

**Successful Practices in**

**COD/COF Task Force on the Healthy Student Program  
American Association of Colleges of Pharmacy**

**Pharmaceutical Education 2008**

# Butler University

College of Pharmacy and Health Sciences  
Indianapolis, Indiana 46208

## Successful Practices COD/COF Task Force on the Healthy Student Program American Association of Colleges of Pharmacy

### My First Patient Program Butler University College of Pharmacy and Health Sciences

#### Description of Course/Activity

The "My First Patient" program is a multi-step process where the student undergoes a series of health screenings and develops his/her own Personal Health Portfolio and Action Plan. An individual's Personal Health Portfolio contains the results of their health screenings, assessments of their health behaviors and health risks. The student reviews these results and develops a Personalized Action Plan to identify strategies targeted to improve and/or maintain their personal health goals. In addition to these assessments the student is presented with lectures in the areas of defining health, exploring individual health beliefs, understanding barriers to implementing behavior change, and discussions of diet, nutrition, substance abuse, stress management, and cultural competency.

The My First Patient program is integrated into the Introduction to Pharmaceutical Care course, 9 didactic lectures and 1 group discussion session (recitation) are devoted to the My First Patient Program. This course occurs in the first semester of the first professional year of the college's pharmacy curriculum. A schedule of the lectures and discussion session included in the course and their specific learning objectives are outlined in Table 1. At the beginning of the course the Program is introduced to the students by providing the students with a copy of the Center for the Advancement of Pharmaceutical Education (CAPE) 2004 Educational Outcomes. Health promotion, disease prevention and behavior change are discussed with an emphasis on personal responsibility.

**Table 1:**

<b>Session</b>	<b>Topic (Instructor)</b>	<b>Learning Objectives</b>
Lecture 1	My First Patient Program Introduction	<ul style="list-style-type: none"><li>• Identify the CAPE outcomes</li><li>• Understand the My First Program process and objectives.</li></ul>
Lecture 2	Promoting Behavior Change	<ul style="list-style-type: none"><li>• Discuss behavior theories and cognitive variables that affect one's health</li><li>• Describe the importance and usefulness of evaluating attitudes and behaviors</li><li>• Explain and apply various social</li></ul>

		science models/theories that help explain health behavior
Lecture 3	Health Beliefs, Goal Setting & Action Plans	<ul style="list-style-type: none"> <li>• Apply behavioral theories and cognitive variables to affect behavior change.</li> <li>• Identify both health and unhealthy behaviors.</li> <li>• Develop an action plan to change one health behavior.</li> </ul>
Lecture 4	Stress management	<ul style="list-style-type: none"> <li>• Define stress</li> <li>• Identify different types of stress</li> <li>• Discuss symptoms of stress</li> <li>• Describe methods to prevent and manage stress</li> <li>• Practice several stress reduction techniques</li> </ul>
Lecture 5	Substance Abuse	<ul style="list-style-type: none"> <li>• Recognize the signs and symptoms of intoxication and withdrawal for commonly abused substances</li> <li>• List the major acute toxicities associated with commonly abused substances</li> <li>• Identify "street names" and routes of administration of commonly abused substances</li> </ul>
Lecture 6	Diet and Nutrition	<ul style="list-style-type: none"> <li>• Discover the link between nutrition and pharmacy</li> <li>• Review the new food pyramid</li> <li>• Discuss what information is required on food labels</li> <li>• Determine the health importance of fats, fiber, sodium, water, calcium and potassium</li> </ul>
Lecture 7	Process of change	<ul style="list-style-type: none"> <li>• Review the My First Patient Program</li> <li>• Recall the stages of change</li> <li>• List and define nine process of change</li> <li>• Identify how these process of change can be utilized in the patient care setting</li> </ul>

Throughout the semester each student schedules an appointment for a comprehensive health screening; all health screenings are completed before the Thanksgiving break. The health screening includes the following assessments: full fasting lipid panel, blood glucose, blood pressure measurement, weight measurement, body composition, calculation of body mass index, and spirometry. The health screenings are performed by COPHS faculty and 4<sup>th</sup> year pharmacy students during their advanced pharmacy practice experience

(APPE) rotations through the Health Education Center, which is part of the College of Pharmacy. During their health screening appointment, the results are reviewed with each student and the student receives a copy for his/her Personal Health Portfolio. In addition to the health screening, the student completes a health risk assessment that is designed to identify specific health behaviors (eg. dietary habits, physical activity) and health risks (eg. personal and family medical history). Utilizing the information presented throughout the semester (see Table 1) and their Personal Health Portfolio the students develop a Personalized Action Plan, identifying strategies targeted to improve and/or maintain their personal health goals.

### **Assessment**

The primary assessment methods are through student self assessment and personal reflection. These activities are integrated throughout the course of the semester. During the didactic portion of the course the students attend lectures on health behaviors, behavior change, and goal setting (lectures 2, 3 & 7). These class sessions introduce the Transtheoretical Model of Change as well as health beliefs and cognitive variable that affect a person's health. During lecture #2, the students participate in an in-class exercise. The students are asked to identify both healthy and unhealthy behaviors that are currently part of their lifestyle (details of this assignment are listed in Table 2). In addition, cognitive variable that affect one's health such as self-efficacy are discussed and the students are asked to identify their level of confidence in changing or maintaining their health behaviors. If the student identifies a health behavior he/she is not ready to change or does not feel confident in changing, the student is asked to reflect about what would they tell a patient in the same situation. The students submit a written assignment in response to questions 6 and 7 outlined below in Table 2.

**Table 2: Behavior Change Discussion & Assignment**

**In Class Activity:**

1. List and describe 3 healthy behaviors that are currently part of your lifestyle (ex: regular exercise, balanced diet, adequate rest):

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

2. List and describe 3 unhealthy behaviors that are part of your lifestyle (ex: smoking, lack of regular exercise, excessive use of alcohol or caffeine):

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

3. Check the statement that best applies:

\_\_\_\_ I am ready to change one or more of the unhealthy behaviors I listed above.

\_\_\_\_ I am not ready to change one or more of the unhealthy behaviors I listed above.

From question 2, indicate the behavior(s), if any, you are ready to change, by their corresponding number(s) above:

\_\_\_\_\_

4. Check the statement that best applies:

\_\_\_\_ I have confidence in my ability to change one of the unhealthy behaviors listed.

\_\_\_\_ I do not have confidence in my ability to change one of the unhealthy behaviors listed.

From question 2, indicate the behavior(s), if any, you feel confident about changing, by their number(s) above:

\_\_\_\_\_

5. Check the statement that best applies:

\_\_\_\_ I have confidence in my ability to maintain the healthy behaviors listed above.

\_\_\_\_ I do not have confidence in my ability to maintain the healthy behaviors listed.

**Written Assignment:**

6. If you listed (an) unhealthy behavior(s) that you were **not** ready to change or did not feel confident about changing, answer the following:

- a. What would it take for you to feel ready to change or confident about changing the behavior?
- b. What would you, as a pharmacist, tell a patient in this same situation?

7. If you listed (an) unhealthy behavior(s) that you feel you **are ready** and confident about changing, please answer the following:

- a. Discuss strategies that will assist with implementing this/these change(s).
- b. Outline a plan, including your behavioral change goal(s) to implement this/these change(s).
- c. Identify potential barriers that may prevent you from achieving your goal(s) and provide a plan for relapse.

Building on what was presented in the previous class session, lecture #3 discusses how to set and obtain goals. The focus is learning the process of taking a long-term goal and developing intermediate and short-term goals to assist in achieving a desired end-point. Students are asked to identify at least one health behavior they want to change and set a short-term, intermediate and long-term goal to assist in meeting the desired change. At the end of the class exercise and discussion, the students are given an action plan to assist in monitoring and modifying their progress to goal attainment. The action plan worksheet is provided in table 3. After this class session, the students are given four weeks to work on their goals and revise their action plan. The students review and reflect how they did in achieving their goals during the group discussion (recitation) periods; this session is done after all the student health assessments have been conducted. A copy of this reflective assignment is presented in table 4.

