No Place Like Home: The Impact on Medical Students of an Interprofessional Home Visit Experience with Pharmacy Students

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Categories: Educational Theory, Medical Education (General), Research in Medical Education

Received: 27/11/2017
Published: 04/12/2017

Abstract

Medical and pharmacy schools are required to train learners using interprofessional education (IPE) to meet accrediting requirements and to enhance the learning experience. Standards for optimal IPE learning have not yet been clearly identified. During a year-long course, 135 third-year medical students participated in a clinical home visit experience with third-year pharmacy students and a geriatrician or geriatric nurse practitioner. Six weeks after the home visits, medical students completed a survey about the value of the experience. In addition, at both the beginning and end of the third-year course, medical students completed a survey of attitudes about physicians and other health care providers, including pharmacists. Interdisciplinary work was significantly less valuable than the other aspects of the home visit (p < 0.001). The top three learning elements were: (1) close contact with the patient, (2) experience of the practitioner, and (3) debriefing after the visit. IPE is an important avenue to enhance education at all levels and in multiple areas of medical education. However, consideration of the learning environment is imperative to success of any IPE experience. This study is one of the first to demonstrate that the setting of the experience is at least as important and may be more important than length of interaction, types of faculty involved, level of learners, and preparation for all parties in the design of an IPE experience.

Keywords: Medical Pharmacy IPE; Home visits

Background

Interprofessional education (IPE) promotes learner education through interactions and aims to foster respect and understanding among healthcare professionals. Medical and pharmacy schools are required to train learners using IPE to meet accrediting requirements and to enhance the learning experience. For medical education, the Liaison
Committee on Medical Education (LCME) requires IPE, and for pharmacy students, IPE is required by the Accreditation Council for Pharmacy Education (ACPE).

Despite the requirements, standards for providing optimal IPE learning have not been clearly identified nor mandated. Existing interprofessional experiences have varied lengths of interaction, ranging from two-hour sessions (Shafran 2015) to two-year curricula (Roy 2016). Some activities are clinic-based (Thompson 2016), others are simulation-based (Sigalet 2012, Goldberg 2015), and a few include classroom-style lectures (Neville 2013). Experiences span the pre-clinical to clinical years of training for medical students. Frequently, learners with varying levels of preparation engage in IPE activities with little context or knowledge of their colleagues’ roles and responsibilities (King et al. 2017).

In addition, the educational impact and clinical outcomes associated with IPE training have not yet been conclusively reported in the literature (Reeves 2013). What has been shown is that medical and pharmacy students can increase their interpersonal and interprofessional communication through a full-semester, interprofessional communication course (Hagemeier et al. 2014). Medical and pharmacy students also have benefitted from weekly one-hour, problem-based peer-led learning seminars lasting 16 weeks (Lehrer et al.2014). Interestingly, pharmacy students with at least one IPE exposure perceived themselves to be more comfortable with questioning and being questioned by other healthcare professionals (Tolleson 2016). In addition, home visits and community site visits with preclinical medical students and pharmacy students have been shown to be beneficial to all learners involved (Tan et al. 2014). Looking specifically at home visits, students’ self-perception of skills and abilities related to a medicine and pharmacy interprofessional team-based care and identification of a medication-related problem are improved after involvement in an IPE medication-focused home-visit assignment (Vaughn et al. 2014).

The Longitudinal Ambulatory Care Experience (LACE) is a required third-year course at Baylor College of Medicine (BCM) that seeks to promote medical student competency in managing the medical, social, spiritual, and cultural needs of patients by combining outpatient preceptor and community experiences. It begins each July at the beginning of the academic year and finishes the following May, near the end of the academic year. The LACE IPE experience includes BCM medical students working alongside a variety of non-physician healthcare professionals such as dentists, orthotists, prosthetists, physical therapists, chaplains, and nurses. Each educational experience is a unique, stand-alone experience that exposes learners to various clinical and community resources. The personal interactions between the learners and their own faculty as well as their interactions with faculty of the other profession are considered to be as significant to the learning experience as is the general exposure to another discipline or service. One LACE IPE offering pairs two third-year medical students with two third-year University of Houston College of Pharmacy students to engage in home visits with a geriatrician or geriatrics-trained nurse practitioner (NP). Patients who are enrolled in the home-visit program either have been recently discharged from the hospital but do not have a means to return to a clinic for follow-up or simply need ongoing care but do not have reasonable transportation to go to a clinic. This nature of the visits gave rise to the name of the program, “No Place Like Home” (NPLH). This study sought to explore the impact of interprofessional home visits on medical students and to determine if a one-time medicine/pharmacy IPE home visit could change medical students’ perception of the role of pharmacists in healthcare. To our knowledge, this is one of the first studies to demonstrate that the setting of the IPE experience is equally or more important than other components of the IPE (length of interaction, types of faculty involved, level of learners, and preparation for involved parties).

