

Successful Practices in  
**Academia-Practice Interface**  
Pharmaceutical Education 2002

# **University of Houston**

College of Pharmacy  
Houston, Texas 77004

## **Academia-Practice Interface**

### **Description**

The University of Houston College of Pharmacy has developed partnerships with different local community groups and organizations. These partnerships enable the College to enhance traditional ways of student learning as well as foster a concern for social problems and develop professional and patient relationships. The partnerships are carried out through the Community Wellness Program where students are encouraged to work with the local community providing a variety of screening services at health fairs, medication reviews, community education seminars, and immunizations. As a result of this community exposure, pharmacy students noticed that many times children would come with their parents to the health fairs, but there were few services provided for the children. Two students in particular began exploring ways in which to educate children about pharmacy and medication-related topics. They found very little information available to use as a guidelines for teaching children about medicine and that the information the children did receive might not be technically accurate, standardized, nor based upon a well-designed curriculum. Based on their findings the two students developed the Meds For Kids program, a medical education curriculum for elementary aged students, which includes a training program for pharmacy students on how to appropriately teach the curriculum to the elementary students.

The program consists of the medication education curriculum for grade 1, grades 2-3, and grades 4-5 as well as an ongoing assessment of the program. Some of the topics in the curriculum include following directions, encouraging kids to ask questions about their health and medicines, Find the Poison and Candy vs. Medicine games, bacteria/viruses and antibiotic use, how medicine works in the body, and many others. Some topics are covered with all grade levels and while others are covered with only the appropriate age group. All topics, materials and information have been chosen with the various age levels in mind. The teaching session takes approximately one hour and the elementary students are provided with color worksheets, handouts, and take home materials which include a letter to the parents explaining what the Meds For Kids program is as well as a certificate of completion for the elementary student.

As part of the session, the students and teacher are asked to assess the program as well as the pharmacy student teachers. The evaluation forms have been developed to measure the success of the medication education curriculum. Data is collected from teachers and elementary school children to assess their overall impressions of the curriculum and how the program can be improved and/or expanded. This allows for continual program improvement to better meet the educational needs of the children.

In addition, training manuals have been developed to guide the pharmacy students through their assigned topic and teaching responsibilities. The training program itself takes about one hour and training videos are being created. The number of pharmacy student teachers for each grade level session varies with a maximum of 10 students plus a student coordinator and faculty.

### **Outcomes**

Although in its infancy, the Meds For Kids program has been a huge success. Based on assessment results, the program has been very well received by teachers and students at two elementary schools and based on pharmacy student reflection, the students enjoyed the experience and felt it enhanced their communication techniques, especially in the pediatric population.

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# University of Minnesota

College of Pharmacy  
Minneapolis, Minnesota 55455

## Academia-Practice Interface

Development of pharmacy practice in a network of community health centers

### Description

The College of Pharmacy has established a professionally and educationally rewarding relationship with a network of federally qualified community health centers in the Minneapolis-St. Paul metropolitan area. Through the relationship, health centers have been able to improve care through expanded services to patients (who are primarily low-income). As well, the College has been able to add to the number of model practice sites affiliated with its experiential education program and increase student exposure to the unique patient care issues experienced by an ethnically diverse and socio-economically depressed population.

The relationship was initiated via a collaborative grant-writing process between a collegiate faculty member and the executive directors of the three network health centers. The three health centers were eligible for a Health Services Resources Administration (HRSA) grant that would allow development of comprehensive pharmacy services, however, administrators lacked the expertise to define such services and thus, compete for funding. The College of Pharmacy took the lead in defining clinical services, facilitating the clinics' participation in the Public Health Service 340B Drug Pricing Program and the subsequent preparation of a grant proposal. The academia-practice interface was defined to create several positive elements:

#### *Community Health Centers*

- Access to expertise in innovative pharmacy practice models
- Securing external funding for expansion of services
- Improved patient care via clinical services provided by pharmacists
- Expanded patient access to affordable medications

#### **College of Pharmacy**

- Disseminate experience through the training of highly functioning pharmacy practice residents.
- Create several new dynamic advanced pharmacy practice experiences that allow students to participate in a "model" pharmaceutical care practice during the advanced pharmacy practice experiences
- Opportunity for College to define and influence pharmacy practice through practice-based research.