**Table 3**

Action Plan				
Long-term or Intermediate Goal:				
Week 1 Goal	Preparation Needed	Potential Barriers	Observations/ Comments	Plan Revision
Week 2 Goal				
Week 3 Goal				
Week 4 Goal				

**Table 4**

<b>Review of Action Plan for Long-term or Intermediate Goals</b>
1. How successful have you been in obtaining your goal(s)?
2. What barriers did you experience while working towards your goal(s)?
3. What changes or modifications have you made to your long-term or intermediate goal(s)?
4. What strategies/techniques have you learned about setting and obtaining personal goals?
5. What have you learned from this experience and how will this help you in the future personally?
6. How will this help you in the future when working with patients?

During this group discussion session, the students assess their health screening and health assessment information. Each section of the health screening is discussed and reviewed by each student. The student assessment questions for this assignment are presented in table 5.

**Table 5**

<b>Review of Health Screening Results</b>
<b>Cholesterol and Blood Glucose Results:</b>
1. Are you at your desired lipid goals?
2. If not, what do you need to do or have done to meet your lipid goals?
3. Do you have a normal fasting blood glucose (<100 mg/dl)?
4. If not, what do you need to do or have done to improve your blood glucose result?
5. Are you at your desired lipid goals?
6. If not, what do you need to do or have done to meet your lipid goals?
7. Do you have a normal fasting blood glucose (<100 mg/dl)?
8. If not, what do you need to do or have done to improve your blood glucose result?
<b>Blood Pressure Results:</b>
1. How is your blood pressure classified: normal, pre-hypertension, or hypertension?
2. If not normal, what do you need to do or have done to improve your blood pressure?
<b>Body Composition Results:</b>
1. Are you at a healthy Body Mass Index (BMI)?
2. If not, what do you need to do or have done to improve your BMI?
3. Are you at a healthy percent body fat percentage?
4. If not, what do you need to do or have done to improve your body fat percentage?

After completion of the “My First Patient” Program, the students are “revisited” in the spring semester for a 6-month follow-up to discuss and assess progress of their health related goals. The students are handed back their written Behavior Change Assignment (table 2) from the fall and are asked to submit a written

reflection that assessing their progress of the health related goals they developed in the fall, identifying any barriers encountered, and identifying any changes in their health related goals. This assignment is outlined in table 6.

**Table 6**

6 Month Follow-up Assignment
<ol style="list-style-type: none"><li>1. Have you made progress towards your goals or what you wanted to change?</li><li>2. If yes, how have you made progress? If no, identify 1-2 reasons/barriers that prevented you from making progress.</li><li>3. Are your personal health goals different from last semester?</li><li>4. If so, what changed your goals?</li></ol>

**Alignment with educational outcomes identified in the Clinical Preventive Services- Health Promotion section of the Caring for the Underserved**

<b>Content</b>	<b>Terminal Educational Outcomes</b>	<b>Program Component</b>
<b>I. Evidence Base for Practice</b>		
E. Determinants of Health (#2)	<ul style="list-style-type: none"> <li>• Identify genetic and behavioral risk factors that influence the patients health status and future health risk</li> </ul>	Health Screening, Health Risk Assessment and self assessment of results.
<b>II. Clinical Preventive Services</b>		
A. Screening (1 thru 3)	<ul style="list-style-type: none"> <li>• Identify evidence based screening recommendations</li> <li>• Provide follow-up for positive screening results</li> </ul>	Based on student's risk factors determine what screenings are recommended, what age and how frequent
B. Counseling (1 thru 4)	<ul style="list-style-type: none"> <li>• Describe various health beliefs and the process of behavior change</li> <li>• Develop follow-up plans and strategies to obtain goals</li> <li>• Review screening results and implications</li> <li>• Identify preventive health strategies</li> </ul>	Students identify their own personal health beliefs and assess how these influence their own health decisions. Students develop a 4 week action plan to change one or more health behaviors and then reflect on their success, barriers encountered and how they would use this experience to assist patients in making behavior changes.
C. Immunization (1 thru 3)	<ul style="list-style-type: none"> <li>• Identify recommended immunizations based on CDC's guidelines</li> </ul>	Students assess what recommendations apply to themselves and if they have received what is recommended. A discussion of perceived susceptibility to communicable diseases is performed.
<b>III. Community Aspects of Practice</b>		
A. Communicating and Sharing Health Information with the Public (#3)	<ul style="list-style-type: none"> <li>• Evaluate the appropriateness of health information provided to the students undergoing the health assessments</li> </ul>	Fourth year students develop health education that is specific for the student population undergoing the health assessments
E. Cultural Dimensions of Practice (1 thru 3)	<ul style="list-style-type: none"> <li>• Identify cultural differences and barriers to health care</li> <li>• Assess health beliefs and cognitive variables that influence one's approach to health and prevention</li> </ul>	Students assess their own health beliefs and cognitive variables that influence their approach to health and prevention thru a questionnaire. The student identifies what influences their health decisions.

### **Special issues involving planning/promotion/implementation**

#### **A. Curriculum:**

Identify best fit into the curriculum, a new "course" does not need to be created to add the content of this program; it could be integrated into an existing course, as done within the Introduction to Pharmaceutical Care course.

#### **B. Physical Resources:**

Determining where and how the health assessments will be conducted, how will scheduling be handled and where the medical information will be securely stored are important items to consider.

#### **C. Financial Resources:**

The average cost of the health assessment would vary depending on what assessments are performed and contract pricing. This program utilizes the Cholestec LDX System, Brentwood's Spirometry and Tanita's body composition analyzer. Costs would include initial start up (cost of equipment or software) and then ongoing costs would include testing supplies and quality controls.

#### **D. Identify Existing Resources:**

This may include fourth professional year pharmacy students on their advanced pharmacy practice experience (APPE) rotations. This is a critical resource for the success of the Program. As described above, the health screenings are performed by COPHS faculty and 4<sup>th</sup> year pharmacy students during their advanced pharmacy practice experience (APPE) rotations through the Health Education Center. Not all colleges or schools may have a "Health Education Center", however, resources within a school or college of pharmacy do exist that can serve the same function as the Health Education Center does within this Program. These resources may include clinical community faculty and practice sites, ambulatory care faculty and practice sites, and professional student organizations.

#### **E. Legal Regulatory:**

Consulting with your Universities legal team is an important step when getting started. Items to consider include informed consent, OSHA, HIPAA, storage of medical information and participation requirements for students in the program

#### **F. Customize your program:**

Before the program was developed a baseline survey was conducted that examined the student's current health practices and habits. This survey was done to identify what content areas needed to be addressed for the student population (i.e. stress management, alcohol)

### **Resources/References**

Allen JA, Barwick TA, Cashman S, et al. Clinical prevention and population health: Curriculum framework for health professions, *Am J Prev Med* 2004;27: 417-22

### **Checklist of Planning Steps**

- A. Establish faculty and administration "buy in" of the program
- B. Assess curriculum and identify how the program could be incorporated
- C. Assess existing resources (physical and financial) and identify additional resources needed
- D. Develop and implementation timeline
- E. Consult Universities legal department
- F. Conduct a baseline assessment of the student's current health practices and habits
- G. Develop program outcomes and parameters for assessment
- H. Implement program and ongoing assessment

#### **Contact persons for additional information:**

Carrie Maffeo, Pharm.D., CDE, BCPS  
Director, Health Education Center  
Assistant Professor of Pharmacy Practice  
Butler University College of Pharmacy and Health Sciences  
4600 Sunset Avenue  
Indianapolis, IN 46208  
317-940-9991  
[cmaffeo@butler.edu](mailto:cmaffeo@butler.edu)

Bonnie Brown, Pharm.D.  
Assistant Dean for Student Affairs  
Associate Professor of Pharmacy Practice  
Butler University College of Pharmacy and Health Sciences  
4600 Sunset Avenue  
Indianapolis, IN 46208  
317-940-8800  
[bbrown1@butler.edu](mailto:bbrown1@butler.edu)

Kevin Tuohy, Pharm.D., BCPS  
Assistant Professor of Pharmacy Practice  
Butler University College of Pharmacy and Health Sciences  
4600 Sunset Avenue  
Indianapolis, IN 46208  
[ktuohy@butler.edu](mailto:ktuohy@butler.edu)

# **Creighton University Medical Center**

School of Pharmacy and Health Professions  
Omaha, Nebraska 68178

**Submission for Successful Practices for the COD/COF Task Force on the Healthy Student**

**Program for AACP**

## **Lifestyle Modifications in Pharmacotherapy**

Thomas L. Lenz, Pharm.D., M.A.

