

# Interdisciplinary Professional Education: A Collaborative Clinical Teaching Project

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As health care institutions restructure the delivery of services to increase efficiency and improve patient outcomes, redeployment of personnel into interdisciplinary health care teams is common. The purpose of this project was for pharmacy and nursing students to learn and practice the skills important for this future professional practice. Ten nursing students enrolled at a large state-supported school of nursing and seven clinical pharmacy students from a private, liberal arts university participated in this project. The students met weekly to present joint case conferences to their interprofessional peers, practice negotiation and collaboration skills, and to demonstrate the unique critical thinking processes essential to their professions. Both student groups responded positively to the experience and expressed a new appreciation of the expertise of the other discipline. Implementation of similar collaborative clinical teaching models can prepare pharmacists and nurses for health care practice partnerships.

## INTRODUCTION

As health care changes, interdisciplinary patient-centered practice teams are becoming a functional reality. Health care institutions are restructuring the delivery of services to increase efficiency and improve patient outcomes. One common aspect of redesign is the decentralization of services and redeployment of health care personnel into interdisciplinary teams. The development of interdisciplinary health professional education has been encouraged in the literature of nursing and pharmacy. McEwen(1) stated that "cross-discipline courses should be encouraged, at least to some extent," and that "The idea is not to overlap disciplines or to infringe on another discipline's territory, but to enable providers to better understand the variety of roles and practices in order to work together better to deliver higher quality care within a true 'system.'" Heaney(2), in his 1975 address to the AACP Council of Sections, stated, "It is now necessary for today's professionals to learn a complicated system of functional interdependencies. Only if each professional is aware of the totality of the system and of how he fits into it, can he function so that the patient will benefit optimally. It is axiomatic that this matrix of functional dependencies is best acquired by health professionals while they are students learning their own specific function."

A review of the nursing and pharmacy literature revealed several educational models that attempt interdisciplinary health professional education. Several didactic courses involving students from different disciplines have been reported including a pharmacy/nursing course that addressed the social and psychological aspects of terminal care(3); a human anatomy course for nursing, pharmacy, dental hygiene, and physical education students(4); and a

pediatric infectious disease course delivered to medical, pharmacy and nursing students during monthly rotations(5). Examples in the literature of interdisciplinary clinical experiences include a physician/nurse project in primary care practice(6); a geriatric experience for physicians, pharmacists, and nurses in three New Mexico nursing homes(7); an elective course in family health care for students of medicine, dentistry, pharmacy, nursing, physician assistants, social work, and dental hygienists(8); a rural clinic experience for medical, nursing, and pharmacy students(9); a community-based pharmacy experience for pharmacists and nurses(10); a rural community health practicum for students from nursing, pharmacy, health care administration, social work, and medicine(11); and a skilled nursing facility experience for student dentists, physicians, nurses, pharmacists, and the social sciences(12).

## RATIONALE

Students in various health care disciplines usually develop their respective thought processes and skills in controlled and discipline-specific environments. As a result, health care graduates discover the similarities and differences in their training and contributions to patient care only in the "real world" outside academia. The purpose of this paper is to describe a unique nursing and pharmacy pilot project that attempts to bridge this gap.

This paper will describe a successful collaborative pharmacy-nursing education pilot program coordinated by instructors from different educational institutions and course orientations. Nursing students enrolled in a senior-level management course offered at a large state-supported school of nursing and senior pharmacy students from a private liberal arts university participated in this pilot project.

## THE INSTITUTIONS

### Butler University College of Pharmacy and Health Sciences

Butler University is an independent, coeducational, nonsectarian university composed of a college of liberal arts and sciences and four professional colleges. A core curriculum encourages students to gain a broad knowledge in government, the arts, social sciences, natural sciences, humanities, and mathematics while considering an area for specialized study. The College of Pharmacy and Health Sciences offers a five-year curriculum leading to the Bachelor of Science in Pharmacy degree, and a six-year Doctor of Pharmacy (PharmD) program that prepares selected students to develop existing and future patient care roles.

