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A collaborative clinical pharmacy research assistant programme for pharmacy students

PROF. FLORA G. ESTES*

Pharmacy Practice, Texas Southern University, College of Pharmacy and Health Sciences, 3100 Cleburne Street, Houston, Texas 77004, USA.

Abstract

Introduction: To expose pharmacy students to research methodologies through didactic and interactive activities and increase student awareness of pharmacy opportunities in the research sector.

Programme Description: Students selected were in their first professional year. All remained in the research programme until the end of their third professional year. Students were selected based on academic and professional year standing, and interest in research. Students were assigned a research mentor and were required to complete a research project and present their research findings.

Evaluation: In Phase I - a monthly progress report from each student documented progress on the research project, evaluated their performance by including their strengths and weaknesses, and outlined their plans for improvement.

Future Plans: An expansion (Phase II) of the pilot study is being implemented. In Phase II, the students and the preceptors will be required to submit quarterly evaluations of each other's performance in addition to the monthly documentation.

Keywords: *assistant, clinical, pharmacy, preceptor*

Introduction

Since students have minimal opportunities to interact with or observe pharmacists who are in less traditional aspects of healthcare, many students do not consider research and/or academia as their career opportunity of choice.

It is reported that a shortage of faculty exists among pharmacy schools due to retirement of senior faculty, loss of professors to jobs in hospital or industry, (Traynor, 2003; AFPE, 2009), and reduced applications to postgraduate programs (Gourley, 2006). The "greying" of pharmacy faculty and turnover for higher-paying job opportunities have contributed to a 'workforce crisis in academic pharmacy' (Party & Eiland, 2007). This creates a need for increased exposure of pharmacy students to careers in pharmacy education. (Traynor, 2003; AFPE, 2009).

In an attempt to increase pharmacy student awareness and exposure to research opportunities, Texas Southern University (TSU) College of Pharmacy and Health Sciences (COPHS), during Spring 2004 to Spring 2007 initiated a pilot programme for interested pharmacy students. Students in their first professional year were introduced to the Clinical Pharmacy Research Assistant (CPRA) programme. The goal was to expose students in their first professional year to research methodologies; through didactic and interactive activities that focus on evidence-based medicine, outcomes research, and pharmacoeconomics. A TSU grant-funded programme allowed students to receive a stipend while engaged in research activities.

Description of Programme

Interested students were asked to submit their curriculum vitae/resume and current university transcript. The number of students selected was based on funding availability. Students were selected based on academic standing, professional year, interest in research, computer skills, and leadership qualities (Figure 1). Accepted students attended a mandatory orientation with the collaborating institution where the research facility and preceptors were housed. Students were assigned to a Clinical Pharmacist who served as a research preceptor, preferably in an area of interest to the student. There was no pre-determined work schedule. Once the students received their academic schedules for the semester they were required to coordinate a work schedule that was agreeable for both the student and preceptor. Students were required to commit to the schedule and attend on the dates and times selected, up to a maximum of 20 hours per week.

Four students in their first professional year (2009) were assigned to clinical pharmacy research preceptors in areas of oncology, HIV, paediatrics, and cardiology with the universities collaborating practice institution (Table I).

To be selected as a research preceptor in the CPRA programme the clinical pharmacist Request for Proposal (RFP) had to be in the areas of clinical, quality assurance and outcomes research. They had to be committed to working closely with the students to provide guidance and project direction, including completing the initial IRB application (if applicable), presenting a quality research poster, and writing/submitting a manuscript for

*Correspondence: Prof. Flora G. Estes, *Associate Professor, Pharmacy Practice, Pharmacy Practice Department, Texas Southern University, College of Pharmacy and Health Sciences, 3100 Cleburne Street, Houston, Texas 77004, USA. Tel: +1 (713) 313-1977. Email: estes_fg@tsu.edu*

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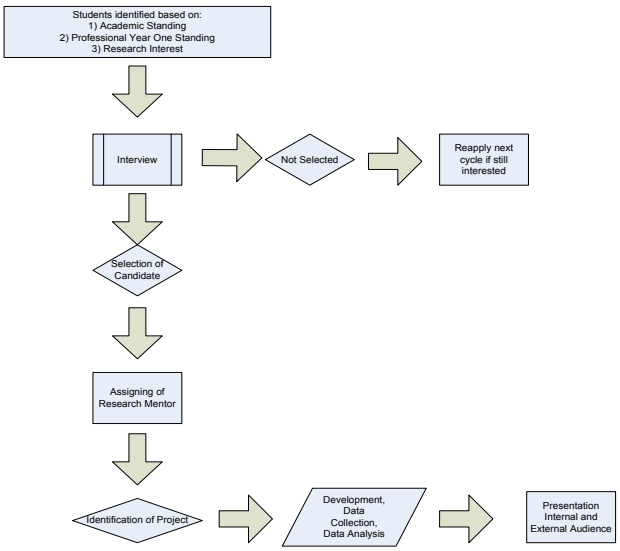
publication. The Clinical Pharmacists received no compensation or honorarium for their participation in the programme.