Associate Professor of Pharmacy Practice

Creighton University Medical Center

2500 California Plaza

Omaha, NE 68178

Phone: 402/280-3144

Email: [tlenz@creighton.edu](mailto:tlenz@creighton.edu)

## Description of Course Activity

### A. Overview

A two credit hour elective course was developed and offered for the first time in the fall semester 2006 entitled, *Lifestyle Modifications in Pharmacotherapy*. This innovative course provides students with the tools they need to not only effectively treat patients' diseases but also prevent them. *Lifestyle Modifications in Pharmacotherapy* fills a gap in pharmacy education by discussing lifestyle modification strategies that are developed and implemented specifically within the framework of pharmacy practice. Following the courses' detailed instructions, students learn to create wellness plans to help patients with certain risk factors prevent disease. Students also learn to help patients with chronic diseases manage those diseases and avoid secondary diseases.

The course is divided into two major sections. The first half of the semester discusses in detail the lifestyle modification strategies of nutrition, physical activity, weight control, tobacco cessation, and health behavior change. This section gives students the essential information needed to construct effective wellness plans for patients that complement their current treatment regimens. The second half of the semester applies the information presented in the first half of the semester to patients with specific conditions and diseases. These lessons focus on building students' understanding and practical skills, rather than rote memorization. Case studies practiced in each lesson give students the opportunity to practice designing wellness plans intended for both primary and secondary disease prevention.

### B. Students

*Lifestyle Modifications in Pharmacotherapy* is offered to both campus and distance pharmacy students at Creighton. Additionally, the course is open to any pharmacy student who is currently enrolled in a U.S. pharmacy school through Creighton's visiting distance student program.

### C. Course Outline

Lesson 1: Course introduction; Disease prevention in pharmacy practice

Lesson 2: Nutrition I

Lesson 3: Nutrition II

Lesson 4: Physical Activity I

Lesson 5: Physical Activity II

Lesson 6: Weight Control I

Lesson 7: Weight Control II

Lesson 8: Tobacco Cessation

Lesson 9: Health Behavior Change

Lesson 10: Hypertension

Lesson 11: Dyslipidemia

Lesson 12: Diabetes Mellitus

Lesson 13: Obesity

Lesson 14: Metabolic Syndrome

Lesson 15: Reimbursement for Preventive Services; Course Summary

**Alignment with educational outcomes identified in the Clinical Preventive Services – Health Promotion section of the Caring for the Underserved**

The following educational outcomes are addressed in the *Lifestyle Modifications in Pharmacotherapy* lesson provided in the far right column for the health behavior change areas of nutrition, physical activity, weight control and smoking cessation. The Terminal Educational Outcomes that are listed in the chart below are of major emphasis of in the course. Various others were also briefly mentioned throughout the course but are not listed below.

Content	Terminal Educational Outcomes	Lifestyle Modifications in Pharmacotherapy Lesson #
<b>Major Emphasis in the Course</b>		
A. Screening 3. Evidence-based recommendations	a. Cite and describe examples from the literature that support the role of pharmacists-provided preventative health care services	1, 8, 10-15
	b. Cite and describe examples from the literature of successful preventative health care delivery models	10-14
B. Counseling 3. Criteria for successful counseling	a. Describe methods for measuring the outcomes of counseling provided	2-9
	b. Assess outcomes of counseling provided	2-14
	c. Formulate a plan to address outcomes not achieved	9-14
B. Counseling 4. Evidence-based recommendations	a. Cite and describe examples from the literature of validated models for communicating effectively with patients	9
	b. Apply and adapt evidence-based models to individual patient interactions based on patient-specific factors	10-14

### **Special issues involving planning/promotion/implementation**

Several issues help to shape the course to make it a successful experience for the students.

Some of these issues include:

- Having the students apply the lifestyle modification strategies to themselves first and then to sample case patients. Some of the strategies included keeping a personal food diary and then designing a healthy eating plan, keeping a personal physical activity diary and then designing a personal physical activity plan, listing their own barriers to adhering lifestyle modification components and then develop strategies to overcome these barriers. Students are also required to bring in no less than six nutrition labels (during Lesson 3) of foods they regularly consume. They then present their analysis of the labels to the class.
- Make the course case based so that health promotion strategies are applied by designing comprehensive wellness prescriptions in pharmacy practice.
- Students present their experiences and wellness prescriptions during class.
- The course is not completely lecture based, but spends a great deal of time practicing, writing and presenting wellness prescriptions.
- Students receive immediate feedback regarding their wellness prescriptions after presenting them. Then they receive written feedback on their prescriptions during the follow-up period.
- The template for designing wellness prescriptions is attached to this submission.

### **Assessment**

Several methods are used throughout the semester to evaluate the students, the instructor, and the course. The following assessment schedule is used:

- Pre-course (first class day)
  - baseline knowledge
  - baseline skills
  - baseline beliefs
  - baseline confidence
- Mid-course
  - formative instructor feedback
- Post-course (last class day)
  - knowledge
  - beliefs
  - confidence

-formative instructor feedback

-summative course evaluation

- Final Exam

-skills (there is only one exam for the course, which is a final exam. It consists of a patient case scenario which students are asked to write a comprehensive wellness prescription – it comprises 20% of the total course grade)

A description of the course with assessment results were published in AJPE: Lenz TL. An elective course on lifestyle modifications in pharmacotherapy. Am J Pharm Educ. 2007; 71(5): Article 92. A portion of that submission is provided below:

#### Assessment Results

A total of 13 pharmacy students participated in the course during the fall semester of 2006, of which 62% were female and 85% were in their third professional year. After the semester was completed, comparisons were made of the knowledge, skills, beliefs, and confidence of the students during the first day versus the last day of the semester. The analysis showed a significant difference in each question of the confidence assessments and showed no significant difference in each of the belief assessments. Results from the beliefs and confidence questions can be found in Table 2 (see below).

The students showed significant improvements in each of the skills assessments in the pre vs. post tests. On average, students improved in their abilities to write a S.O.A.P. note by 22.5% ( $P<0.001$ ), identify cardiovascular risk factors by 92.9% ( $P<0.001$ ), design a patient specific nutrition program by 804% ( $P=0.001$ ), design a patient specific physical activity program by 932% ( $P=0.001$ ), design a patient specific weight loss program by 4817% ( $P=0.01$ ), and design a patient specific smoking cessation program by 1563% ( $P=0.003$ ).

The results varied in the knowledge portion of the assessments. In general and on average, students significantly improved their knowledge of specific nutritional recommendations ( $P<0.01$ ), essential components of an exercise prescription ( $P=0.05$ ), and

obesity related interventions ( $P=0.05$ ). Non-significant changes in knowledge were revealed in the areas of physical activity recommendations, defining obesity, and in recommendations for weight loss. It should be noted, however, that most students scored high in these areas on the pre-assessment and therefore had little room for improvement for the post-assessment.

**Table 2. Pre and Post belief and confidence assessments and results (n=13)**

<b>Belief assessment statements*</b>	<b>Average pre assessment value†</b>	<b>Average post assessment value‡</b>	<b>P value</b>
I believe that patients with certain chronic disease(s) (ex. hypertension, dyslipidemia, coronary heart disease) should engage in lifestyle modification activities such as proper nutrition and physical activity to effectively manage their disease(s) along with taking appropriate medication.	5.00	5.00	§NA
I believe that pharmacists should counsel selected patients to engage in disease prevention activities that specifically involve lifestyle modification strategies (i.e. nutrition, physical activity, weight loss, tobacco cessation)	4.62	4.85	0.37
I believe that pharmacists can effectively implement disease prevention strategies such as proper nutrition, physical activity, weight loss, and tobacco cessation with their patients who need such interventions.	4.31	4.62	0.39
I believe that pharmacist should work with other healthcare professionals to collaboratively implement disease prevention strategies in patients who need such interventions.	4.77	4.85	0.51
<b>Confidence assessment statements*</b>			
I am confident that I can accurately analyze the daily nutritional intake for an individual without disease.	2.69	4.38	<0.001
I am confident that I can accurately analyze the daily nutritional intake for an individual with one or more specific chronic disease(s) (ex. hypertension, dyslipidemia, coronary heart disease).	2.00	4.31	<0.001
I am confident that I can accurately recommend appropriate physical activity for an individual without disease.	2.92	4.77	<0.001
I am confident that I can accurately recommend appropriate physical activity for an individual with one or more specific chronic disease(s) (ex. hypertension, dyslipidemia, coronary heart disease).	2.46	4.38	<0.001
I am confident in my ability to design and implement a weight loss program for an individual who is obese.	2.54	4.62	<0.001
I am confident in my ability to design and implement a tobacco cessation program for an individual who smokes tobacco.	1.85	3.85	<0.001
I am confident in my ability to design and implement behavior change strategies to improve an individual's adherence to lifestyle modification activities.	2.38	4.31	<0.001
I am confident in my ability to accurately and effectively talk with other healthcare professionals about lifestyle modification disease prevention strategies for specific patients.	2.85	4.46	<0.001
*Likert scale agreement: 1= Strongly Disagree; 2=Disagree; 3=Undecided; 4=Agree; 5=Strongly Agree †Pre = Assessment on the first day of class ‡Post = Assessment on the last day of class §Analysis cannot be performed due to the pre and post values being the same			