Methods

IRB approval was granted for this study by both institutions (Baylor College of Medicine IRB protocol number...
H-29022, University of Houston College of Pharmacy IRB protocol number 12545-EX).

Learning Experience

The NPLH experience is designed to increase collaboration among physicians, medical students, and pharmacy students. During the clinical home visits, the team includes two BCM medical students, two pharmacy students from the University of Houston College of Pharmacy, and one geriatric MD or NP. Together, the 5-person team assesses the patient and formulates an assessment and plan. As part of the experience, all students ride in a van with the MD or NP from the medical center to the patient's home. The ride is used as an opportunity to educate learners about the concept of home visits, which patients are eligible for the service, which diagnoses are commonly seen, how the home visit is valuable to the patient, and what additional services can be offered to the patient. At the patient's home, the team works together to examine the patient and discuss physical findings. Pharmacy and medical students gather the pill bottles, evaluate the medications, and discuss with the MD or NP the indications for each medication, potential side effects, items that should be monitored, and learning points for patient/family education. If the patient is nearing hospice-care, appropriate discussion occurs about whether to continue or stop each medication once the patient enrolls in hospice. Instead of students teaching others about their own specific roles as members of the healthcare team, the team works together and carries out the final plan. The students debrief and reflect with the MD or NP during the return drive to the medical center.

Data Collection

Six weeks after the home visits, medical students are asked to complete a survey about the NPLH experience, specifically their perceptions of its value and what contributed to that value. In addition, at both the beginning and end of the LACE course, medical students complete a survey of their attitudes about MDs and other healthcare providers, including pharmacists. The survey includes seven items taken from the Role Perception Questionnaire (Mackay 2004) that are most directly related to the intended learning outcomes of the NPLH experience.

Participant Characteristics

Over the course of four semesters, 135 LACE third-year medical students participated in NPLH visits with third-year pharmacy students. Of these, 88 (65.2%) medical students completed the six-week post-visit survey. Data was also available from sixty-seven (76.1%) of the NPLH participants regarding their attitudes toward MDs and pharmacists prior to (pre) and at the end (post) of LACE. Fifty-seven (64.8%) medical students had worked previously with pharmacy students in a limited fashion as part of another course or during rounding. Fifty-two (59.1%) were male, and fifty-five (62.5%) participated in this IPE during the first semester of their third-year. At BCM, students enter clinical clerkships during the second half of their second year. Thus, at the time of the IPE, medical students had at least 8 months of clerkship experience. The pharmacy students were in their third year of training and had only engaged in introductory community experiences and no inpatient ward or outpatient clinic experiences.

Data Analysis

Analyses included item descriptive statistics and comparisons over time. However, much of the data did not meet the assumptions for parametric testing, and we utilized non-parametric methods for group or time-based comparisons. We used SPSS Version 23 for these analyses.
Results

Value of the Learning Experience

In the post-visit survey, medical students were asked the value of four aspects of the NPLH visit (1) seeing patients in their home environment, (2) working with a student from another discipline, (3) working directly with a practitioner, and (4) learning about community-based services. Each item used a 1-7 scale (with 1 = "not valuable at all," and 7 = "extremely valuable"). Responders rated interdisciplinary work as significantly less valuable than the other three aspects of the visit (p < 0.001). There were no differences in students’ perceptions of value by gender or time of training (Table 1).

|                        | Mean | Median | Mode | SD   |
|------------------------|------|--------|------|------|
| Seeing patients in their home environment. | 6.36 | 7.00   | 7    | 1.135 |
| Working with a student from another discipline. | 5.23 | 6.00   | 7    | 1.858 |
| Working directly with a practitioner. | 6.35 | 7.00   | 7    | 1.104 |
| Learning about community-based services. | 6.36 | 7.00   | 7    | 1.033 |