The pilot project was conducted during clinical clerkship rotations. The five day per week, month long clerkship rotation consisted of making patient rounds and providing direct pharmaceutical services in the hospital setting (adult internal medicine, and critical care/pulmonology). With a physician and preceptor, the students assessed patients, planned and monitored drug therapy regimens, suggested changes as appropriate, and shared their unique knowledge of drug therapy and pharmacokinetics with other health care professionals and patients. Three groups of pharmacy students participated in this pilot project during their clinical clerkship. Since this was the first clinical experience for the six baccalaureate pharmacy students, the goals for the students were: (i) exposure to acute care clinical medicine and interdisciplinary collaborative practice, and (ii) the integration and application of didactic course work into direct patient care situations. In addition to the six baccalaureate students, one Doctor of Pharmacy student participated in the project. While the course requirements and expectations for the Doctor of Pharmacy rotation were significantly different than for the baccalaureate students, the objectives and expectations for this interdisciplinary pilot project were equivalent for all pharmacy student participants.

### Indiana University School of Nursing

The Indiana University School of Nursing is the largest school of nursing in the United States, offering a wide range of academic programs, from the associate to doctoral level. The school is located within a large academic health sciences center, and students are assigned to clinical affiliations throughout metropolitan Indianapolis.

The 10 nursing students who participated in this project were enrolled in a required nursing management course during the final semester of the baccalaureate curriculum. The goals for the course included the development of skills in leadership and the management of patient care in collaboration with health care team members. Each student was assigned to one of a variety of nursing units, including specialty areas such as critical care, inpatient psychiatric, surgical, and obstetric services. The clinical rotation was designed so that each student spent one day per week across the entire semester on the assigned unit functioning in the role of the first-line nursing care manager.

## PROJECT DEVELOPMENT

The idea for this project came about serendipitously when the two authors met and discovered a common interest in interdisciplinary education. A brief discussion of ideas evolved into this pilot project. Neither instructor had previ-

ously participated in interdisciplinary teaching. The instructors' initial intentions were to experiment, to ascertain student acceptance of the idea, and to explore the logistic feasibility of combining students from separate disciplines, different schools, with dissimilar schedules into an interdisciplinary practice team.

## OBJECTIVES

The objectives for this curricular enrichment opportunity were that the students would:

1. Develop skills in interdisciplinary collaboration by:
  - a. directly applying of their unique or "profession specific" critical thinking skills to patient care situations;
  - b. cooperating to develop a patient case for presentation to their peers; and,
  - c. sharing leadership of the case discussion with their peers.
2. Appreciate the commonalities and differences in professional orientations by:
  - a. being exposed to different professional mindsets; and,
  - b. exploring common professional concerns and perspectives in patient care.
3. Understand the complementary nature of the two health care disciplines by:
  - a. Increasing their awareness of each profession's unique patient care focus;
  - b. developing an appreciation for the multiple perspectives of other health care professionals; and,
  - c. improving inter-professional communications via elimination of perceived professional barriers and boundaries.

## METHODS

The students met weekly in the hospital to present joint case conferences to their peers. At the initial meeting, the two faculty members presented a case study in which they demonstrated the desired presentation and discussion format. At subsequent conferences, students worked in pairs, one from each discipline, to select a patient, plan a case study, and present the results to the group (Figure 1). The experience required the students to practice skills in negotiation and collaboration, as well as to demonstrate the critical thinking processes essential to their disciplines. Students were expected to identify areas where cross-disciplinary collaboration could enhance patient care and to discuss the implications of such collaboration on patient outcomes.

Seven pharmacy students (four females, three males) and 10 nursing students (nine females, one male) participated in the initial pilot project. One challenge to overcome in the project was the scheduling differences between the nursing and pharmacy students (Figure 2). Small groups of one to three pharmacy students rotated each month throughout the project, while the 10 nursing students remained the entire semester. Nevertheless, students from each discipline were afforded at least one opportunity to collaborate with a colleague from the other discipline. Two nursing students each volunteered to make a second presentation with a pharmacy student. In one instance, a patient well known to the pharmacy preceptor declined a pharmacy student interview. Consequently, the pharmacy preceptor co-presented this case with the nursing student.