## Resources/References

The primary resource for the course was developed by the instructor. It is a textbook that will be published in June 2007 from the publisher Wolters Kluwer/Lippincott, Williams & Wilkins. The citation for the book is as follows, along with a link to the LWW website:

Lenz TL. Lifestyle Modifications in Pharmacotherapy. Lippincott, Williams & Wilkins. Baltimore. 2008

**ISBN-10:** 0-7817-7651-1; **ISBN-13:** 978-0-7817-7651-6;

<http://www.lww.com/product/?978-0-7817-7651-6>

Other references that may be helpful with such a course include:

- Ainsworth BE, Haskell WL, Leon AS, et al. Compendium of physical activities: classification of energy costs of human physical activities. *Medicine and Science in Sports and Exercise* 1993;25(1):70-80.
- Ainsworth BE, Haskell MC, Whitt ML, Irwin AM, Swartz SJ, Strath WL, et al. Compendium of physical activities: an update of activity codes and MET intensities. *Medicine and Science in Sport and Exercise* 2000;32(9) Suppl S498-S516.
- Lenz TL, Lenz NJ, Faulkner MA. Potential interactions between exercise and drug therapy. *Sports Med* 2004;34(5):293-306.
- Durstine JL, Moore GE. (Editors) *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities* (2<sup>nd</sup> Edition). Human Kinetics. Champaign, IL. 2003
- Williams MH. *Nutrition for Health, Fitness, & Sport*. (7<sup>th</sup> Edition) McGraw Hill. Boston. 2005.

### **Checklist of Planning Steps**

- Obtain assessment data throughout the course
- Provide sample patient cases for students to apply the information
- Provide practice implementation suggestions and strategies
- Design strategies for students to work on designing wellness programs in class (either in groups or by themselves) so they can get immediate feedback with questions
- May want to bring in outside pharmacists who are doing some of this type of activity in their practice site to lend credibility and practicality to the topics (this is a challenge)

### **Contact Persons for Additional Information**

Tom Lenz, Pharm.D.  
Creighton University  
tlenz@creighton.edu

# Loma Linda University

School of Pharmacy  
Loma Linda, California 92350

**Loma Linda University School of Pharmacy**  
**AACP Call for Public Health Information**  
**Course Coordinator: Elvin A. Hernandez, DrPH, MPH, CHES**  
**Academic Year 2007-2008**

## Description

Below is a synopsis of aspects of the course RXSA 545: Public Health and Lifestyles and RXSA 751: Social Behavioral Pharmacy, which pertain to the teaching, learning, and assessment of health promotion, disease prevention, and health behavior modification at the Loma Linda University School of Pharmacy.

### **RXSA 545: Public Health and Lifestyles (3.0 quarter units)**

This course is taught in the first professional year of pharmacy education. This course is intended to provide the student with a comprehensive overview of the history, theory, and practice of public health science. The RXSA 545 course provides the student with an examination of public health systems, discussion of public health issues from local and global perspectives, discussion of the interdisciplinary characteristics of public health, and future developments of public health. There are three specific components of the course that are unique and specific to the pharmacists' role in public health practice, health promotion, and disease prevention: *smoking cessation/tobacco dependence training for pharmacists*, *disaster/emergency preparedness training for pharmacist*, and *public health introduction to immunization/vaccination*.

### **Description of course, specific learning activity, or assessment** **RXSA 545: Public Health and Lifestyles**

- Smoking cessation/Tobacco Dependence: Integrated into the RXSA 545 curriculum, the course offers 9 hours of intensive training in smoking cessation/tobacco dependence for pharmacists.
- Didactic material including Powerpoint® presentation slides, pharmacist-patient counseling modules and cases, over-the-counter smoking cessation aids, training videos and trigger tapes are supplied through the *Rx for Change: Pharmacist-assisted Tobacco Cessation* curriculum developed by the University of California, San Francisco School of Pharmacy team facilitated by Dr. Karen Hudmon, PI.
- Materials and resources can be found on the website for Rx for Change: <http://rxforchange.ucsf.edu/>
- The goal of this component of RXSA 545 is introduce, practice, and reinforce the epidemiology, public health and pharmacy implications of smoking/tobacco dependence, and clinical implications of tobacco dependence and the pharmacological and non-pharmacological aids used in decreasing and eliminating tobacco dependence in the local and global community.
- Assessment occurs through standardized testing in the course's final examination.

**Description of course, specific learning activity, or assessment**  
**RXSA 545: Public Health and Lifestyles**

- Center for Health Disaster Preparedness-Pharmacy Training in Disaster Preparedness: Integrated into the RXSA 545 curriculum. This component of the course is devoted to a 3-hour training session in which first year pharmacy students are introduced to disaster preparedness and emergency response terminologies and procedures targeted toward the pharmacist.
- Students learn about the various types of disasters and emergency situations, as well as the pharmacist's role in such scenarios.
- Students are introduced to biological agents most likely used in the biological attacks, as well as the medications, their pharmacology, pharmacokinetics, and distribution in the population.
- Students are presented the points-of-distribution (PODs) as well as the disaster response mechanisms now in place from a public health perspective.
- Assessment occurs through online training from the North Carolina Center for Disaster Preparedness website (<http://nccphp.sph.unc.edu/training/index.php>) for pharmacists.
- Assessment occurs through standardized testing in the course's final examination.

**Description of course, specific learning activity, or assessment**  
**RXSA 751: Social Behavioral Pharmacy**

- This course examines and focuses on the models and theories of health behavior change. RXSA 751 will focus on an in-depth examination of the primary models and theories of health behavior change relative to public health, health education, preventive health, health promotion, and pharmacological practice.
- From a combination of pharmacological and health behavior practice exercises, as well as actual patient interviews/presentations, the student will gain a broad exposure to the models and theories that may enhance understanding towards how health behavior change models and theories can be applied to assessing a patient's level of behavior change.
- Subsequent to the didactic training, an experiential component of the course will provide students with first-hand exposure to patient health behaviors in and/or outside of the class setting. This will enable students to better anticipate patient behaviors and optimize patient-centered care.
- Clinical Case papers: Students must complete a series of papers that are based on actual patient case scenarios. As an assessment piece of correctly integrating the didactic material reflecting health belief models and theories to the actual patient behaviors, students apply what they have learned about health behavioral changes processes and how these processes affect patient health outcomes.
- Patient Interviews:

**Alignment with educational outcomes identified in the Clinical Prevention and Population Health Curriculum Framework**

- **RXSA 545: Public Health and Lifestyles:** Smoking Cessation/Tobacco Dependence Training appears to fulfill the following educational outcomes identified on page 11 of the Clinical Prevention and Population Health Curriculum Framework:
  1. Clinical health services (e.g., continuum of care—hospital, ambulatory, home, long-term care) (p.11)

