

The Longitudinal Patient Care Project: a multi-faceted, collaborative approach designed to connect pharmaceutical sciences to pharmacy practice

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BACKGROUND

Pharmaceutical science and pharmacy practice faculty collaborated and implemented an integrated Patient Care Project (PCP) in 2000 as a required component of the curriculum. As part of a 2012 curricular redesign, the PCP was expanded from 1 to 3 years. With expansion, 23 assignments were created/modified (8 basic science and 15 practice-based). Year 1 (Figure 1) retained the key core elements from the original project by focusing 15 assignments (housed within 9 courses) on one disease/drug combination, culminating in a professional poster presentation. For the remaining 2 years (Figures 2 and 3), 10 additional assignments linked both science and practice courses. The PCP scope broadened to include a comprehensive review of all the chosen patient's drugs and diseases. This work concluded with a professional poster presentation designed around the tenets of medication therapy management (MTM). Students (classes of 2016-2018) and patients (class of 2021) completed surveys to evaluate perceived achievement of PCP learning objectives (Figures 4 and 5).

PROJECT DESCRIPTION

Figure 1. First Year PCP Assignments

FALL	PCP Assignment
Anatomy and Physiology	Required written critical review of a basic science physiology article from a peer review journal.
Biochemistry and Molecular Biology	Paper outlining either the biochemistry or molecular biology relevant to the disease and how your drug affects the biological process.
Pharmacy Practice I	Selection of a volunteer patient. Completion of a medication therapy review (MTR). Interview patient's health beliefs.
US Health Care	Determine the medical insurance your patient has and the specific benefit it provides for prescription medications.
SPRING	PCP Assignment
Drug Delivery I	Optional paper that uses the physical properties of the drug to explain the dosage forms and the advantages and disadvantages of the method of drug delivery.
Principles of Medicinal Chemistry	Extra credit paper focusing on the chemistry of the drug stressing the physical properties including: structure with stereochemistry, structure of primary metabolite, pKa, site of absorption and LogP.
Principles of Pharmacology and Pharmacotherapy	Written assignment focusing on the pharmacology of your assigned drug including: mechanism of action, significant adverse effects and drug interactions.
Pharmacy Practice II	Interview patient to determine adherence issues and create a personalized medication record (PMR). Perform a health literacy assessment. Conduct patient interview focusing on behavior change.
Ethics	Write two paragraphs about how ethical principles or an ethics of care approach apply to your patient.

Poster Presentation in Fall of PY2 year

PROJECT DESCRIPTION

Figure 2. Second Year PCP Assignments

FALL	PCP Assignment
Drug Delivery II	Homework assignment discussing the correlation between patient-specific factors and the dosage form currently taken by the patient.
Therapeutics of Nonprescription Products	Update patient's Medication Therapy Review (MTR) document. Determine if problems exist with current OTC medication use as it relates to drug/drug, drug/disease interactions and precautions.
IPPE	Health coaching assignment: assess progress toward previously established health-related goal.
SPRING	PCP Assignment
Evidence Based Pharmacotherapy I	Individual assignment to discuss how research project can be designed, how data can be collected and how data can be analyzed and interpreted.
Pharmacy Practice Skills Development I	Interview patient to determine immunization status in accordance with CDC guidelines and complete questionnaire with patient. Present results during Skills Lab Immunization module
Clinical Pharmacokinetics	Written report emphasizing important pharmacokinetics parameters to underscore factors leading to inter-subject variability.
IPPE	Health coaching assignment: assess progress toward previously established health-related goal.

Figure 3. Third Year PCP Assignments

Fall	PCP Assignment
Evidence Based Pharmacotherapy II	Apply pharmacoeconomics and pharmacoepidemiology concepts by choosing an alternative therapy to the one your patient is currently taking and discuss the relative cost-effectiveness of the alternative therapy.
Peer Mentored Experience I	Conduct Medication Therapy Review (MTR) update and create a Medication Related Action Plan (MAP) with patient.
Spring	PCP Assignment
Peer Mentored Experience II	Poster credit for patient care project. Poster will be graded at an 85% pass rate. Grade of < 85% requires a remediation assignment

Poster Presentation Spring Semester

ASSESSMENT OF THE PROJECT

All stakeholders are engaged in order to continually improve the PCP. Students are asked to complete surveys on the achievement of the PCP learning objectives and guided written reflections at years 1 and 3. Faculty are interviewed each fall to determine changes to be made based on previous years' experience with the individual course assignments. Starting in 2017, an Institutional Review Board approved research project collected patient input on the process at baseline, after year 1 and year 3.

With a fall 2018 curricular revision, the PCP will be revised to reflect the components of the Pharmacist Patient Care Process. We will also be evaluating the use of ExamSoft rubrics to better track student learning and progression.

RESULTS

Figure 4. Student-Perceived Achievement of PCP Objectives

Patient Care Project Learning Objectives	Strongly Agree to Agree	
	PY1	PY3
Survey Question		
This project helped me to understand the relationship of the basic sciences to pharmacy practice	84.6	81.3
This project promoted the development of my ability to provide science-based patient centered pharmaceutical care	85.3	81.3
This project helped to develop my ability to integrate knowledge gained from didactic course work to the care of a real patient.	86	83
This project fostered professionalism and professional behavior by promoting the interactions between my fellow students, my patient and my professors	83.3	71.1
This project allowed me to learn to empathize with the plight of my patient and others	77.3	74.3
The patient care project allowed me to understand the importance of developing the skills needed to become a life-long learner	71.7	57.3
I believe that scholarly activities, such as the patient care project, promote my professional development	82.3	70
Overall, the patient care project helped to improve my verbal communication skills	72.3	78.3
Overall, the patient care project helped to improve my written communication skills	65.7	57.3
Unique to PY1 Evaluation		
This project helped me to identify and understand the impact of financial, legal, cultural or ethical situation can/does have on patient care.	74.6	
Unique to PY3 Evaluation		
This project helped me to gain the skills needed to be an advocate on behalf of my patient and their health		77.7
This Project allowed me to apply the core Elements of Medication Therapy Management to the care of my patient		85

Figure 5. Patient-Perceived Achievement of PCP Objectives

Patient Perception of Student Pharmacist Growth During 3 Year PCP (n=24)	Strongly Agree to Agree
Survey Question	
My student pharmacist always explains my medicine(s) in a way I can easily understand	100
My student pharmacist understands my concerns and works with me to help me become healthier.	100
My student pharmacist respects my opinions and beliefs about my health.	100
My student pharmacist is professional during all of our interactions	100
My student pharmacist is caring and listens to what I have to say.	100
I understand how to manage my medicine(s) better.	88
I understand my disease state(s) better.	75
It is easier for me to ask other health professionals (such as doctors and nurses) questions during visits.	83
This project gave me a better understanding of how a pharmacist can help me manage my medicine(s).	100