Each student pair identified potential case study patients, which the preceptors approved based upon potential

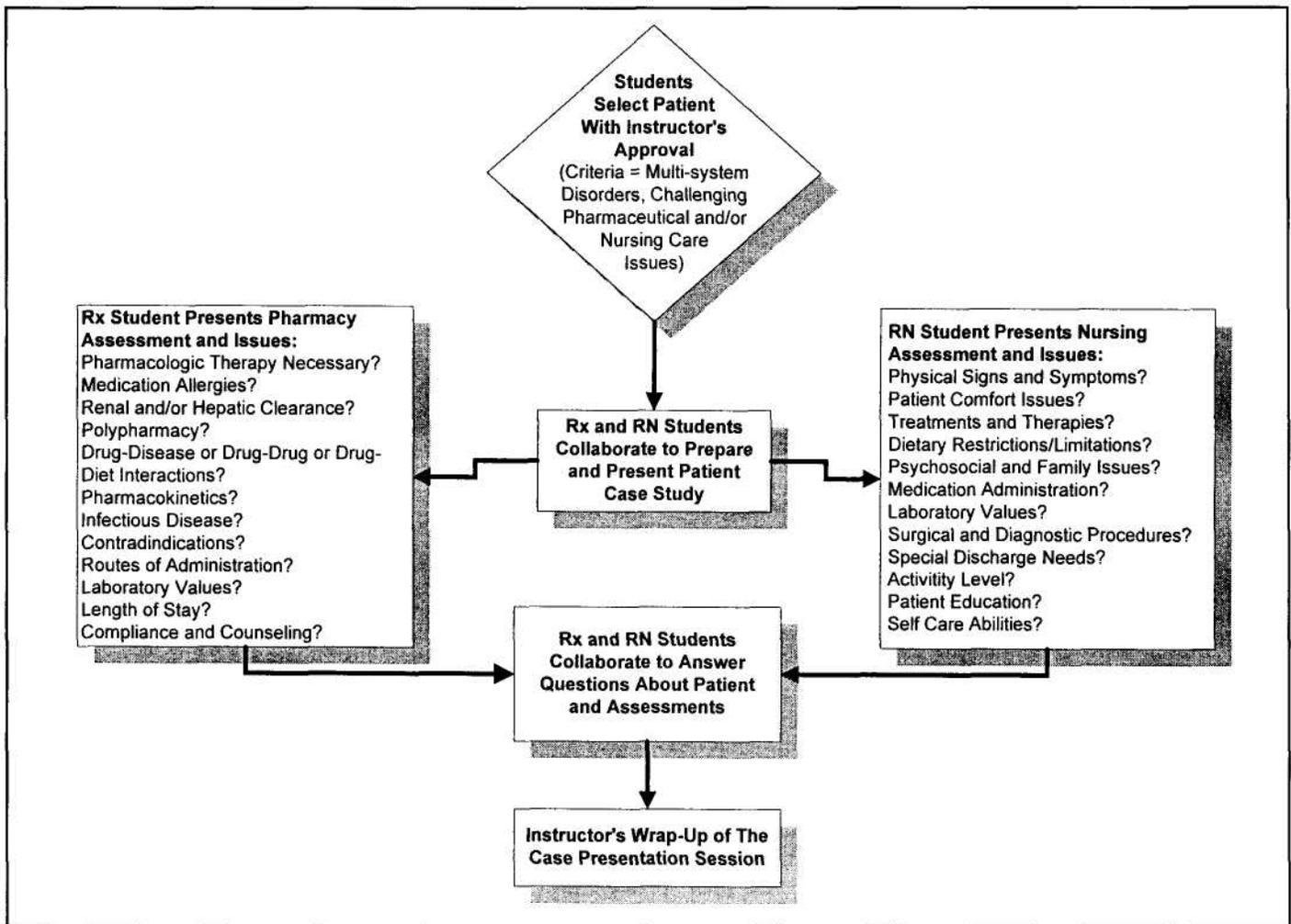


Fig. 1. Case presentation process.

Month	September	October	November
<b>Nursing Rotation</b> (9/1/93 - 11/17/93) Ten Students, Every Wednesday For 14 Weeks			
<b>Pharmacy Rotation 1</b> (September) One Clerkship Student, Five Days Per Week For Four Weeks			
<b>Pharmacy Rotation 2</b> (October) Three Clerkship Students (2 B.S., 1 Pharm.D.) Five Days Per Week For 4 Weeks			
<b>Pharmacy Rotation 3</b> (November) Three Clerkship Students (Plus One Extern At Final Session), Five Days Per Week For 4 Weeks			

Fig. 2. Schedule of rotations.

interest to the group (Figure 1). The student pair would then evaluate the patient, apply their unique perspectives and skills to develop a case study, and then lead an informal lunch-time case discussion with their peers. The case study sessions were well attended, although some nursing students were occasionally unable to leave their assigned nursing units due to patient care demands. The discussions were quite lively as the students became more familiar with the group and with the instructors' expectations. The instructors facilitated these discussions and occasionally furnished answers to technical questions or patient care dilemmas (ethical, psychosocial, economic or health care policy issues).