2. Public health responsibilities (e.g., public health functions [Institute of Medicine], ten essential services of public health (p.11)
  3. Relationships between clinical practice and public health (p.11)
- **RXSA 545: Public Health and Lifestyles:** Center for Health Disaster Preparedness-Pharmacy Training in Disaster Preparedness: Integrated into the RXSA 545 curriculum appears to fulfill the following educational outcomes identified on page 11 and 20 of the Clinical Prevention and Population Health Curriculum Framework:
    1. Clinical health services (e.g., continuum of care—hospital, ambulatory, home, long-term care) (p.11)
    2. Public health responsibilities (e.g., public health functions [Institute of Medicine], ten essential services of public health (p.11)
    3. Relationships between clinical practice and public health (p.11)
    4. Public health preparedness (e.g., terrorism, natural disasters, injury prevention)- (p.12)
  - **RXSA 545: Public Health and Lifestyles:** Immunization lecture contain information relative to providing students with public health perspective of immunization, truths/myths of thimerosal use in vaccines, and common immunizations used in public health practice. The following educational outcomes identified on page 8 of the Clinical Prevention and Population Health Curriculum Framework:
    1. Approaches to vaccination (e.g., live vs. dead vaccine pre-vs. post-exposure, boosters, target population, population-based immunity)
    2. Criteria for successful immunization (e.g., effectiveness, benefits and harms, cost, patient acceptance)
    3. Evidence-based recommendations
  - **RXSA 751: Social Behavioral Pharmacy:** The following educational outcomes identified on page 7 of the Clinical Prevention and Population Health Curriculum Framework:
    1. Approaches to culturally appropriate behavioral change (e.g., counseling skill training, motivation) (p.7)
    2. Clinician-patient communication (e.g., patient participation in decision making, informed consent, risk communication, advocacy) (p.7)

### **Special Issues and Considerations involved in Planning, Design, and/or Implementation**

- **RXSA 751: Social Behavioral Pharmacy: Patient Interviews**
  1. Identify a willing patient from a University affiliated ambulatory care clinic for an in-class interview
  2. Obtain consent from the patient and clinic administrator for participation in the interview and video recording
  3. Discuss policies and procedures of similar activities with University IRB Director, Risk Management Director, Compliance Director, and Media Relations.
  4. Development of Case Introduction and Interview Assessment Forms
  5. Develop a student form for Requirements for the Appropriate Use of PHI & Patient Confidentiality and obtain signed agreements.

### Resources

1. Rx for Change website: <http://rxforchange.ucsf.edu/>
2. North Carolina Center for Disaster Preparedness:  
<http://nccphp.sph.unc.edu/training/index.php>

### Contact person(s) for additional information:

Elvin A. Hernandez, DrPH, MPH, CHES  
Course Coordinator: RXSA 545, RXSA 751  
Assistant Professor  
Dept. of Pharmacotherapy and Outcomes Science  
School of Pharmacy  
11262 Campus Street, West Hall 1308  
Loma Linda University  
Loma Linda, CA 92350  
Office 909-558-7725  
Fax 909-558-7924

# University of Pittsburgh

School of Pharmacy  
Pittsburgh, Pennsylvania 15261

## Successful Practices COD/COF Task Force on the Healthy Student Program American Association of Colleges of Pharmacy

### Introduction to Public Health and Wellness University of Pittsburgh School of Pharmacy

#### Description of Course Activity

As a result of the periodic revision necessary to assure the contemporary validity of the curriculum, faculty at the University of Pittsburgh School of Pharmacy defined public health as one of 13 curricular outcomes. The goal of the outcome definition and gap analysis was to ensure that the public health outcome was adequately addressed across the curriculum. In May 2006, the chair of the curriculum committee created a working group of faculty responsible for teaching the public health components of the curriculum and charged them to:

- Outline component content areas;
- Identify the ability outcomes;
- Map how public health was integrated across the curriculum, including examples of content, practica sessions, and assignments;
- Expose any gaps; and
- Identify instructional and assessment strategies to facilitate further integration.

In Phase I of the review, the working group suggested minor revisions to the outcome statement based on the literature; articulated four ability outcomes drawn from resources, such as the work of the AACP Providing Care for the Underserved Curriculum Task Force; and mapped related course-specific learning objectives, educational strategies, and assessment methods by outcome and year in the curriculum.

In Phase II of the review, the working group examined the progression of student learning objectives across the curriculum for each of the four ability outcomes and implemented changes to enhance student learning across the first three years of the curriculum.

A gap was identified in terms of incorporating principles of disease prevention and behavioral change appropriate for individuals within a community. In order to address this, students became their own first patients. Class sessions were added to address health beliefs, health status, and health-impacting behaviors. A laboratory and two subsequent practica sessions were added in which each student gathered personal data; established a personal health record; explored personal readiness to change; and outlined a health-impacting behavior change goal. These activities were added to the curriculum to help students identify with the struggles patients encounter when trying to modify health behaviors. Other aims of the experiential exercises were to improve student health; inspire role-modeling of healthy behaviors; improve understanding of negative and positive health-impacting behaviors; increase sensitivity and empathy for patients; and increase awareness of methods that can improve adherence to behavior changes.

### **Laboratory and Follow-up Assignment**

Each student established a personal health record, inclusive of immunization records; family history; analysis of health status; and analysis of health-impacting behaviors, including diet and nutrition. Data collected in the laboratory session included:

- Height and weight
- Body mass index
- Skin fold thickness
- Heart rate and blood pressure
- Blood glucose
- Total cholesterol

In follow-up sessions to the laboratory, students compared their personal health data with national guidelines; explored the importance of health record data to health promotion and disease prevention strategies; and established an action plan that included a personal health goal, an assessment of readiness to change, and strategies for change.

#### **Alignment with educational outcomes identified in the Clinical Preventive Services- Health Promotion section of the Caring for the Underserved document:**

**[http://www.aacp.org/Docs/MainNavigation/CurricularResourceCenter/7701\\_CaringfortheUnderservedCurriculumFramework\(2\).pdf](http://www.aacp.org/Docs/MainNavigation/CurricularResourceCenter/7701_CaringfortheUnderservedCurriculumFramework(2).pdf)**

In a Foreword to the July 2000 supplement to *Academic Medicine*, then Surgeon General David Satcher noted that “the link between individual medical care and treatment and population-based health care is essential if we are to provide the highest quality health care to the entire US population...”<sup>1</sup> In that same *Academic Medicine* supplement, Pomrehn, Davis, Chen, and Barker defined “*public health*” as inclusive of better housing, sanitation, nutrition, immunization, and safety and “*preventive medicine*” as inclusive of biostatistics, epidemiology, and environmental health. They stated “health care providers, researchers, and policy makers all have an interest in evidence-based, cost-effective ways to enhance the length and quality of life. As a result, disease prevention and health promotion are receiving increasing emphasis and prominence as cornerstones of good medicine.”<sup>2</sup>

Calls for the inclusion of public health within pharmacy curricula are found in:

#### **CAPE Educational Outcomes: Public Health**

Pharmacy education will prepare students to promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an interprofessional team of health care providers.

#### **JCPP Vision for Pharmacy Practice in 2015**

Pharmacy education will prepare pharmacists to provide patient-centered and population-based care that optimizes medication therapy; to manage the health care system resources to improve therapeutic outcomes; and to promote health improvement, wellness, and disease prevention.

#### **ACPE Standards 2007**

Standard 12: Professional Competencies and Outcome Expectations

Professional pharmacist competencies that must be achieved by graduates through the professional degree program curriculum include the ability to...promote health improvement, wellness, and disease prevention...

Guideline 12.1 ... promote the availability of effective health and disease prevention services and health policy through the ability to apply population-specific data, quality improvement

strategies, informatics, and research processes to identify and solve public health problems and to help develop health policy...

Guideline 13.1: ...understand the development and use of medications and other therapies for the treatment and prevention of disease...

### **Resources/References**

Satcher, D. Foreword. *Academic Medicine* 75(7): S1 (2000).

Pomrehn, PR, Davis, MV, Chen, DW, Barker, W. "Prevention for the 21st Century: Setting the Context through Undergraduate Medical Education. *Academic Medicine* 75(7): S5-S13 (2000).

Allen JA, Barwick TA, Cashman S, et al. Clinical prevention and population health: Curriculum framework for health professions, *Am J Prev Med* 2004;27: 417-22. Available at [http://www.aptrweb.org/taskforce/HPC\\_Framework-AJPM.pdf](http://www.aptrweb.org/taskforce/HPC_Framework-AJPM.pdf). Accessed July 12, 2007.

