



UNIVERSITY of MARYLAND SCHOOL OF PHARMACY

Applied Pharmaceutical Sciences: An Innovative, Interdisciplinary Approach to Educating Both Students and Faculty

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Background

All pharmacy practitioners must integrate and apply basic sciences with population sciences and clinical practice.

During the 2009 curricular redesign process, University of Maryland School of Pharmacy faculty members supported the concept that prior to embarking on advanced pharmacy practice experiences, students should know how to apply core knowledge and skills from the pharmaceutical, clinical and health services sciences to real world issues which arise in pharmacy practice and drug development, and be able to articulate and advocate for solutions to therapeutic dilemmas.

Objective

The objective was to design a course that demonstrates integration and application of scientific principles to solve a therapeutic dilemma, and enhances interaction of faculty across disciplines.

Sample Debate Topics

- **High Fructose Corn Syrup – Sweet Or Sour?**
- Are Antidepressants Safe And Effective In Children?
- **Should Gardisil be a mandatory vaccine in schools?**
- Should Acetaminophen be Withdrawn from the Market because of Liver Toxicity?
- **Should All Patients With Diabetes Be On A Statin?**
- Do The Potential Benefits Of Cannabinoids As Therapeutic Agents Outweigh Their Risk Of Abuse And Dependence Liability?
- **Are Cephalosporins First Line Now For Strep Pharyngitis?**
- Should GLP-1 agonists be a first line treatment for type 2 diabetes?
- **Qsymia – Do The Benefits Outweigh The Risks?**

Methods

During the 2009 curricular redesign process, the University of Maryland School of Pharmacy planned a P3 required didactic interdisciplinary course, "Applied Pharmaceutical Sciences" (APS). **Interdisciplinary faculty teams lead case discussions, and moderate student debates** on contemporary clinical topics that require synthesis and application of science to pharmacy practice.

- Clinical cases presented in the Pharmacotherapy and Population-based Strategies courses are used as a basis for the discussion in these sessions.
- **Student groups are assigned topics to research and prepare debates of pro and con positions.** Faculty moderate the debates.
- Exams consist of case studies where students critically analyze a problem and propose a solution.
- Capstone take-home assignment allows the student to fully explore the scientific and practice aspects of a particular disease state or medication.
- Students and faculty complete evaluations at the end of the semester to inform continuous course improvement.



Results

Student feedback:

- 93% agree that *"I was challenged to apply the information in this course"*
- 87% agree that *"I understand how the material in this course contributed to my professional development"*
- Students identified areas for improvement such as reducing group size to increase the number of medications that are addressed.

Faculty feedback:

- 89% agree that *"As a result of my participation in APS, I am better able to teach with other pharmacy disciplines to explore science/therapeutic issues that are commonly encountered in the management of therapeutic issues in patient care"*
- 58% agree that *"as a result of my participation in APS, I am better able to tolerate differences, misunderstandings and shortcomings in other pharmacy disciplines."*
- Faculty identified areas for improvement, including requesting more interdisciplinary interaction to prepare for class discussions.

Implications

The evaluation data suggest that both students and faculty desire more interdisciplinary interactions to better understand its benefit to their careers.

The APS team teaching approach serves as a novel way to reinforce the integration of scientific principles in clinical decision making, and could be replicated in other courses in the PharmD curriculum.