#### **Pharmacy Practice**

- Develop model collaborative practices where pharmacists realize significant responsibility and autonomy for patient care.
- Implement and evaluate a novel approach to drug distribution, focused on minimizing technical responsibilities of pharmacists.

The collaborative effort between the College and the health centers was successful in garnering \$375,000 in federal funding for the first two years of the project. In addition to external funding, the College contributed additional resources by co-funding an "Educational Site Coordinator" whom had

responsibilities for developing the network pharmacy services as well as the educational framework for residents and students placed at the health centers.

### **Outcomes**

The relationship between the College and these community health centers has been successful in addressing each of the elements described above. At this time, two of the three health centers have established financially viable pharmacy operations that have significantly increased patient access to affordable medications. The third clinic has yet to establish medication distribution services at this time due to administrative issues unrelated to pharmacy services. All three sites have successfully integrated pharmacists into the daily delivery of primary care services, establishing collaborative practice agreements, patient referral mechanisms and delegating various responsibilities related to “process improvement” related to care delivery to pharmacists. All clinics have been successful in receiving revenue (albeit limited) from the patient care services provided by pharmacists.

Five pharmacy practice residents have completed or are engaged in training within the network. The residency opportunities hosted by these sites is affiliated with the College of Pharmacy’s Pharmaceutical Care Residency program and recently received ASHP accreditation. Sites are actively teaching 4<sup>th</sup> year PharmD students, hosting 15 students for a combined 150 weeks of advanced pharmacy practice experiences during the 2002-2003 academic year. These health centers remain one of the most significant opportunities for pharmacy students to work with a highly diverse patient population.

Tremendous experience has been gained, both related to the delivery of clinical and distributed services. The sites have served as a model for practitioner collaboration, highlighting the extent of responsibilities pharmacists can assume in a primary care clinic. They have also served as a “test case” for a novel drug distribution system that incorporated a “central fill” model across multiple business entities. Finally, the health centers have provided an opportunity for scholastic pursuits related to medication affordability and access for indigent patient populations.

Additional “outcomes” will be realized as the relationship between the College and the health centers grows. Currently, opportunities are being explored with additional federally qualified health centers in the Minneapolis-St. Paul area seeking to implement programs similar to those established within the current network participants. In addition, services within the current health centers continue to mature, providing valuable experience that will be evaluated and disseminated. Finally, opportunities to leverage the experience gained via this relationship to different pharmacy practice settings is also being considered.

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# University Of Mississippi

School of Pharmacy  
Jackson, Mississippi 39216

## Academia-Practice Interface

### Description

The University of Mississippi School of Pharmacy has converted most of its fifth-professional year to a problem-based learning format. Thirty-two credits of didactic coursework have been distilled into a single course series called *Pharmaceutical Care*. Students meet in groups of six to eight students for two hours, three times a week, to discuss patient cases. Each PBL group meets for eight weeks (a PBL “block”).

Each of these groups has a facilitator who attends each group meeting. This requires quite a few facilitators. For example, in the current year we have 85 students who started the fifth year.

- Eighty-five students
- Divided into eleven groups
- Four “blocks” of eight weeks

This means that there we need 44 facilitators to complete the fifth-professional year.

Even with most of our full-time faculty facilitating two blocks each academic year, we do not have enough faculty to meet these requirements. We have turned to non-faculty practitioners to fill the void.

In our program, expertise in the subject of the patient case being studied is not a requirement for being a facilitator. Facilitators need to be *content-aware*, but not *content-experts*. For example, if the students are studying a case of breast cancer this week, not all the facilitators need to be experts in cancer chemotherapy. They merely need to be aware enough of the subject to facilitate the student-centered discussion.

We have actively recruited practitioners, both pharmacists and non-pharmacists to serve as facilitators for our students.

