td>
<td>Integration</td>
<td>Innovation</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Instructional videos about PPCP viewed by all faculty from all departments; mapped where PPCP taught and at what level for pharmacy and pharmaceutical sciences.</td>
<td>Use of a micro-credentialing process where students earn badges by completing required training and testing in PPCP elements.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Medicinal chemistry and toxicology (in addition to pharmacy practice) brainstormed ways to incorporate the PPCP into their coursework and exams; 40% of courses contain a PPCP-related learning objective.</td>
<td>Created video where practice, social-administrative, and basic science faculty discuss the role of their discipline in the PPCP process.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Intentional integration throughout the therapeutics coursework, which integrates social-administrative sciences and pharmaceutical science; pull in basic sciences through “assess.”</td>
<td>All faculty, including basic and social/administrative sciences, worked together to create a PPCP-based grading rubric that can be used across all of the skills courses.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Have created first-year course on Introduction to PPCP and integrated across all therapeutics skills courses. In process of incorporating PPCP into social-administrative and pharmaceutical sciences courses.</td>
<td>Created a patient assessment guide and progress note template used across all skills coursework.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Introduced a new course which supplements labs and didactic by going over increasingly complex patient cases, applying PPCP. Had pharmaceutical science faculty with pharmacy background integrate PPCP concepts into coursework.</td>
<td>Created timed exercises where students have to perform PPCP steps and either write a care note quickly or verbally and briefly present case to faculty member.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Had all pharmaceutical sciences faculty help build integrated cases that students work up in lab.</td>
<td>Developed a single-point rubric to facilitate instructor grading of student case patient workups.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Revised all terminal performance outcomes and all course syllabi to include the PPCP, including pharmaceutical sciences. Added first-year course in general patient management to introduce PPCP.</td>
<td>Created a guidance document for faculty and students that describes the PPCP and its use, particularly in therapeutic decision-making.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Added 3-course series in first year that introduces PPCP through cases involving patient management for specific disease states.</td>
<td>Integrated PPCP write-ups into some of the objective structured clinical examinations (OSCEs).</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Integrated across therapeutics skills coursework.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Added an introductory course that teaches PPCP and probably taught across skills courses.</td>
<td></td>
<td></td>
</tr>
</tbody>
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Table 3. Description of Pharmacist Patient Care Process (PPCP) Integration into Various Curricular Elements and Timing of Curricular Revision

<table>
<thead>
<tr>
<th>Program #</th>
<th>Integration across therapeutics courses?</th>
<th>Integration across non-therapeutics courses?</th>
<th>PPCP in EE evaluations?</th>
<th>PPCP in interprofessional education?</th>
<th>PPCP as preceptor development?</th>
<th>Last curricular revision</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>Yes</td>
<td>Implied</td>
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<td>Yes</td>
<td>Yes</td>
<td>Just starting</td>
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<td>Somewhat</td>
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<td>Not asked</td>
<td>No</td>
<td>Yes</td>
<td>2015</td>
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</tbody>
</table>

APPE = advanced pharmacy practice experiences; EE = experiential education

Appendix 1. Interview Questions.

Demographic information
- Are you a public vs private institution?
- What is your program length?
- What year was your program established?
- What is your specific role at the institution? How long have you been in that role?
- How long have you been at this institution?

Integration Questions
- Describe how you have innovatively integrated the PPCP in your program.
- How does your program integrate faculty?
  - How do you involve faculty from different disciplines?
  - Within a discipline, what is the level of involvement?
- What type of processes have you used to implement the PPCP?
  - Has this been a longitudinal development/rollout?
  - Is it completed or a work in progress?

Assessment Questions
- How has the PPCP been mapped to assessment plan/program outcomes?
Is it mapped throughout the curriculum?
Does it include experiential learning? If yes, describe.
Does it include interprofessional education? If yes, describe.

- How have you used the PPCP for assessment & curricular change (closing the loop)?

**Experiential Education Questions**

- Describe PPCP integration into your IPPEs and APPEs.
- How are you educating preceptors?
  - Are you familiar with the AACP Catalyst projects? If yes, describe how you have utilized the initial Catalyst projects?
- How have you assessed experiential education integration of the PPCP?
  - What CQI processes have you developed to assure student competence and preceptor comfort and knowledge of the PPCP in experiential?
    - How do you know it’s working?
    - How have you closed the loop?

- Is there integration and assessment around:
  - Experiential education?
  - Interprofessional education?
  - Post-grad (residency, fellowship, alumni)?

**Closing Questions**

- What challenges have you faced regarding PPCP implementation?
  - How have you resolved those challenges?
- What support would be helpful to you to aid in the implementation of the PPCP?
- Is there anything that you have created that you would be willing to share more broadly in the academy?
- Is there anything more you would like to add?

**CRediT Author Statement:** Teresa O’Sullivan: Conceptualization, methodology, formal analysis, investigation, writing – original draft, writing – review and editing; Aleda Chen: Conceptualization, methodology, formal analysis, investigation, writing – original draft, writing – review and editing, project administration; Margarita DiVall: Conceptualization, methodology, investigation, writing – original draft, writing – review and editing; Michael Gonyeau: Conceptualization, methodology, investigation, writing – review and editing; Robin Zavod: Conceptualization, methodology, writing – review and editing; Mary Kiersma: Conceptualization, methodology, writing – review and editing; Adeola Balogun: formal analysis, writing – original draft, writing – review and editing; Haylee Moser: formal analysis, writing – original draft, writing – review and editing.
Declaration of interests

☒ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☐ The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: