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INSTRUCTIONAL DESIGN AND ASSESSMENT

Development and Evaluation of a Student Early Hospital Exposure Program in a Canadian Bachelor of Science Pharmacy Program

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Objectives. An early hospital exposure program was piloted and implemented for second-year pharmacy students of a 4-year Bachelor of Science in Pharmacy degree program to provide them with insight into hospital practice.

Design. A pilot program was implemented and evaluated in the spring of 2002, and based on the success of the pilot, the program was implemented into the second-year curriculum in the fall of 2002. Hospital pharmacists and students involved in the program evaluated the program for continuing quality assurance.

Assessment. Pharmacists, students, and teaching staff members at the Faculty of Pharmacy evaluated the program as beneficial and felt the program should be continued, with increased time spent with the hospital pharmacist.

Conclusion. Early hospital pharmacy exposure allowed students to develop an appreciation for opportunities in hospital practice and a better understanding of the concepts of problem-based learning in a patient setting.

Keywords: practical experience, hospital practice, pharmacy education, problem-based learning

INTRODUCTION

This paper describes the development, pilot program, and implementation of an early exposure for second-year BSc pharmacy students to hospital practice. This initiative was implemented jointly by the University Health Network (UHN) and the Leslie Dan Faculty of Pharmacy, University of Toronto.

UHN is Canada's largest acute care teaching hospital, providing clinical services at 3 sites: Princess Margaret Hospital (PMH), Toronto General Hospital (TGH), and Toronto Western Hospital (TWH). The pharmacy department at UHN is one of the main hospital teaching sites for the Leslie Dan Faculty of Pharmacy at the University of Toronto.

The Pharmacy department at UHN underwent a strategic planning process in April 2001, in which staff identified a commitment to academic teaching with an interest in developing a leadership position in creating and implementing new teaching initiatives. As a result of this departmental focus, the managers and practice leaders met with representatives from the Leslie Dan Faculty of Pharmacy to identify potential areas for new partnership.

The 4-year undergraduate program at the Leslie Dan Faculty of Pharmacy is designed to provide pharmacy students with the knowledge, skills, and values necessary for the delivery of pharmaceutical care in a variety of practice settings. The curriculum is delivered through traditional lecture formats as well as through problem-based, self-directed learning. Critical appraisal, self-evaluation, and interpersonal skills such as assertiveness in communication, delegation, leadership, and compromise are all stressed.

A need was identified to develop a program for increasing exposure of undergraduate students to hospital pharmacy practice. Currently the only practical experience students receive during their undergraduate pharmacy education is the Structured Practice Experience Program at the end of their fourth year. However, the staff concluded that students would benefit from introduction to a hospital practice site earlier within the curriculum. Early practice-site exposure would allow the students to develop an appreciation for the vast array of

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opportunities open to them within hospital practice while gaining a better understanding of the concept of problem-based learning in a practical setting.

DESIGN

Pilot Program

Objectives. The objectives of the pilot program were (1) to provide students with insight into hospital practice in their early academic career, and (2) to ensure the program suited the needs of both the students and the academic curriculum. UHN's 3 sites provided ideal locations for piloting the program, since they incorporated acute-care (TGH), community hospital (TWH), and specialty hospital (PMH) conditions. A letter was sent to the second-year students and announcements were made in class regarding the program. The pilot program commenced on March 1, 2002. For the pilot project, the first 40 students who volunteered for the site visits were accepted.

Site Visits. Four rotations were offered in March 2002. The participating students were enrolled into 2 visits at the UHN. Each visit consisted of one half day. During the visit at the PMH, students were exposed to sterile product preparation and to the role of the oncology pharmacist. Students were encouraged to practice aseptic technique with well-experienced technicians. The clinical pharmacist demonstrated the importance of pharmacy practice in supporting an oncology patient.

Students also visited either the TWH or TGH. During this visit, a basic knowledge of hospital pharmacy operations, the relationships between pharmacist and patients, and the role of the pharmacist with other healthcare professionals were observed. The educational and research roles of hospital pharmacists were also explored.

An evaluation was developed to assess this pilot prior to considering incorporation of the program within the undergraduate curriculum. The 3 areas assessed included the structure, activities, and concept of the program. All students ranked site visits as either good or excellent. This suggested that students were particularly interested in hospital practice. Overall, 50% of the students rated the time allocation as good, commenting specifically that more time should be allotted for patient care. Most students rated other activities such as aseptic technique, the dispensing systems tour, and discussion about opportunities for hospital pharmacists as good. These activities were therefore adequate and no change was required prior to implementation of the program.

Conclusion of the Pilot. From the evaluation of the pilot, most students felt that more time should be allocated for them to spend with the pharmacist providing patient care. Based on the pilot, the UHN and Leslie Dan Faculty of Pharmacy made the joint decision to implement this program as a component of the second-year pharmacy practice course.

Implementation of the Program Into the Curriculum

Recruitment of Sites. The idea of an early exposure program and the results of the pilot program were presented to hospital pharmacy directors at the annual meeting of the Pharmacy Residency Directors' Forum of Ontario in June 2002. The directors group was supportive of the concept and many sites offered to participate in the undergraduate program. In order to accommodate 180 students, 7 other hospitals were added to the program: Centre for Addiction and Mental Health, Hospital for Sick children, Mount Sinai Hospital, Rouge Valley Health System, St. Joseph's Hospital, St. Michael's Hospital, and Toronto Rehabilitation Institute, along with The University Health Network (PMH, TGH, TWH). Several sites outside of Toronto offered to participate, however, due to the timing of the rotations (based on student availability) it was decided to limit rotations to hospitals within Toronto and surrounding areas. These centers were all able to provide a problem-based learning environment (PBL). PBL utilizes real world problems, not hypothetical case studies with neat, convergent outcomes. It is in the process of struggling with actual problems that students learn both content and critical thinking skills.

Prereadings and Assignment. Prior to the hospital visit, students were given 2 articles on hospital pharmacy practice to read to familiarize themselves with issues in hospital pharmacy.[1,2] Furthermore, students were assigned to read *Standards of Professional Practice Behavior* and *Principles to Confidentiality* documents.[3,4] Students were assigned 6 questions that pertained to hospital/pharmacy vision statements, dispensing systems, hospital formularies, and pharmacist-patient and pharmacist-health care professional interactions.

Site Visits. The site visits consisted of a didactic session followed by a tour of the pharmacy department and nursing areas and interaction with patients and various hospital staff. The visit consisted of 4 components.

Welcome and Introduction to the Pharmacy Department. This consisted of a 30-minute didactic component that included discussion of the goals and objectives of the early exposure program, hospital and pharmacy departmental mission and vision statements, the purpose and process of hospital formularies, drug budgets, and pharmacy administration. The focus of this didactic component included a discussion of the full range of hospital

Table 1. Pharmacist Evaluation of the Early Hospital Exposure Program, *N* = 26

	Percent Responding					
Item	**Excellent**	**Good**	**Fair, keep it the same**	**Needs small improve-ments**	**Poor, needs to be fixed**	**Did not respond N/A**
Preparatory package	4	74	15	0	4	3
Time allocation (too short)	8	15	12	62	0	3
Practical application	15	73	12	0	0	0
Introductory discussion	7	62	25	0	0	6
Nursing unit visit	19	62	7	12	0	0
Chart review	8	73	12	4	0	3
Professional interaction (eg, patient interview)	19	55	19	4	0	3
Pharmacy department tour by technician	10	63	21	0	0	6
Closing discussion	14	64	15	0	0	7
Time allocation for assignment	0	49	32	12		7

pharmacy practice across Ontario, including specialty, acute care, and community care, teaching and non-teaching sites, and practice across the patient-care continuum of primary, secondary, tertiary, and quaternary care, so that students would have a good understanding of the diversity within hospital pharmacy practice.

Clinical Services and Tour of Nursing Unit. This 1½-hour session was spent with a clinical pharmacist on a patient care unit. The ratio of pharmacist to students was a maximum of 1 to 4. Students were introduced to work areas, chart reviews, the pharmaceutical care process, and the medication order processes. Furthermore, the student observed one professional interaction (ie, with another health care professional) and one patient interview.

Tour of the Pharmacy Department. This 30-minute tour consisted of a tour of the inpatient dispensary with discussion of the advantages and disadvantages of different distribution systems. Depending on the hospital, students were familiarized with pneumatic tubing systems, prepackaging areas, study drug areas, and drug information services. Hospitals were encouraged to utilize pharmacy technicians in conducting this tour to allow students further exposure to technicians as an integral part of the hospital pharmacy team.

Discussion and Completion of Assignment. This 1-hour session consisted of student discussions about patient care surrounding confidentiality issues, teaching, and research. Finally, the student was allowed about 30 minutes to complete the assignment questions.

Student Assessment. Student assessments consisted of 2 parts: a written assignment and a professional assessment. The written assignment was composed of 6 questions pertaining to the hospital/pharmacy mission statement, dispensing systems, formulary systems, and both patient and professional interactions with the hospital pharmacist. Students were graded on their written responses to these questions. The assessment of their professional behavior was based on their punctuality, appearance, enthusiasm, and communication skills during their site visit.

Evaluation of the Program. At the end of the site visit, all students completed an evaluation of the hospital early exposure program. A 5-item evaluation was also sent to all of the pharmacists who participated in the program. The program was evaluated based on the prereading package, site facilities, time allocation, activities during the visit, such as pharmacist-patient interviews and the technician tour, and practical application of this early exposure visit.

ASSESSMENT

Pharmacist Evaluation

Twenty-six evaluations from pharmacists were received. Overall, pharmacists thought this was a beneficial program for students. More than 70% of the participating pharmacists thought the preparatory package and practical application of the program was good. More than 80% of the pharmacists thought the patient interview, chart review, and nursing unit visit were either good or excellent; however, most pharmacists commented on the need for longer visits, specifically time spent with the pharmacist. In fact, 62% felt that the program was too short and more time for students to provide patient care should be allocated. More than 60% of the pharmacists rated the pharmacist department tour, introductory discussion, and closing discussion as good and did not believe any change was necessary (Table 1).

Table 2. Student Evaluation of the Early Hospital Exposure Program, *N*=180

	Percent Responding				
Item	**Excellent**	**Good**	**Fair keep it the same**	**Needs small improve-ments**	**Poor, needs to be fixed**
Preparatory package	25	48	13	13	1
Site facilities	62	37	1	0	0
Time allocation (too short)	12	28	9	43	8
Practical application	54	40	5	1	0
Introductory discussion	45	45	9	1	0
Nursing unit visit	48	31	15	5	1
Chart review	48	42	6	4	0
Professional interaction (eg, patient interview)	53	28	9	9	1
PC process	43	39	13	4	1
Pharmacy department tour by technician	44	40	10	6	0
Closing discussion	52	43	4	1	0

Student Evaluation

Overall, students found the program to be beneficial, ranking all aspects of the program as either excellent or good (Table 2). Although the students ranked the nursing unit visit, chart review, and professional interaction as either excellent (50%) or good (34%), most students thought the program was too short (43%). Students specifically commented on increasing the time spent with the pharmacist providing patient care.

DISCUSSION

Based on the success of the pilot program, the early hospital exposure program was implemented into the second-year curriculum in the fall of 2002. Because the program was made part of the second-year professional practice course, it was necessary to assign 10% of the student's final grade to the visit. An assignment grade and a professional behavior grade, each worth 5% of the student's final grade, were associated with the hospital visit.

Based on feedback from both pharmacists and students after the first year of the program, a few changes were made to the program in the fall of 2003. Both the students and pharmacists enjoyed all aspects of the program; however, both parties felt spending more time with the pharmacist was needed. In the fall of 2003, students visited 2 different sites and each visit was 3 hours in duration. The students spent the majority of the time (2.5 hours) with the pharmacist-technician team. At the end of each visit, students had 30 minutes to complete their assignment, which was worth 5% of their final grade (5% for each of the 2 visits for a total of 10%). The students were also evaluated on their professional behavior at each visit (5% at each visit; total of 10%). Therefore, the assignment and professional behavior grade was worth a total of 20% of the student's final grade for the course. In order to increase the time each student spent with a pharmacist, it was decided to include the introductory discussion (types of hospital, pharmacy structure, formularies, and mission statements) and closing discussion (opportunities for hospital pharmacists) in the form of a 1-hour lecture at the beginning of the school year. These changes were implemented in the fall of 2003 in order to fulfill the pharmacists' and the students' objective that students spend more time with the pharmacist providing patient care.

CONCLUSIONS

Therefore, the goal of the early hospital exposure program is to build a bridge linking academia and clinical practice. Early practice-site exposure will allow the students to develop an appreciation for the vast array of opportunities open to them within hospital practice while gaining a better understanding of the concepts of problem-based learning in a patient setting.

REFERENCES

1. Calvert RT. Clinical pharmacy-a hospital perspective. *Br J Clin Pharmacol*. 1999;47:231-238.
2. Pharmacy Technician Competency Profile. *Pharmacy Connection*. 2001;1:6-27.
3. Standards of professional practice behaviour for pharmacy undergraduate and postgraduate student of the Faculty of Pharmacy, University of Toronto. Leslie Dan Faculty of Pharmacy, University of Toronto Calendar 2002-2003; 58-9.
4. Ten Principles of Patient Confidentiality. Available at http://uhn.on.ca. Accessed August 2002.