### Outcomes

Most of the non-faculty facilitators have been pharmacists. Some of these pharmacists also take students on rotations, but some do not. Additionally, we have had a registered nurse facilitate several times. A physician and a pharmacy director have expressed interest in facilitating as well. Student evaluations of non-faculty (and even non-pharmacist) facilitators have been indistinguishable from those of full-time faculty. Additionally, the students have been exposed to practitioners from a variety of different settings earlier than they would have been otherwise.

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# **University Of Mississippi**

School of Pharmacy  
Jackson, Mississippi 39216

## **Academia-Practice Interface**

### **Description**

Pharmacy practice is evolving from the responsible dispensing of medications to the comprehensive management of pharmaceutical products in disease states. This broadened scope emphasizes the role of pharmacists in direct patient care. The University of Mississippi School of Pharmacy is contributing to the development of disease management through innovations at dedicated Pharmaceutical Care Clinics. Pharmacists in these clinics educate patients on proper drug administration, monitor responses to pharmacologic agents through physiologic and laboratory assessments, and initiate and modify medication regimens based upon collaborative drug therapy protocols. Disease states currently managed in these clinics include asthma, diabetes, anticoagulation and dyslipidemias. The clinical protocols dictating diagnostic and therapeutic algorithms have been adapted to local conditions from established national practice guidelines.

In response to the community need to improve asthma management and to curtail overutilization of emergency care, a pharmacist-staffed asthma care clinic was developed. Patients are educated as to the pathogenesis of asthma, the signs and symptoms of airway decompensation, and the pharmacology underlying medication options. In concert with the physician-supervised protocol, individualized asthma action plans are developed. Pharmacists train patients to use peak flow meters and to monitor and self-adjust drug therapy. Pharmaceutical care supplements primary and specialty care by identifying and responding to intervening pathophysiology, so as to mitigate the need for urgent medical attention.

In 1998, Mississippi became the first state to secure government reimbursement for pharmaceutical care. The Health Care Financing Administration (HCFA), through the Mississippi Division of Medicaid, approved payment to pharmacists for disease management services provided to Medicaid enrollees. The components of a reimbursable service are: patient evaluation, patient or caregiver education, drug therapy review and compliance assessment, and disease management under protocol according to clinical practice guidelines. To bill for services, pharmacists must be credentialed through the National Institute for Standards in Pharmacist Credentialing (NISPC) disease state certification program. Pharmacists practicing in the University of Mississippi clinics utilize this avenue for reimbursement.

The University of Mississippi Pharmaceutical Care Clinics serve as model practice sites for pharmacy students and resident trainees, as well as for community pharmacists who are interested in expanding their practices to include collaborative drug therapy management.

### **Outcomes**

Analyses reveal that the Asthma Pharmaceutical Care Clinic at the University of Mississippi is achieving its stated goals. Utilizing enrolled patients as their own historical controls, this disease management intervention has resulted in fewer emergency room visits or hospitalizations for asthma decompensation. An annualized cost saving of approximately 60 percent over previous expenditures for these hospital services has been realized. Similarly encouraging results have been demonstrated for the Diabetes Management Clinic. Pharmacist-managed patients followed for one year have been noted to experience an average decrease of 2.2 per cent in glycosolated hemoglobin values. Likewise, Anticoagulation Clinic patients more frequently achieve desired therapeutic goals than those receiving usual care. Data from the newly instituted Lipid Clinic is currently being reviewed.

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# **University Of Mississippi**

School of Pharmacy  
Jackson, Mississippi 39216

## **Academia-Practice Interface**

The University of Mississippi School of Pharmacy (SOP) and the Aaron E. Henry Community Health Center (CHC) applied for and received a demonstration grant from HRSA to implement effective clinical pharmacy services in the community. The CHC and the School must collaborate to receive this award.

This project was unique in a couple of ways. First, the implementation was truly “integrated” into the community of retail pharmacists in Clarksdale, MS. The School of Pharmacy solicited participants and provided upgrade education to the voluntary retail pharmacies. The CHC referred patients to the pharmacies, under written protocol, for “pharmaceutical care.” The pharmacists maintained communication with staff physician regarding progress of their patients. The data was collected and analysis was performed to document the outcomes associated with this interventional effort. Pharmacists were reimbursed for the service rendered.