Figure 1: Student Selection Process



Assessment Method

There was no formal evaluation of the students by their research preceptors other than their projects had to be of presentation quality and publishable, and presented at a notable forum. [Table II]. Students were required to submit a monthly progress report and a reflection summary upon completion of the programme. In the expansion programme (Phase II), assessments and evaluations were to be conducted at the beginning of the assigned project, at midpoint, and the end of the project time period. The evaluation focused on preceptor evaluation of students, expectations of the students and preceptors, and the student's perception of their own strengths and weaknesses (captured in a monthly reflective summary report).

Evaluation

Student feedback indicated that the program provided an opportunity to learn how to be an effective medical writer, to formulate a research project from start to finish, to gain self-confidence as a public speaker, to expose networking opportunities, and to function as a team player. Areas of improvement mainly focused on the allotted 20 hours per week schedule. Students felt they were never able to maximise their work by being restricted to only working within a Monday through Friday, nine to five schedule. This issue was also a concern of the preceptor, and the result was that their projects were not making timely progress. In addition, issues with computer accessibility at sites and slow time reimbursement for expenses by students were also mentioned as problem areas in the evaluation. Students also noted that they desired more meetings with the CPRA coordinator and recommended scheduled meetings be built into the program. A weakness of the expansion program was the lack of written feedback and evaluations by research preceptors during scheduled intervals.

Table I: Collaborating Institution Research Projects

Number of Students Assigned	Site/Setting (Hospital, Clinic)	Research Type (MUE, Clinical Study)	Project or Agent	Avg. Length of Project	Research Preceptor
3	Hospital	MUE/ Clinical Study	The HCHD review of oral anticoagulation management between inpatients and outpatients (THROMBI)	5 months	Clinical Faculty – Internal Medicine
1	Hospital	MUE	Delayed CINV cost analysis (cisplatin, zofran, emend)	3 months	Clinical Faculty – Oncology
1	Hospital	MUE	Synagis: medication use evaluation	4 months	Clinical Faculty – Paediatrics
1	Hospital	Clinical Study	Necrotizing entercolitis prevalence in neonates in a county institution; Phase I and II	5 months	Clinical Faculty – Paediatrics
1	Clinic	Clinical Study	Effects of Tenofovir on Serum Creatinine levels	5 months	Clinical Faculty – HIV/ AIDS
1	Clinic	Clinical Study	Atazanavir and its effects on conjugated and unconjugated bilirubin levels	4 months	Clinical Faculty – HIV/ AIDS
1	Hospital	MUE	The use of warfarin in inpatient/outpatient anticoagulation	4 months	Clinical Faculty – Internal medicine
2	Hospital	MUE	Medication Use Evaluation of Darbepoetin alfa versus Epoetin alfa in Anemic Patients Secondary to HIV, Cancer, Hepatitis, Surgery and Renal Insufficiencies	6 months	Clinical Faculty – General Medicine/ Oncology
1	Hospital	MUE	A retrospective medication use evaluation of pioglitazone.	6 months	Clinical Faculty -Drug information

Note: Medication Use Evaluation (MUE), Harris County Hospital District (HCHD), – The HCHD Review Oral anticoagulant Management Between Inpatient and outpatient (THROMBI), Chemotherapy-induced nausea and vomiting (CINV), Human Immunodeficiency Virus (HIV), Acquired immunodeficiency syndrome (AIDS)