Medical students were also asked to rank the top three learning elements that increased after attending the NPLH experience. The items in the list were developed from focus groups with medical students held during the experience development. The number and percentage of students endorsing each item as one of their top three choices is shown in Table 2. Two of the key elements that were chosen by the majority of students included (1) close patient contact and (2) experience of the practitioner. There were no differences in students’ first, second, or third choices by gender or time of training.

|                        |
|------------------------|
| # (%) who ranked as #1 | # (%) who ranked as #2 | # (%) who ranked as #3 | # (%) who ranked in top 3 |
| Close contact with the patient | 29 (33%) | 23 (26%) | 14 (16%) | 66 (75%) |
| Experience of the practitioner | 28 (31%) | 17 (19%) | 12 (13%) | 57 (65%) |
| Debriefing after the visit | 13 (15%) | 7 (8%) | 16 (18%) | 36 (41%) |
| Experiencing another discipline's perspective | 4 (5%) | 13 (15%) | 11 (13%) | 28 (32%) |
| Time allocated to the visit | 2 (2%) | 11 (13%) | 14 (16%) | 27 (31%) |
| Practitioner present for entire visit | 6 (7%) | 8 (9%) | 7 (8%) | 21 (24%) |
Working with students from another discipline | 3 (3%) | 3 (3%) | 8 (9%) | 14 (16%)
Orientation to visit | 0 | 4 (5%) | 2 (2%) | 6 (7%)
Having a chance to learn new patient care skills | 1 (1%) | 1 (1%) | 1 (1%) | 3 (3%)
Level of responsibility afforded students | 0 | 1. | 1 (1%) | 1 (1%)
Other | 2 (2%) | 1 (1%) | 2 (2%) | 5 (6%)

### Attitudes about Physicians and Pharmacists

We also compared medical students’ attitudes about pharmacists prior to and after the year-long LACE course. Because the data did not meet the assumptions for parametric tests, we utilized the non-parametric Wilcoxon Signed Ranks Test. No differences were found between medical students’ pre-course attitudes and their post-course attitudes about pharmacists (Table 3).

| Item | Scale | Pre LACE (SD) | Post LACE (SD) | P |
|------|-------|---------------|----------------|---|
| Medical/Social focus to their work | 0 = medical focus, 9 = social focus | 1.34 (1.5) | 1.40 (1.5) | ns |
| Builds a deep/superficial relationship with the patient | 0 = deep, 9 = superficial | 7.31 (1.9) | 7.19 (1.8) | ns |
| Communicates with many/few professionals | 0 = many, 9 = few | 3.04 (2.5) | 3.19 (2.7) | ns |
| Has an objective/subjective medical perspective | 0 = objective, 9 = subjective | 1.81 (1.7) | 1.69 (1.6) | ns |
| Work effectively in a team/alone | 0 = team, 9 = alone | 3.31 (2.7) | 3.15 (2.3) | ns |
| Requires a high level of technical/intellectual skill | 0 = technical, 9 = intellectual | 5.67 (2.6) | 5.03 (2.6) | ns |
| Seeks out a high/low degree of involvement with the patient | 0 = high, 9 = low | 6.72 (1.9) | 6.64 (2) | ns |

Using the post-LACE measures, we compared medical students’ attitudes about members of their own discipline to their attitudes about pharmacists on the same items. Because the data did not meet the assumptions for parametric tests, we utilized the non-parametric Wilcoxon Signed Ranks Test. Several differences were reported between medical students’ attitudes about physicians and their attitudes about pharmacists (Table 4).
Table 4: Medical Student Post-LACE Perceptions of Physicians Compared to Pharmacists (n=67) after a Community Based Course and No Place Like Home IPE Experience

*Selected Items from Role Perception Questionnaire to assess Attitudes Toward Healthcare Providers, scored 0-9