The project applied to the Secretary Tommy Thompson (HHS) for permission to contract with the individual pharmacies in the area to purchase and distribute drugs under the 340-B Drug Pricing Program which made affordable drugs available to poor and uninsured patients in the Clarksdale area, coupled with the pharmacy services to assure the safe and effective outcome from the use of these drugs.

It is a unique model, the incorporation into existing community pharmacies of affordable price drugs with accompanying rendering of pharmaceutical care or disease state management. It is a model that can be replicated. It is a unique partnership of two agencies (SOP & CHC) specifically designed to address the health care needs of the under served patient population in Mississippi.

### **Outcome**

Early data, specifically with asthma, show significant impact on frequency of occurrence of acute attacks and the resultant hospitalization costs. The physicians are very pleased with the ability to extend service with their patients and increase awareness and effectiveness of drug therapy in the disease. The community pharmacists are not left out and feel very much a part of the project. Finally, and most important, the project has a good chance of “sustainability,” something which most government funded projects lack.

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# **The Ohio State University**

College of Pharmacy  
Columbus, Ohio 43210

## **Academia-Practice Interface**

### **Description**

The College launched a NonTraditional PharmD ([www.osuntpd.com](http://www.osuntpd.com)), the first online doctoral degree program at The Ohio State University, in January, 2001. To support this new program, we formed a team of educational technology specialists who not only support the NonTraditional PharmD, but leverage their expertise to support online learning needs for all programs in the College of Pharmacy.

In addition to running the NonTraditional PharmD, this team trains faculty in the use of multiple educational technologies and in designing, developing, implementing, and evaluating technology enhanced learning. The team provides technical support for course delivery and technical assistance to resident and nontraditional students engaged in online courses; acts as a liaison with University constituencies involved in educational technology policy; and provides technological support to the College's continuing education enterprise.

Some examples of the College's use of innovative educational technologies include: methods for capturing live lectures; digitizing analog course materials; creating quizzes and surveys with online feedback; streamed video introductions to new course materials; and multiple modes of online communication where students publicly display their understandings in a learning management system for peer review.

All Pharmacy students also have access to a virtual medical library, which includes access to Facts and Comparisons, MD Consult, Micromedex and an electronic reserve for retrieving scanned journal articles.

### **Outcomes**

We have seen a consistent increase in our applications to the Non-Traditional PharmD program (both domestic and foreign) and our current students express a high rate of satisfaction in the program. The faculty and residential students are pleased with the added value the web-based technology provides for their courses.

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# **The Ohio State University**

College of Pharmacy  
Columbus, Ohio 43210

## **Academia-Practice Interface**

### **Description and Outcomes**

The Division of Pharmacy Practice and Administration (Chair: Milap Nahata) has developed a number of collaborations and partnerships with the practice community in Columbus, Ohio.

#### **1. Columbus Neighborhood Health Clinics (CNHC)**

Laura Hall and Maria Pruchnicki are funded by CNHC, to practice in 8 clinics for the indigent and underserved population, supported by the City of Columbus. The College funds a pharmacy resident for these facilities. The two faculty and the resident provide primary care to patients. In 2001, they saved over \$1.3 million for the city, and showed improvement in clinical outcomes. Pharm.D. students in years I, II and IV receive clerkship experience at these sites.

#### **2. Kroger**

Kristin Casper is funded 50% by Kroger and 50% by OSU to develop pharmaceutical care programs at Kroger pharmacies. She has developed a number of disease management programs and trained pharmacists within Kroger to provide pharmaceutical care. Kristin has shown improved clinical outcomes and has trained three pharmacy residents funded by the College. Pharm.D. students in years I, II and IV receive clerkship experience at these sites.

#### **3. University Health Connection**

Marialice Bennett codirects this clinic, funded by OSU Managed Care, for OSU employees. She works with a pharmacist, nurses and physicians employed by the clinic, and a pharmacy resident funded by the College, to provide pharmaceutical care to patients. Pharm.D. students in years I, II and IV receive clerkship experience at these sites.