The final session included a priority-setting simulation game entitled "Setting Up The First Hospital On Jupiter."<sup>13</sup> Participants included eight of the 10 nursing students, and four pharmacy students (three clerkship students and one externship student) on their final experiential rotation of the year. Two nursing students were unable to participate in this session due to patient care demands. The group was subdivided into four triads, each consisting of two nursing students and one pharmacy student. Every group was given an index card with instructions to develop a list of essential medical supplies for an imaginary hospital on the planet Jupiter. The triads were later combined into two groups of six and instructed to shorten these lists to include

**Table I. Evaluation form Indiana University — Butler University joint nursing-pharmacy education pilot program**

Item	Rx Mean <sup>3</sup>	RN Mean <sup>3</sup>
1. The overall joint Nursing-Pharmacy program was beneficial to my future professional practice.	4.33	4.57
2. The Nursing-Pharmacy program helped me to understand the interdisciplinary approach to patient care.	4.33	4.57
3. I discovered that my colleague (pharmacist if you are a nurse, nurse if you are a pharmacist) shared many of the same concerns I have for patients.	4.33	3.86
4. I appreciated the opportunity to work with my colleague regarding specific patient and disease discussions.	4.17	5.00
5. The joint Nursing-Pharmacy program was interesting to me.	4.50	4.86
6. The joint Nursing-Pharmacy program should be continued in this institution.	4.83	5.00
7. The joint Nursing-Pharmacy program should be expanded to other clinical sites utilized by both institutions.	4.33	4.88
8. A formalized process to develop and implement similar educational opportunities should be instituted by both Indiana and Butler Universities.	4.17	4.71
9. The program detracted from the perceived goals and purposes of my clinical rotation. <sup>b</sup>	3.83 <sup>b</sup>	4.57 <sup>b</sup>
10. The program wasted valuable time I could have spent on the clinical rotation goals and objectives. <sup>b</sup>	4.17 <sup>b</sup>	4.71 <sup>b</sup>
11. The Nursing-Pharmacy program gave me a greater opportunity for collaboration with other professionals than I have had in other learning experiences.	4.00	4.14
12. The Nursing-Pharmacy program developed my confidence in communicating with other members of the interdisciplinary health care team.	3.67	4.00
13. In the future, I will be more confident when communicating with my colleague.	4.00	4.14
14. More patient care discussions should be included in the joint Nursing Pharmacy program.	3.83	4.14
15. More discussions of managerial issues should be included in the joint Nursing-Pharmacy program.	3.42	2.57
16. More discussions of the broad scope of health care, regulations, pending legislation, and economics should be included in the joint Nursing-Pharmacy program.	3.67	2.86
17. I wholeheartedly support continuation of the current joint Nursing-Pharmacy program.	4.17	4.86
18. I would invite staff nurses and staff pharmacists to the joint Nursing Pharmacy program, to be included in the discussion with the Nursing and Pharmacy students.	4.17	4.29
19. Because of this opportunity to participate in the joint Nursing-Pharmacy Education Pilot program, I gained greater appreciation for the thought processes and patient evaluation skills of my colleagues.	4.33	4.71
20. Because of this opportunity to participate in the joint Nursing-Pharmacy Education Pilot program, I gained greater appreciation of the knowledge and patient care skills of my colleagues.	4.50	4.71
21. Because of this opportunity to participate in the joint Nursing-Pharmacy Education Pilot program, I would like to see greater Nursing and Pharmacy collaboration in my future practice environment.	4.57	4.17
22. Because of this opportunity to participate in the joint Nursing-Pharmacy Education Pilot program, I would like to see greater Nursing and Pharmacy collaboration in the future on-campus education of my professional discipline.	3.33	4.29
23. Because of this opportunity to participate in the joint Nursing-Pharmacy Education Pilot program, I would like to see greater Nursing and Pharmacy collaboration in the future clinical site education of my professional discipline.	4.17	4.43
24. The Nursing preceptor was helpful and approachable.	4.33	5.00
25. The Nursing preceptor was knowledgeable and current.	4.33	5.00
26. The Pharmacy preceptor was helpful and approachable.	4.33	4.86
27. The Pharmacy preceptor was knowledgeable and current.	4.50	4.86
28. Please describe what you liked about the program:		
29. Please describe what you disliked about the program:		
30. Suggestions for improvement of this program include:		