### **Contact persons for additional information**

Susan M. Meyer, PhD  
Associate Dean for Education and Professor  
Professor  
University of Pittsburgh School of Pharmacy  
724 Salk Hall  
Pittsburgh, PA 15261  
[smeyer@pitt.edu](mailto:smeyer@pitt.edu)

# Samford University

McWhorter School of Pharmacy  
Birmingham, Alabama 35229

## Samford University McWhorter School of Pharmacy Description of Educational Practices in Health Promotion, Disease Prevention, and Public Health, 2008

Submitted by: Michael D. Hogue, PharmD; Robert P. Henderson, PharmD;  
Roger D. Lander, PharmD; Charles D. Sands, III, PharmD;  
Condit F. Steil, PharmD; Paula A. Thompson, PharmD

### Introduction

Samford University's McWhorter School of Pharmacy was established in 1926. Our institution is well established as an institution with excellence in producing pharmacy practitioners capable of serving their local communities regardless of practice setting. It is, in our opinion, impossible to extricate the teaching of pharmacy from the teaching of important public health concepts, and many examples can be given of specific public health issues which have been taught at our school since its inception. However, given the emphasis placed on public health education in pharmacy by the AACP CAPE Outcomes document, by ACPE in the standards for doctor of pharmacy education 2007, and by the Institute of Medicine, the McWhorter School of Pharmacy has made a very deliberate effort to increase the learning opportunities for our students in health promotion, disease prevention, and public health more broadly. We will attempt to outline our teaching methods of public health topics for the PharmD program, and then we will outline a broader approach to public health and pharmacy adopted by our institution in an attempt to further connect the two professions.

### Didactic and Laboratory Approaches

#### *Financial Considerations/Access to Pharmaceuticals*

The public health system as a concept is introduced to our students very early in the curriculum, during our *U.S. Health Care Systems* course taught during the first semester of the first professional year. Students learn about the basic structure of the public health system in the United States. In particular, the students learn about the governmental and private agencies which affect the *U.S. Health Care System*, access to care (particularly pharmaceuticals and pharmacist care), and caring for the uninsured. While these concepts are introduced in this course, they are further developed later in the curriculum, and most specifically in the 3<sup>rd</sup> professional year in *Fiscal Management*. In this course, students are presented with a mini-lecture about patient assistance programs for branded pharmaceuticals, and are then presented with case studies which engage the students in determining whether or not a patient qualifies for a particular patient assistance program. Students learn about the Federal Poverty Level and how it is set. In the 2006-07 academic year, a novel approach to teaching students about access to pharmaceuticals was introduced. Students enrolled in *Fiscal Management* were required to spend a total of 6 clock hours over the course of the semester at one of six clinics run by the Jefferson County, Alabama Department of Health (JCDH). The students were required to take a medication history for any patients who presented to the pharmacy during their time at the clinic, and then review with the patient how they pay for their medications and any possible opportunities to reduce their drug expenditures. Illustrating to students the public health issues associated with reduced access to pharmaceuticals was one of several goals for this project. An unanticipated side benefit of this activity was that some students identified issues in low health literacy which they

previously did not fully comprehend. A complete manuscript detailing this educational activity has been accepted for publication during 2008 in the *Journal of Pharmacy Teaching*.

#### *Health Promotion/Disease Prevention*

The school of pharmacy has adopted two nationally recognized programs into the pharmacy curriculum. *Pharmacy-Based Immunization Delivery: A National Certificate Program for Pharmacists* (developed by the American Pharmacists Association) has been incorporated as a component of the *Pharmacy Practice* course sequence during the third professional year. Students not only complete the self-study and didactic components of this course, but are also required to demonstrate proficiency in administering intramuscular and subcutaneous injections. Injection technique is further practiced in a variety of experiential courses during the fourth professional year. In addition to the basic curriculum provided by APhA which was originally intended for practicing pharmacists, the faculty has enhanced the teaching of immunology and vaccines for a total number of contact hours across the curriculum (not counting the APhA self-study material) of approximately 30 hours.

Secondly, *Rx for Change: Clinician-Assisted Tobacco Cessation* (developed by researchers at the University of California-San Francisco), is taught as a component of the *Patient Self-Care and Monitoring* course sequence which crosses the second and third professional years. The material is designed with a mixture of lecture, video clips, and case vignettes, and the course instructors have enhanced the teaching with real case examples from a local tobacco cessation clinic. The learning from this course is reinforced for the approximately one-quarter of students who complete an ambulatory care rotation at a site with a tobacco cessation clinic during the fourth professional year.

The *Pharmacy Practice* course sequence contains a number of didactic and laboratory teaching elements on the topics of health promotion and disease prevention. Students are required to demonstrate proficiency in the use of a variety of point-of-care testing devices (e.g. cholesterol, blood sugar, A1C, skin analysis, body fat analysis, visual field, Spirometry, urine drug testing, at-home HIV and Hepatitis C kits) in this course and in the *Patient Self-Care and Monitoring* course. Further, students are taught many different disease prevention strategies in the *Physical Assessment*, *Therapeutics*, and *Infectious Disease* courses. Students are required as part of a "real-world cases" component in the *Therapeutics* sequence to write SOAP notes and care plans which include disease prevention strategies in addition to pharmacotherapy. Several elective courses also engage the students in patient cases and care plan development which incorporates disease prevention as a significant evaluated component of the course (e.g. electives in *geriatrics* and *pediatrics*).

#### **Experiential Approaches**

While many, perhaps if not the vast majority, of experiential courses have some component of health promotion, disease prevention, or public health as a stated outcome of the course, we have taken a more direct approach to teaching of public health concepts in practice. Beginning in 2004, our institution formally affiliated with the Jefferson County, Alabama Department of Health (Birmingham) for placement of faculty and students within the seven clinics operated by the department. Two faculty members practice at JCDH as their primary practice location, and two other faculty members provide at least part-time service at this site. Between one-third and one-half of the students enrolled at our school of pharmacy will complete at least one early practice experience and/or advanced practice experience at this urban county health department site. Students are required to work with indigent

patients in an adult medicine/family practice setting providing medication therapy management services. In conjunction with their preceptor they provide health promotion and disease prevention education, review immunization histories and administer needed vaccines, provide tobacco cessation assessment and counseling, work in a diabetes education clinic, participate in tuberculosis clinic (including epidemiologic case tracking), and administer vaccines and provide travel health information in an international travel medicine clinic. The students keep a reflective journal of their experience, which is assessed as a component of their evaluation for the course.

In addition, in 2005 our institution formally affiliated with the Alabama Department of Health and one of our faculty members established a hypertension clinic at a rural health department (Perry County) approximately 80 miles southwest of our main campus, in the community where our institution was originally founded as Howard College in 1841. In 2006, Samford University purchased a house for use by students so that the school of pharmacy and other schools (i.e. education, business, nursing) on our campus could house students for experiential training. Because of this commitment, approximately twenty students each year complete an ambulatory care experience at this rural health department. In this experiential course, students are required to perform a "community health assessment" of Perry County, interact with both community physicians and community pharmacists, provide health promotion and disease prevention education via a community partners outreach program, and complete a reflective journal detailing their activities and educational take-aways from the program.

Beyond these two deliberate attempts to connect pharmacy and public health for the education, training, and service purposes, a pharmacist at the ADPH headquarters in Montgomery, Alabama serves as a drug information experiential site preceptor for our school. While only a handful of students are currently able to take advantage of this opportunity each year, this does provide additional diversity to our practice sites and gives additional insight to those students who may have particular interest in public health pharmacy practice.

### **A Deep Commitment to Public Health Education in Pharmacy**

In 2005 our institution began what we believe was a first-of-its kind post-doctoral residency program in ambulatory care with emphasis in public health. We are aware that at least two other institutions have since established similar residency programs. In 2008 we became the first ASHP accredited PGY-1 residency with emphasis in public health. We believe that public health clinics are an untapped resource for experiential training of PharmD students, and provide an excellent opportunity for post-graduate training as well as faculty service. We now offer two PGY-1 positions, one located within our urban department of health relationship and one located within our rural department of health relationship.