Table II - Research Projects Presented and/or Published

Number of Student Assigned	Project or Agent	Presented (Local, State, National Venues)	Manuscript (in-process; Yes/ No)	Published (Peer-reviewed Journals, other)
3	The HCHD review of oral anticoagulation management between inpatients and outpatients (THROMBI)	MUE Committee/P&T	No	No
1	Delayed CINV cost analysis (cisplatin, zofran, emend)	MUE Committee/P&T	No	No
1	Synagis: medication use evaluation	MUE Committee/P&T	No	No
1	Necrotizing entercolitis prevalence in neonates in a county institution; Phase I and Phase II	Research Preceptor; ASHP 2008 MUE Committee/P&T	No	No
1	Atazanavir and its effects on conjugated and unconjugated bilirubin levels	MUE Committee/P&T	No	No
1	Effects of Tenofovir on Serum Creatinine levels	MUE Committee/P&T	No	No
1	The use of warfarin in inpatient/ outpatient anticoagulation	MUE Committee/P&T	No	No
3	Medication Use Evaluation of Darbepoetin alfa versus Epoetin alfa in Anemic Patients Secondary to HIV, Cancer, Hepatitis, Surgery and Renal Insufficiencies	(abstract #SP-10) Poster presentation to faculty and students at the American Society of Health System Pharmacists Midyear Meeting Orlando, FL; 12/2005 Poster presentation to faculty and administrators at the Texas Southern University Research Week 2005 (1st Place) MUE Committee/P&T	Yes	No
1	Retrospective medication use evaluation of pioglitazone	Poster Presentation: Retrospective medication use evaluation of pioglitazone in Type II diabetes mellitus at a county hospital district. [Ligy John, Jacqueline Milton-Brown, Tammi Hayes, Lincy Lal. P382E, presented at ASHP Midyear Clinical Meeting of 2006] MUE Committee/P&T	Yes	Published as an article [John L, Milton-Brown J, Lal L. A retrospective medication use evaluation of pioglitazone in patients with Type 2 diabetes mellitus in a county healthcare system. Hospital Pharmacy. 2008; 43(1): 35-42]

Note: American Society of Health System Pharmacists (ASHP), Medication Use Evaluation (MUE), Harris County Hospital District (HCHD), The HCHD Review Oral anticoagulant Management Between Inpatient and outpatient (THROMBI), Chemotherapy-induced nausea and vomiting (CINV), Human Immunodeficiency Virus (HIV), Acquired immunodeficiency syndrome (AIDS) , Pharmacy and Therapeutics Committee (P&T)

Table III: Post-graduate training

Student Assignment	Residency (Type/Location)	Fellowship (Type/Location)	Other (Med school, independent pharm, certificate programmes (BPS), etc.
A	Postgraduate Year one (PGY1) Residency at the Mickey E. DeBakey Veterans Administration Medical Center Houston, Texas; 2008-2009	No	• Registered pharmacist in the state of Texas; 2008 • Certifications Academia from the University of Houston. • Pharmacy-based Immunization Delivery Certification
B	Postgraduate Residency and Fellowship at MD Anderson Cancer Center Houston, Texas; 2008-2010	Translational Research Fellow in Oncology at MD Anderson Cancer Center Houston, Texas; 2008-2010	• Registered pharmacist in the state of Texas; 2008 • Certifications in Anticoagulation Therapy Management from the University of Southern Indiana • Certifications Academia from the University of Houston. • Board of Pharmacy Specialties (BPS) Oncology
C	Postgraduate Year one (PGY1) Residency at Kaiser Foundation Health Plan of Mid-Atlantic States, Inc. Rockville, MD; 2008-2009	No	• Registered pharmacist in the state of Texas (2008); Maryland (2008), Virginia (2008) and District of Columbia (2010)
D	No	No	• Registered pharmacist in the state of Texas; 2008 • Independent Pharmacy; 2009

Table IV: Per cent of professional pharmacy students participating in Research Activities and the percent of 4th year students accepted to post-graduate programs.

Academic Year	% of students in the professional pharmacy program participating in Research Week*	% of 4th professional year students accepted to post graduate programs**
2010	14.7%	12%
2011	12.7%	8%
2012	26.5%	14%
2013	19.8%	7%

(*) Includes the professional pharmacy students participating in the University's annual Research Week. An average of 462 students in the professional pharmacy program per academic year.
(**) An average of 78 4th year professional pharmacy students per academic year.

Future Plan

The Clinical and Translational Science Awards (CTSA) sponsored by the National Institutes of Health (NIH) have established a consortium whose focus is to train academic pharmacy and clinical and translational researchers. (NIH News, 2008). The CPRA programme demonstrated student interest and a mechanism to expose pharmacy students to research. The research training proved beneficial in increasing the students' motivation to pursue further research training. Because of the overwhelming response from our pharmacy students; their interest in pursuing residencies and fellowships after graduation, coupled with obtaining start-up funding, the programme was continued.

The goal of the CPRA programme has been achieved with greater than 10% of the students in the professional program being exposed to research study and continues to move forward. Additional measures enlisted to achieve the overall goal were the promotion of post graduate study early in the professional program; (Table IV), citing research as a strong component of the prospective residency application process, and the requiring of a longitudinal research seminar project for fourth year pharmacy students (Table IV).

As the number of accredited or planned pharmacy schools increase so will competition for clinical and basic science faculty (Party & Eiland, 2007). Raising research awareness and introducing basic research methods training, through initiatives like the CPRA programme, will help make pharmacy students competitive for research-oriented jobs (Dutta, 2011).

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