<sup>a</sup>Strongly Agree=1, Agree=2, Neutral=3, Disagree=4, Strongly Disagree=5

<sup>b</sup>Reverse scored for analysis.

only the most essential medical supplies through a process of negotiation. Finally, the entire group was reunited and required to reduce the list even further by discussing the rationale for inclusion or deletion of items. The ensuing debate revealed two interesting preconceptions. For ex-

ample, the pharmacy students expected that the nursing students would select supplies based on a "first aid kit" orientation (bandages, scissors, antiseptics, etc.). On the other hand, the nursing students expected the pharmacy students to include some type of reference text, "since

**Table II. Student comments**

**Summary of Positive Comments**

**Pharmacy Students:**

- Appreciation of the psychosocial and financial complexities of patient-focused care
- Improved understanding of nurses' patient assessment Skills
- A more holistic view of patient-focused care
- Collegial relationships

**Nursing Students:**

- In depth discussions of laboratory values and principles of pharmacotherapy
- Collegial relationships

**Summary of Negative Comments**

**Pharmacy Students:**

- Length of program — too short
- Unequal emphasis of nursing vs. pharmacy aspects in Discussions

**Nursing Students:**

- Environmental (room size)
- No lunch break (case study presentations were convened at lunch time for "mouthful conferences")

pharmacists are more interested in books than in patients". Interestingly, both student groups fulfilled these expectations. The nursing students actively lobbied for gloves (for universal precautions) and a "flying surgical suite," while the pharmacy students requested a variety of computerized CD-ROM medical information references.

**EVALUATION**

At the completion of each one-month pharmacy rotation, or at the final session of the nursing class semester, an evaluation of the project was conducted to ascertain student opinion of the experience. A 30-question survey (Table I), which consisted of Likert-type responses and open ended questions, was developed by the instructors and designed to elicit information about:

1. achievement of the instructors' initial goals (item numbers 2-4, 11-13, and 19-21);
2. student acceptance and approval of the project (item numbers 1, 5, 9, 10, 14-18, 24-27);
3. desirability of continuation of this project or expansion of similar projects to other clinical clerkship instructional sites (item numbers 6-8, 22 and 23); and
4. opportunities for improvement (item numbers 28-30).

**RESULTS**

The mean item scores for each group are depicted in Table I. Note that items 9 and 10 were negatively worded and were, therefore, reverse scored so that higher scores indicated greater satisfaction with the pilot project. Overall, the mean satisfaction scores across all items was 4.69 on a five point scale. The mean satisfaction score for the pharmacy students was 4.50, while the mean satisfaction score for the nursing students was 4.86. Thematic summaries of the students' open-ended comments are listed in Table II.

**DISCUSSION**

Overall, both groups of students responded positively to this interdisciplinary pilot project and expressed a new appreciation for the expertise of the other profession. The pharmacy student scores are slightly lower on most items. Pos-

sible explanations for this difference in average scores include:

1. The initial pharmacy and nursing student session of the semester included an instructor's demonstration of the expected presentation style and process. This modeling did not occur again in subsequent months. Thus, not every group of pharmacy students received the same orientation to the interdisciplinary case presentation.
2. Since the pharmacy students were new to the group each month, they were not as accustomed to the group as the nursing students. Pharmacy students may have expressed their unfamiliarity with the experience as lower satisfaction scores. The nursing students outnumbered the pharmacy students each month (10:1 or 10:3). The pharmacy students may have experienced some discomfort in the group dynamics, which they expressed as lower satisfaction scores and in the open-ended comments.
3. The senior nursing students had completed several patient care rotations prior to this experience. For most of the pharmacy students, however, this rotation was their first direct patient care experience; the discomfort related to an entirely new situation could explain the slightly lower scores.
4. Some pharmacy students may believe that, since their career interest is in community pharmacy practice, a hospital clinical rotation is irrelevant and simply a necessary evil to be endured. If this is, indeed, the case, one could conclude that these scores were remarkably positive.