In 2006 the dean of the school of pharmacy and the provost approved a faculty-originated proposal to establish *The Institute for Public Health and Pharmacy* at Samford University. The school was successful in recruiting a non-pharmacist with a doctorate in public health (DPh), an appointment at the Centers for Disease Control and Prevention (CDC) and over twenty years of experience in public health education to serve as the inaugural director of the Institute. The Institute seeks to enhance public health education of pharmacists, and engage pharmacists in public health activities. Additionally, the Institute seeks to serve as a catalyst for sound research which furthers the role of the pharmacy profession in public health. The Institute has established an external advisory board made up of individuals with significant influence on public health policy in Alabama. Our hope is that the Institute will

serve as a tangible example to our students of the difference pharmacists can make in health promotion, disease prevention, and public health more broadly.

# University of Washington

School of Pharmacy  
Seattle, Washington 98195

## Submission of a Successful Health Promotion Practice at the University of Washington School of Pharmacy

### Description of course/activity

Following the first professional year and completion of the course "Immunizing & Antimicrobial Agents" (MEDCH 401), students at the University of Washington School of Pharmacy may enroll in the elective course "Community Pharmacy-based Immunization and Health Screening Programs" (PHARM 445). This three-day course aims to promote public health by preparing students to provide immunization and chronic disease screening as well as general health education in the community setting. While the course incorporates readings and didactic lectures, its focus is on the practical application of immunization administration and health screening techniques. This is reflected in the extensive experiential component of the course, which includes a required four-hour vaccine injection practicum in a pharmacist-managed community setting. In addition, students have the option of becoming certified as an "Immunization Provider" by the Washington State Pharmacy Association following completion of the course and a limited number of additional requirements. The didactic, laboratory, and experiential elements of PHARM 445 are described below and demonstrate the course's alignment with the educational outcomes delineated in the area of health promotion by the American Association of Colleges of Pharmacy (AACCP).

The course includes lectures and laboratory sessions covering the following topics, which are referred to in the discussion of educational outcomes below.

- Lectures:
  - Introduction to Public Health Objectives
  - Collaborative Drug Therapy Agreements
  - Vaccinating Adults & Adolescents: An Immunization Program
  - Cardiovascular Screening
  - Essentials of Nutrition
  - Screening for Type 2 Diabetes
  - Measuring Bone Mineral Density
  - The Pharmacist's Role in Screening/Risk Assessment
  - Establishing a Community-Based Clinic & Getting Paid for Services
- Laboratory sessions:
  - Intramuscular and subcutaneous injections
  - Case scenarios
  - Vital signs
  - Blood pressure measurement
  - Stroke risk assessment
  - Blood glucose meters
  - Finger stick technique and use of Cholestech LDX®
  - Bone mineral density screening using OsteoAnalyzer®

## Alignment with educational outcomes as delineated in the “Clinical Preventive Services – Health Promotion” section of “Caring for the Underserved”

### A. Screening

As discussed above, the practical application of health screening techniques is one of the main areas of emphasis of PHARM 445. Following didactic lectures that discuss the role of screening in preventive care and specific screening techniques, students receive hands-on experience with various screening devices in afternoon laboratory sessions. Chronic disease states and risk factors covered include hypertension, hyperlipidemia, type 2 diabetes, and osteoporosis. Multiple preceptors are present during laboratory sessions to provide one-on-one training, with the goal of preparing students to participate in upcoming community health fairs and screening events. All students enrolled in PHARM 445 are sent notification of such events for the remainder of the year following completion of the course. As a result, students receive didactic and experiential training in the following topics and skills:

#### 1. *Approaches to testing and screening.*

a. In the first lecture of the course, students learn that pharmacists are uniquely positioned to address preventable *risk factors* for chronic and infectious disease in *target populations* (including *underserved populations*). The importance of fulfilling this public health role is stressed within the context of the Healthy People 2010 initiative as a national effort to *anticipate the health needs* of various populations and improve preventive care in the United States. Against this background, students are taught to view risk factor assessment and screening tests as activities that community pharmacists can use to provide targeted preventive care. The first lecture of the course also explores the rationale and limitations of screening tests by discussing the World Health Organization “Criteria for Early Detection” as well as screening test *sensitivity, specificity*, and reliability. In subsequent lectures and laboratory sessions, students are instructed in risk factor assessment and screening techniques for specific disease states and conditions. In this way, the course cultivates a broad understanding of the role of community pharmacists as public health promoters. At the same time, however, the course remains focused on practical, targeted tools and strategies pharmacists can use to *analyze and assess demographic information to identify at-risk populations* in the following areas:

- Hypertension:
  - Understand key messages and blood pressure targets set forth in the Joint National Committee VII guidelines
  - Assess patients for cardiovascular risk factors and target organ damage
  - Obtain accurate blood pressure measurements
- Hypercholesterolemia
  - Understand key messages and cholesterol targets set forth in the National Cholesterol Education Program Adult Treatment Panel III guidelines
  - Assess patients for major risk factors for coronary heart disease and determine 10-year coronary heart disease risk based on the Framingham risk tables
  - Obtain a lipid panel using Cholestech LDX® following completion of the online training course for this device

(available at <http://www.cholestech.com/support/training>)

- Stroke
    - Assess risk factors
    - Inform patients about signs and symptoms of stroke
  - Type 2 diabetes mellitus
    - Understand the American Diabetes Association's most recent recommendations regarding screening for type 2 diabetes
    - Assess risk factors for diabetes
    - Inform patients about signs and symptoms of diabetes
    - Perform and instruct patients how to perform fingerstick tests
    - Assess blood glucose using blood glucose meter such as Accucheck Advantage®
  - Osteoporosis
    - Identify screening candidates based on National Osteoporosis Foundation guidelines
    - Assess patients for fracture risk
    - Obtain bone mineral density using various devices including OsteoAnalyzer®
- b. The specific screening techniques and risk assessment skills described above are presented as tools that allow pharmacists to *target specific patient populations* as preventive care providers within *community-based frameworks*. The lectures "The Pharmacist's Role in Screening/Risk Assessment" and "Establishing a Community-Based Clinic & Getting Paid for Services" focus on health fairs and pharmacist-managed community-based clinics, respectively, as two different models of such frameworks. Among other things, these lectures emphasize the importance of follow-up care and communication with other health care providers in the community as part of providing effective preventive care services. These lectures also instruct students on resources available to underserved populations in the Seattle area while encouraging students to assess patients for potential barriers to health care access. Students are encouraged to practice their newly acquired skills by participating in community health fairs following completion of PHARM 445. E-mail notifications of health fairs are sent to students enrolled in the course to raise awareness of these opportunities for community involvement.

2. *Criteria for successful screening.*

- a. Students are familiarized with the characteristics and *effectiveness* of individual screening methods in several lectures and afternoon laboratory sessions focused on cardiovascular disease, type 2 diabetes, and osteoporosis. In particular, the hands-on sessions help students learn to interpret and use the results from the various screening devices to enable patients to achieve desired health outcomes. In keeping with this approach, a strong emphasis is placed on the various methods for *reporting and measuring the outcomes* of screening services. These methods include referring patients to other health care providers, documenting screening results in individual patient "files", and billing insurance providers. These strategies encourage students to view pharmacist risk assessment and screening

services as part of the larger goal of preventing poor health outcomes in the long term, such as cardiovascular events, fractures, and target end organ damage.

- b. The didactic portion of the course provides a basic review of the risk factors and national guidelines pertaining to hypertension, hypercholesteremia, type 2 diabetes, and osteoporosis. Students are thus educated with regard to the desired outcomes of screening services provided (e.g. reduce cardiovascular morbidity and mortality by achieving goal blood pressure values). The lecture "Collaborative Drug Therapy Agreements" presents collaborative practice agreements as a way for pharmacists to work closely with physicians or other health care providers in *assessing the outcomes* of screening services provided during the course of follow-up visits. Pharmacist-managed clinics are another alternative presented as a means for following patient outcomes.
  - c. In the lectures covering hypertension, hypercholesteremia, type 2 diabetes mellitus, and osteoporosis, students learn how to follow up on the results of screening tests and *address outcomes not achieved*. Students learn when to provide lifestyle modification counseling, physician referral, and drug therapy monitoring or management for each of the disease states/risk factors mentioned above. Furthermore, the lecture "The Pharmacist's Role in Screening/Risk Assessment" familiarizes students with resources available specifically for underserved populations in the Seattle area. It should be noted that the emphasis of PHARM 445 is on the recognition of unachieved health outcomes and the promotion of healthy behaviors. Specific strategies for addressing these outcomes using drug therapy are addressed later in the curriculum in the Therapeutics course series.
3. *Evidence-based recommendations.*
- a. In didactic lectures, students are exposed to the historical precedents, laws, and government programs that *support the role of pharmacist-provided preventive health care services* in Washington State. These include the "Pharmacy Practice Act" and "Diabetes Cost Reduction Act" in Washington state legislature as well as national Medication Therapy Management Services billing models. In addition, students are provided with extensive literature pertaining to pharmacist-physician collaborative practice agreements, including sample agreements as examples of successful collaborations. An optional reading list allows interested students to access additional literature regarding collaborative practice agreements.
  - b. The initial lecture of the course cites and discusses studies showing *improved outcomes* in diabetes and lipid management as a result of *successful pharmacist-managed community programs*. Evidence of benefits due to pharmacist-directed smoking cessation and osteoporosis risk factor detection programs is also discussed.

