



Research Article

# Design and implementation of pharmacy morning report: An adaptation of medical morning report for case-based instruction in the pharmacy curriculum

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## Abstract

**Objective:** To design and implement a curriculum-spanning, vertically and horizontally integrated case-based active learning activity structured on the medical model of morning report.

**Methods:** First (P1), second (P2), and third-year (P3) students in a 4-year doctor of pharmacy program were divided into 14 groups and participated in a 1-hour progressive-disclosure case study discussion session modeled on medical morning report. Sessions were facilitated by pairs of faculty, with each pair comprised of one member from the pharmacy practice department and one from the basic sciences department. Students were administered pre- and post-activity knowledge assessments as well as a post-activity qualitative evaluation of the session.

**Results:** Significant increases in content knowledge were demonstrated by P1, P2, and P3 students following the activity. Moreover, pre- to post-activity knowledge gains were achieved in each of the 14 groups. Evaluations showed that most students (89%) felt the activity was a positive learning experience, and over 90% of students believed the activity helped them to better understand how their current pharmacy studies are applicable to future courses.

**Conclusions:** This method of integrated case-based instruction, modeled on medical morning report, is an effective means by which students at various stages in the pharmacy curriculum can engage in an active learning, peer teaching, and learning activity. Pharmacy morning report can be used as a curriculum-spanning integrated learning activity in various models of pharmacy curricula.

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**Keywords:** Integration; Case study; Peer teaching; Pharmacy; Morning report; Active learning

## Introduction

Medical morning report has been incorporated into the medical field for at least 100 years. The concept was initially developed by physicians for the purpose of updating the chief of medicine about patients admitted to the hospital overnight.<sup>1–4</sup> Over the years, medical morning report has progressed into a case-based teaching tool to

enhance peer-led teaching and foster independent reasoning and problem-solving skills in post-graduate studies.<sup>5</sup> Most residents or junior physicians believed that medical morning report is the most valuable learning experience during their residency.<sup>6</sup> Medical morning report has not only improved medical residents' learning in various stages of training, but it has also been validated to improve patient outcomes. Boushehri et al.<sup>7</sup> showed that for patients whose cases were presented during medical morning report, significant decreases in length of stay and medication costs during hospitalization were observed when compared to a matched-control whose case was not discussed utilizing this teaching model.

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The 2016 Accreditation Council for Pharmacy Education (ACPE) Accreditation Standards<sup>8</sup> not only stresses the importance of foundational knowledge content integration within the pharmacy curriculum, but schools must incorporate programs to provide students with the necessary skills in order to provide patient-centered care by collecting, interpreting, prioritizing, and formulating recommendations based on a patient case scenario. The utilization of an active- and problem-based learning model is preferred within the context of case studies and small group discussions. The 2013 Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes<sup>9</sup> document the need for schools to develop programs encompassing a team-based approach to pharmaceutical care. In addition, the 2016 standards guidance document states “colleges and schools are encouraged to promote collaboration between faculty members of all disciplines in helping students make connections between scientific understandings and patient care, and in evaluating their developing knowledge-application skills.”<sup>10</sup> With these new guidelines, the medical morning report teaching model addresses the need for increased problem-based, peer teaching in the curriculum.

Our development of a Pharmacy Morning Report (PMR) model is based on the basic premises of medical morning report, but emphasizes the biomedical and pharmaceutical sciences such as physiology, biochemistry, pharmacology, pharmacokinetics, and pharmaceuticals, and how each of these relate to the clinical pharmacy sciences, such as pharmacotherapy. By using a patient-centered, progressive-disclosure approach, students can further develop clinical competency and ability to understand the clinical reasoning necessary to provide pharmaceutical care within the realm of evidence-based medicine. The PMR teaching model was previously pilot tested at the same institution (Samford University, McWhorter School of Pharmacy) using a small sample of the students enrolled in the Doctor of Pharmacy program. The pilot study consisted of five sessions over the course of a semester. Each session involved a unique patient case led by two fourth-year (P4) students to a group of first (P1), second (P2), and third-year (P3) volunteer students ( $n = 57$ ), with faculty from two different departments present to help facilitate the discussion. Students voluntarily completed a perception questionnaire at the end of semester, and rated PMR as a positive learning experience. The limitations of the pilot program were the small number of students and lack of an assessment to identify potential knowledge gains due to the activity. However, the success of the pilot program warranted further evaluation and possible integration into the pharmacy curriculum.<sup>11</sup> The objective of this study was to design and implement a school-wide, curriculum-spanning, vertically and horizontally integrated case-based active-learning activity structured on the medical model of morning report. Horizontal integration refers to linking of curricular content among courses delivered within a single didactic year, whereas vertical integration refers to linking of content from courses taught in two or more years of the curriculum.

## Methods

The school-wide PMR activity was administered during the fall 2013 semester as part of a required, one credit-hour integrated pharmacy applications course taught each semester throughout the first three years of the curriculum. Several days prior to the PMR session, an e-mail describing the PMR activity was sent to P1, P2, and P3 Doctor of Pharmacy students. Students were informed of the general process of a progressive-disclosure case presentation, the main content area of the case to be discussed, and the importance of student participation. Each session was led by a faculty facilitator pair comprised of one member from the Pharmacy Practice department and one member from the Pharmaceutical, Social and Administrative Sciences department. Faculty were assigned by the PMR coordinators (authors). Several days prior to the PMR session, faculty attended a 1-hour meeting in which the coordinators described the PMR process, provided an overview of the case, and discussed logistics. Facilitators were given instructions to only intervene in the discussion in instances where specific answers or questions were needed to move the discussion in the preferred direction as outlined in the facilitator guide. A detailed facilitator guide and case ([Appendix A](#)) was also provided in order to ensure learning objectives were addressed in a similar fashion among all sessions.

A total of 14 PMR sessions utilizing the same case were conducted within the allotted 2-hour time frame of the course, with each of the seven faculty pairs facilitating two back-to-back 1-hour sessions. P1, P2, and P3 students were assigned to one of the 14 groups to attend either session 1 (first hour) or session 2 (second hour). P4 students were invited, but not required, to attend and observe the sessions. The groups were designed to have approximately equal numbers of students from the P1, P2, and P3 classes. A pre-activity knowledge test ([Appendix B](#)) consisting of five multiple-choice questions and a question for class year identification was administered during the first five minutes of the activity. Following the pre-activity knowledge test, handouts were distributed providing pertinent case information such as chief complaint, lab values, past-medical history, and current medications in a progressive-disclosure format. Additional information was provided through supplemental handouts and verbally from the facilitators as the activity progressed. Students were asked to develop a differential diagnosis and pharmacotherapy treatment plan and reach a consensus prior to moving forward with the case. Throughout the activity, faculty facilitators helped to direct peer teaching among the students and encourage participation. More detailed information of the progressive-disclosure case discussion format has been previously described.<sup>11</sup> At the conclusion of the case, a post-activity assessment was administered that included the same questions as the pre-activity knowledge test, as well as a post-PMR evaluation consisting of 5 Likert

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