| Item*                                      | Scale                                                                 | Physicians Mean (SD) | Pharmacists Mean (SD) | P       |
|--------------------------------------------|----------------------------------------------------------------------|----------------------|-----------------------|---------|
| Involvement with patients                  | 0 = Seeks out a high degree of involvement with the patient          | 2.91 (2.02)          | 6.64 (1.94)           | < 0.001 |
|                                           | 9 = Maintains a low degree of involvement with the patient          |                      |                       |         |
| Objective versus subjective medical        | 0 = Has an objective medical perspective                            | 3.31 (1.99)          | 1.69 (1.62)           | < 0.001 |
| perspective                                | 9 = Has a subjective medical perspective                            |                      |                       |         |
| Communication with professionals           | 0 = Communicates with many professionals                             | 1.78 (2.18)          | 3.19 (2.68)           | < 0.001 |
|                                           | 9 = Communicates with few professionals                             |                      |                       |         |
| Work in a team versus alone                | 0 = Work effectively in a team                                      | 2.24 (2.21)          | 3.15 (2.25)           | 0.003   |
|                                           | 9 = Work effectively alone                                          |                      |                       |         |
| Relationships with patients                | 0 = builds a deep relationship with the patient                      | 2.90 (2.17)          | 7.19 (1.84)           | < 0.001 |
|                                           | 9 = builds a superficial relationship with the patient               |                      |                       |         |
| Medical versus Social focus to their work  | 0 = medical focus to their work                                      | 3.45 (2.03)          | 1.40 (1.54)           | < 0.001 |
|                                           | 9 = social focus to their work                                      |                      |                       |         |

Discussion

The NPLH IPE experience was well-liked by BCM medical students because of the novelty of being in the community as part of a clinical home visit with an experienced practitioner. Although this NPLH experience was designed to combine learners from medical and pharmacy schools to learn from each other about their own specific roles, this was overshadowed by the uniqueness of the experience itself. This same theme was constant in the students’ responses that the key elements from the experience included, (1) close contact with the patient, (2) experience of the practitioner, and (3) debriefing after the visit. These are consistent with the students’ interests in being in the community as part of a clinical home visit with an experienced practitioner.

Medical student surveys, taken at the beginning and end of their enrollment in the LACE course, evaluated medical students’ perceptions of other healthcare professionals. It is important to note that LACE students may have had the opportunity to work with pharmacists on the wards and in clinics through other medical courses during their third year of medical school. These experiences may have impacted their perception of pharmacists and pharmacy students. The survey demonstrated that over the full third year of medical school, medical students’ perceptions of
pharmacists did not change related to their objective-versus-subjective perspective on patient care, communication with professionals, effectiveness in working in a team versus alone, relationships with patients, and medical-versus-social focus to their work. Before and after the LACE course, medical students answered consistently that pharmacists’ focus on their work is more medical than social and that they tend not to have deep relationships with patients, communicate well with many professionals, have an objective focus to their work, work effectively in teams, maintain a high level of intellectual skill, and do not seek out a high degree of involvement with patients. These qualities seem appropriate, given the specific role of the pharmacist in delivery of healthcare.

The last set of data that compared students’ perceptions of physicians versus pharmacists showed that medical students have very different views of physicians’ and pharmacists’ roles and responsibilities in practice. From an IPE perspective, it is reassuring to see that medical students perceive that both MDs and pharmacists work well in a team. Medical students recognized, however, that there are many differences in day-to-day practices of MDs and pharmacists. The students seemed to appreciate that each profession has its specific role and responsibility and each profession’s job is different. However, when each professional successfully fulfills his or her role, the team is successful.

Three important limitations of this study as an IPE evaluation were that (1) a pharmacy faculty member was not present to serve as a role model for the medical and pharmacy students; (2) pharmacy students were third-year students with no previous clinical experience, whereas the participating third-year medical students had engaged in clinical rotations for at least 8 months; and (3) the students did not learn about each other’s roles because, in general, they all performed the same duties during the home visit. Given these limitations, it is not surprising that the students rated "seeing patients in their home environment," "working directly with a practitioner," and "learning about community-based services" as being more valuable than "working with a student from another discipline."

**Take Home Messages**

IPE is an important avenue to enhance education at all levels and in multiple areas of medical education. However, consideration of the learning environment is imperative to success of any IPE experience. This study is one of the first to demonstrate that the setting of the experience is equally important, if not more important, than length of interaction, types of faculty involved, level of learners, and preparation for all parties in the design of an IPE experience.

**Notes On Contributors**

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Dr. Anne Gill is Assistant Dean for Interprofessional Education, former course director of LACE, and one of the founders of the No Place Like Home student experience.

Acknowledgements

The authors thank Dr. Lee Ligon of the Center for Resources, Innovation and Scholarship (CRIS), Department of Pediatrics, Baylor College of Medicine, for editorial assistance.

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Appendices

Declarations

The author has declared that there are no conflicts of interest.

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