#### **4. Columbus Health Department**

Jerry Cable and Christine Murphy, in cooperation with the Columbus Health Department, have developed two part-time rotation sites in the Sexual Health Clinic and TB Clinic. Third year pharmacy students spend 4 hours per week for a full quarter working with physicians, nurses and physician extenders in a clinic setting. The students participate in a supportive role, by counseling patients on appropriate use of medications and providing drug information.

#### **5. Parish Nurse Program**

Christine Murphy has developed a 4-hour per week for 2 quarters rotation for Pharm.D. year III pharmacy students in cooperation with the Parish Nurse Program at St. Stephen the Martyr Catholic Church in Columbus, Ohio. Christine, the Parish Pharmacist, works with the Parish Nurse, Carolyn Collins. The Parish Nurse Program promotes good health for parishioners and residents of Seton West. Seton West is a HUD subsidized independent living apartment complex for people over 62 years of age. The Parish Nurse Program provides Health Fairs, blood

pressure monitoring and a Medication Education and Advocacy Program (MEAP). The students participate in all of these events. In addition, the students plan and provide a number of social activities for the seniors at Seton West. MEAP provides Medication use education, Brown Bag Drug reviews and facilitates paperwork for Patient Assistance Program from drug industry for those who cannot afford their prescription medications.

#### **6. Immunization Promotion**

Pharm.D. year III students completed the APhA/CDC Immunization Certification Program for Pharmacists in September 2002. These students also participated in 12 hours of immunization related activities:

- Columbus Health Department: Phone calls to parents to remind them of immunizations due or missed and help in the clinic answering patient/parent questions about immunizations
- Community Pharmacies: Students promoted the flu shot days to customers
- Community pharmacies, Health Departments Senior Centers, Health Fairs - Flu Shot Days: Helped clients fill out forms, answered questions, promoted other immunizations.

#### **7. Latiolais Leadership Program**

This interprofessional program, led by Phil Schneider, integrates the expertise and resources of three different disciplines, pharmacy, medicine and nursing, to comprehensively improve the medication use process. The projects undertaken through this program also integrate the academic and practice communities by taking an objective and scholarly approach to the discovery of new knowledge and the timely integration of this knowledge into practice for the benefit of patients who receive medications. The most recent project, Measuring Medication Safety, is an example of the work of the Latiolais Leadership Program. This project involved bringing together the foremost experts from pharmacy, medicine and nursing together at a two-day conference to discuss methods for measuring medication safety. The proceedings of this conference were published in the *American Journal of Health-System Pharmacy*, December 1, 2002.

#### **8. OSU Medical Center**

Three College faculty (Cari Brackett, Cynthia Carnes and Joe Dasta) work with three pharmacists (Jay Mirtallo, Kerry Pickworth-Pierce and Tony Gerlach) to jointly contribute to teaching and practice. These and other faculty (Jim McAuley, Patty Havard, Daren Knoell and George Hinkle) conduct research with medical faculty, which contributes to improved patient care.

#### **9. Children's Hospital**

Milap Nahata and Vinita Pai have developed relationships with the members of the departments of Pediatrics and Pharmacy at the hospital to contribute in the areas of education, practice and research. The research program has produced numerous peer reviewed articles in various pharmacy, pediatric, medical and clinical pharmacology journals. The research is patient focused and it addresses clinical problems. One component of the research program is to develop stable extemporaneous drug formulations for use in pediatric patients when appropriate dosage forms are not available commercially. Pharm.D. students in years I, II and IV receive clerkship experience at these sites.

#### **10. MS/Residency in Health-System Pharmacy Administration**

The Master of Science Program in Health-System Pharmacy Administration, chaired by Phil Schneider and Craig Pedersen, is offered as a combined graduate study-residency program in partnership with four health care institutions having eight residencies accredited by ASHP: Grant Medical Center (one residency), Mount Carmel Medical Center (one residency), The Ohio State University Medical Center Pharmacy (five residencies), Riverside Methodist Hospital (one residency), and the Columbus Children's Hospital (one residency). The goal of this internationally recognized program is to educate and train pharmacists for leadership roles in health system pharmacy by learning to conceptualize, plan, coordinate, and evaluate pharmaceutical care in organized health care settings. In order to accomplish this goal, the program is directed toward providing students with the knowledge and skills necessary for providing professional services to the patient and members of the health care team, understanding the managerial and financial responsibilities in health system pharmacies, and, designing strategies to cope with the changing health system pharmacy and health care environments. The research projects of these graduate students/residents benefit both patients in the local hospitals and those in hospitals around the world since their work is presented at professional and scientific meetings and published in peer reviewed journals.