The instructors were initially concerned that the students would express dissatisfaction because their expectations for the course would be different, since the nursing students were enrolled in a management course and the pharmacy students were enrolled in a practice rotation. Survey items 9 and 10 were included to measure potential dissatisfaction with this project, and the instructors' were pleased to discover that these concerns were unfounded. The students responded that the interdisciplinary experience was, indeed, valuable and did not conflict with their rotation goals and/or personal expectations. Even though the nursing student rotation was directed at managerial skills and issues, as reflected in survey items 15 and 16, the nursing and pharmacist student groups preferred that this program continue to address the interdisciplinary delivery of patient-focused care.

Generally, the students' comments about the program were very positive. The pharmacy students gained a greater appreciation for the psychosocial and financial complexities of patient-focused care. The nursing students appreciated the pharmacists' contributions to developing pharmacotherapeutic plans and evaluating laboratory values. Both student groups enjoyed the collegial relationships established in this experience. Most negative comments about the program centered on environmental issues (e.g., size of the meeting room).

The instructors' goals for the project were achieved. Both groups of students reported increased comfort with interdisciplinary collaboration and communication, in addition to discovering that they shared many similar patient care concerns. Both groups strongly supported continuation of the pilot project at this rotation site and believed that similar projects should be developed at other clinical practice sites. The nursing students also wanted to adopt interdisciplinary formats into their on-campus classrooms, al-

though the pharmacy students expressed ambivalence about this concept.

Both student groups received unexpected benefits from this project. The nursing students' opportunities for patient follow-up were somewhat limited by their one day per week schedule. However, the pharmacy students' continuous four-week, on-site presence promoted collegial follow-up discussions between the pharmacy and nursing students. Similarly, the participating pharmacy students benefited from the nursing students' expanded patient base. The patient load of the pharmacy students included only medical/surgical or critical care patients. However, since the nursing students were placed in other practice areas of the hospital (obstetrics, psychiatry, emergency department, surgery), the pharmacy students were exposed to a greater variety of patients with a different spectrum of disease states, diagnostic parameters, and drug therapies during the joint conferences.

Several unexpected benefits for the instructors arose from this interdisciplinary teaching opportunity. The shared facilitation of case presentations was beneficial in that both participants' teaching styles were stretched beyond their usual experiences, vocabularies, and educational orientations. It also encouraged the instructors to collaborate to develop strategies to address challenging student problems.

The benefit of this pilot project in correcting professional stereotypes held by the students is illustrated in a comment from one of the pharmacy students, who, in response to the question, "What did you like most about this program?" replied, "The opportunity to find out that nurses are not as dumb as we are led to believe in school." Similarly, one nursing student commented, "I hope we allowed the pharmacists to value patient's individuality as far as needs, and not just look through charts and books." While it is unfortunate that such divisive and elitist attitudes are present in both disciplines, similar interdisciplinary opportunities of this variety might one day eliminate these misconceptions.

### OPPORTUNITIES FOR IMPROVEMENT

Some of the nursing students reported that staff nurses from the hospital had asked whether they were "going to have another interesting lunch today." While staff nurses were not included in the case discussions, prior to future sessions the instructors will extend an invitation to members of both the hospital pharmacy and nursing departments.

Many of the student suggestions concerned environmental factors. Due to a limited number of available meeting rooms, the case study sessions convened in the pharmacy preceptor's office. Most of the students thought these accommodations were excessively confining and suggested a larger meeting room.

### FUTURE IMPLEMENTATION PLANS

The instructors will utilize their experiences with this pilot project to improve future offerings, including the following:

1. The program evaluation items will be redesigned and administered before and after the program so that changes in student perceptions as a result of the interdisciplinary experience can be measured.
3. More explicit and consistent case presentation guidelines

will be developed to define the expectations for each group of pharmacy students.

4. More collaborative case preparation time will be built in to promote increased interdisciplinary interaction.
5. Opportunities for student role reversals, such as a "Walk-A-Mile-In-My-Shoes" component, will be implemented to increase awareness of the unique practice competencies that each profession contributes to patient care.
6. The instructors will participate more actively in selection of patient cases that require interdisciplinary collaboration to achieve optimal therapeutic outcomes.

### CONCLUSIONS AND IMPLICATIONS

Health care in the evolving delivery system of the future will require greater collaboration among all health care professionals. Traditional clinical learning experiences in pharmacy and nursing education reinforce cooperative, rather than collaborative, practice. All students of the health care professions need guided, interdisciplinary clinical practice opportunities to develop and practice the skills necessary for collaborative future practice. A collaborative clinical teaching model such as this one can help prepare our new professionals for these practice partnerships.

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