LETTER

Response to the Integration of the Pharmacists' Patient Care Process into a Comprehensive Disease Management Course Series

To the Editor: Mr. Bowar and Dr. McCarthy have raised several important aspects of our study as it relates to the wider educational system and we thank them for their perspective and interest in our article. As was noted in the original study and their letter to the editor, our program chose to incorporate the JCPP Pharmacists' Patient Care Process within a therapeutics course series for students beginning in their P2 year.¹ This course series emphasizes the role of the pharmacist in disease state management, is taught by clinicians, and was the first opportunity for us to introduce PPCP to the PharmD class of 2017 after the publication of the JCPP PPCP statement in May 2014.² Whereas Rivkin and colleagues integrated the PPCP during a single course in a variety of differing methods, our institution undertook an approach that overlaid numerous aspects of the PPCP throughout several longitudinal, and simultaneously, delivered courses.³ The initial introduction of the PPCP was presented during an intensive five-lecture series at the start of our Comprehensive Disease Management course series and then reinforced throughout the P2 and P3 curriculum during co-curricular courses that focused on small group, seminar-style, discussions, as well as within practice and laboratory coursework. It was thought that this approach would reinforce the major themes and concepts of the PPCP throughout the continuum of our curriculum, and across differing course settings and outcomes. This approach was similarly applied by a group of faculty at the University of Arizona; however, it should be noted that they began initial presentation of the PPCP during their orientation phase, and then throughout their coursework.⁴

In a total of 11 distinct courses that comprise our comprehensive disease management series, our faculty sought to enhance and support student learning using different modalities incorporating the PPCP. It is important to note that while four of the courses in the series are delivered in the traditional didactic format with active student engagement, the other seven courses are delivered as case-based seminar and/or skills laboratories facilitated by practitioners who engage students in active application of materials. Therefore, we believe we provide ample opportunities for our students to attain deeper learning, similar to what has been found by McLaughlin and colleagues⁵ and Lucas and colleagues.⁶ Each of these

studies demonstrated increases in overall student perception, and engagement within course materials was statistically improved.^{5,6} However, there was no appreciable difference detected in end-of-semester examinations. Additionally, Lucas and colleagues evaluated student outcomes across different course modules after implementation of a flipped classroom model between course modules. After completion of all course modules, students were assessed on this course content after completing a majority of their advanced pharmacy practice experience rotations. The course content between each module varied and their overall scores ranged from a low of 51.7% (non-flipped course materials) to 58.1% and 60.6% (flipped course materials). While we appreciate the authors' points, we feel that it is difficult to compare course outcomes across each of these studies given the methodologic differences employed within the respective institutions, including our own.

As we detailed, and Mr. Bowar and Dr. McCarthy noted, there was varied utilization of the PPCP throughout each of these courses as it was introduced. While 11% of the polled faculty reported not having a "clear understanding" of the specific abilities within the PPCP, this represented a total of two faculty members. Of those directly involved in these team-taught courses, the remaining 16 faculty members reported agreement/strong agreement with this statement. While we cannot fully know the faculty's level of comfort with the various components based on the survey instrument, we remain confident that this did not represent a barrier to student learning. This is furthered by the fact the JCPP PPCP process is similar to the patient assessment process taught by our faculty for the previous decade. It is also important to highlight that our paper described the initial cycle of implementation of PPCP into our curriculum and we have continued to make improvements to how the PPCP is introduced, emphasized, integrated and reinforced throughout our courses. We have made numerous modifications to our assessment instruments. While our original paper noted the mapping of examination questions, we have also modified various rubrics that are used to evaluate a wide variety of assignments and performance-based assessments used as part of the 11-course series. We have also continued to provide faculty development through formal sessions and peer observations and evaluations.^{7,8} We have also discussed PPCP and the importance of emphasizing it throughout the entire curriculum with our Pharmaceutical Sciences and Social Administrative Sciences colleagues and provided preceptor development. Self-efficacy data from our exit survey suggest that students' competency in various activities/skills associated with PPCP has improved from the class of 2017 (first cohort who graduated with formal

curriculum on PPCP) to the class of 2018 signifying that our efforts to improve PPCP integration are improving. This sentiment can be further supported by additional student data gathered since our publication.

We have observed increasing trends in student confidence in applying steps of the PPCP to patient care from our initial data collected in 2017 with newer data from 2018. Using the same survey tool, we observed that student confidence has increased in all aspects of the COLLECT and ASSESS areas (mean increase of 5% for each question), with more mixed results in PLAN (two questions with increased confidence (mean 4% increase), one question with decreased confidence (1%), and one question remained constant) and IMPLEMENT (three questions showed increased confidence (mean 3% increase), two questions showed decreased confidence (mean 3.5%) and one question remained constant). The MONITOR and EVALUATE questions (n=4) remained constant from the 2017 and 2018 student cohorts.

We are thrilled that our article is sparking additional and ongoing discussion of PPCP curricular incorporation. The continued evolution of the literature surrounding the integration and use of the PPCP within pharmacy education demonstrates that there is no one “best” approach. Each institution must evaluate how and where to develop their curriculum to support this patient assessment process, as numerous publications continue to demonstrate its role, and value, in a variety of areas ranging from student perceptions and classroom outcomes to experiential and practice-based outcomes.

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