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# **The University of Washington**

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## **Academia-Practice Interface**

### **Description**

Following an objective from the strategic plan to increase interdisciplinary opportunities, the University of Washington School of Pharmacy is an active participant in the *Health Sciences Partnerships in Interdisciplinary Clinical Education* (HSPICE). The program's goal is to develop, implement and sustain an interdisciplinary model among all the University's six health science schools (Dentistry, Medicine, Nursing, Pharmacy, Public Health and Community Medicine, and Social Work), the Health Sciences Library and Information Center, and the Graduate School of Library and Information Sciences.

The need for a program to educate health professionals together early in their professional training is even stronger than it was in 1996, when this program was first conceived. The recent report from the Institute of Medicine regarding patient safety emphasized the key role that interprofessional communication and leadership plays in safeguarding health care consumers and patients from errors in medical care. An even newer report emphasizes that high quality health care for the 21st century will be built on the same principles that underlie collaborative, interprofessional care, not on individual provider autonomy.

The HSPICE idea began in the mid-1990's with a small number of faculty who met informally across the health sciences school in order to respond to needs for educating more primary care practitioners from a variety of professions (medicine, nursing, physician assistants and public health). They developed the idea to successfully compete for a university "transformation" funding source. This was viewed an opportunity to break down the barriers between professions and disciplines and to educate the next generation of practitioners in the interpersonal and professional skills needed to work together in the rapidly changing world of acute and community based health care.

The goal for the first few years of funding was to develop, implement, and sustain an interdisciplinary model for clinical education—a menu of courses, clinical rotations and seminars. The initial courses and placements were piloted with the intent that refinements would be made based on an independent evaluation of student and faculty knowledge, behavior and attitudes. The curricular elements of interdisciplinary practice development and function were partnered with extra-curricular activities of the student-led SPARX (Student Practitioners Aspiring to Rural and underserved eXperiences) and CHAP (Community Health Advancement Program). The curriculum is comprised of new courses as well as insertion of interdisciplinary competencies within existing courses so that these cross-school opportunities are available to all students in all health science schools.

### **Outcomes**

Among the pharmacy related accomplishments across the initial six years of HSPICE include:

1. An innovative interprofessional convocation, "capstone" experiential experience at the close of orientation for entering students in medicine, nursing, public health, dentistry, pharmacy, physician assistant training, and the allied health professions (e.g., physical therapy, occupational therapy). This has provided an initial baseline inter-professional introduction and understanding upon which to build.

2. An interprofessional course entitled Health Care and Society that is required for all students in medicine and pharmacy and elective for students in the Schools of Public Health and Nursing.
3. An elective classroom and web-based problem-based seminar built on clinical cases with the target urban underserved populations. This provides a solution to the scheduling issues, while still providing interaction among graduate and undergraduate students in all the health professions.
4. An interprofessional case-based “grand rounds” series that includes faculty, staff, and students in all the professions.
5. Modeling of effective interprofessional clinical teamwork (e.g., interactions and communication) for students at a Medical Center. This serves as a successful exemplar to build upon as more clinical sites are identified with well-functioning interprofessional teams.
6. On-going community-based interprofessional experiences in partnership with the Salvation Army Adult Rehabilitation Center for men struggling with recovery from alcohol and/or drug abuse.
7. The integration of library and information specialist expertise in accessing and providing information resources into the above programs.
8. HSPICE recently received grants from both the Macy Foundation and HRSA to further develop interdisciplinary health care learning.

Several of these experiences have been integrated into the required curricula of the schools and are not offered solely as elective experiences. More intangibly, these accomplishments positively touch the broader “community” at multiple levels, promoting faculty innovation and enriching students’ learning, cooperation and appreciation of their own and sibling “caring” professions, as well as enhancing campus service contributions and campus-local community cooperation and partnerships.

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