#### B. Counseling

Students receive a review of the transtheoretical model of behavioral change in PHARM 445 within the scope of the lecture "The Pharmacist's Role in Screening/Risk Assessment". The importance of lifestyle modification in the screening/risk assessment process is emphasized throughout the course as the first step in providing preventive care to address identified risk factors. For example, the lecture "Cardiovascular

Screening" teaches students that patients with unmet blood pressure targets should be urged to lose weight, adopt the DASH diet, increase their physical activity, reduce their dietary sodium, and/or decrease their alcohol intake before or in addition to therapy with an anti-hypertensive medication. As a result, students learn that the ability to motivate for change, in addition to managing medications, is key to the pharmacist's role as public health promoter. Students in the course have already taken the required first-year courses "Profession of Pharmacy" (PHARM 304) and "Pharmacy Practice (PHARM 334) at the University of Washington School of Pharmacy. These courses provide extensive training in the educational outcomes delineated by AACP with respect to counseling (e.g. encouraging culturally appropriate behavioral change, exploring the various aspects of clinician-patient communication, understanding criteria for successful counseling). PHARM 445 does not focus on counseling but serves as a review of the techniques learned in these classes.

### C. Immunization

Students enrolled in PHARM 445 are required to complete the pre-requisite course "Immunizing & Antimicrobial Agents" (MEDCH 401), which covers the mechanisms of action as well as the appropriate vaccination schedules for all vaccines recommended by the Centers for Disease Control and Prevention (CDC) for adults and children, among other topics. As a review of this pre-requisite course, students in PHARM 445 are required to read the slide sets pertaining to immunization available from the CDC website (<http://www.cdc.gov/nip/ed/slides/slides.htm>). Furthermore, the didactic portion of PHARM 445 corresponds to the Washington State Pharmacy Association (WSPA) certification program "Vaccinating Adults and Adolescents: An Immunization Program", which was created and published in conjunction with the CDC. As a result, students should be very familiar with CDC guidelines and recommendations pertaining to immunization by the end of PHARM 445. In addition, because they complete the WSPA's immunization training program, students enrolled in this course have the option of becoming a certified "Immunization Provider" in the state of Washington. In order to obtain certification, they must complete an examination written by the WSPA (offered in class as part of the final examination) as well as a limited number of additional requirements. Among these requirements is completion of a four-hour practicum involving vaccine injection experience in a pharmacist-managed community setting. Students should therefore be well-versed in the following topics and skills by the end of the course and practicum:

#### 1. *Approaches to vaccination*

- a. *Priority groups for influenza vaccination* according to the most current CDC guidelines are discussed in lecture and the CDC slide sets assigned as reading (available online at <http://www.cdc.gov/nip/ed/slides/slides.htm>).
- b. *Priority groups for pneumococcal vaccines* according to the most current CDC guidelines are not discussed directly in lecture but are covered in the pre-requisite course, required reading, and final course examination.
- c. Didactic lectures cover topics related to the *administration of vaccines*, including vaccine storage and handling, immunization screening and documentation, and the initiation of emergency measures in the event of an adverse immunization reaction. These topics are also covered in the Washington State Pharmacy Association (WSPA) handbook "Immunization: A Manual for Pharmacists", which is provided to all students who choose to become certified WSPA

"Immunization Providers" as described above. Experiential training in the form of a laboratory session and a four-hour practicum in a pharmacist-managed community setting provide students ample opportunity to practice injection technique and *administer influenza and pneumococcal vaccines to eligible adults and adolescents*. Via the course website, students can access a list of community pharmacy practice sites where they can complete the practicum requirement. Alternatively, students may choose to obtain this experience at their worksite. Regardless, a site preceptor must complete an evaluation form following the student's practicum, and this form must be returned to the coursemaster as evidence that the student has completed the practical portion of his or her training.

- d. Priority groups for vaccination with *other immunizations* (e.g. DPT, Hepatitis A, etc.) are covered in the pre-requisite course, required reading, and final course examination with the goal of enabling students to provide *counseling to vulnerable groups* in need of these vaccinations.

2. *Criteria for successful immunization*

- a. The lecture "Vaccinating Adults and Adolescents: An Immunization Program" emphasizes the goals of successful immunization and introduces students to strategies for *assessing the effectiveness* of pharmacist-based immunization services in their area. Immunization goals discussed include decreasing the incidence of diseases for which immunizations provide protection and, consequently, decreasing the morbidity, mortality, *hospitalizations*, and *costs* associated with these diseases. Students also learn that provision of successful immunization services entails development of a system for documenting and effectively managing *adverse events* associated with immunizations. Within this context, students are familiarized with adverse event reporting via the Vaccine Adverse Event Reporting System form. In addition, this lecture and the lecture "Establishing a Community-Based Clinic & Getting Paid for Services" emphasize the importance of assessing the *need for immunization services in a geographical area*, *motivating immunization in targeted patient populations* and thus *identifying barriers to vaccination in these populations*. The pre-requisite course "Immunizing & Antimicrobial Agents" also raises student awareness of potential barriers to immunization via research projects focused on timely topics relating to vaccines (e.g. controversies surrounding vaccine safety). Finally, the two lectures mentioned above also discuss the *costs* of providing immunizations and how to receive compensation for these services by billing Medicare, Medicaid, patients, or private insurance providers.

3. *Evidence-based recommendations*

- a. Links from the course website allow students direct access to *appropriate websites* providing information about current *immunization guidelines and recommendations*. The coursemaster motivates students to visit these websites by assigning their portions of their content as required reading. The websites emphasized include [www.immunize.org](http://www.immunize.org) and [www.cdc.gov/nip/](http://www.cdc.gov/nip/)
- b. Students who choose to become certified "Immunization Providers" (described above) are provided with the handbook "Immunization: A

Manual for Pharmacists", which is published by the Washington State Pharmacy Association. In addition to covering much of the information discussed in lecture, it provides references to articles citing the *impact of providing immunizations to various target population*.

- c. Students are exposed to *multiple models* of pharmacist-managed immunization services in the form of sample immunization collaborative practice agreements and articles describing such services.
- d. The initial lecture "Introduction to Public Health Objectives" discusses the *prevalence and impact of pharmacist-based immunization services*. Articles cited provide evidence of increased rates of immunization among underserved populations due to pharmacist-managed immunization services, high patient satisfaction with such services, and evidence of pharmacist provision of immunizations including varicella and Hepatitis A vaccines.

#### D. Chemoprevention

PHARM 445 addresses chemoprevention within the framework of the individual lectures on screening for cardiovascular disease and osteoporosis ("Cardiovascular Screening" and "Measuring Bone Mineral Density"). The specific areas of chemoprevention covered are:

- Cardiovascular disease
  - Initiation of anti-hypertensive medications in appropriate patients
  - Initiation of lipid-lowering medications in appropriate patients
  - Initiation of aspirin therapy in appropriate patients
- Osteoporosis:
  - Initiation of calcium/vitamin D supplementation

However, given its early placement in the curriculum (most students enrolled in PHARM 445 have just finished their first year of pharmacy school), the focus of the course is on the practical application of immunization administration and health screening techniques, as well as promotion of health behavior. The specifics of chemoprevention are emphasized later in the curriculum in the Therapeutics course series.

#### Health promotion among students

In addition to teaching students to provide preventive care to underserved populations, the course enables students to identify and address their own risk factors or disease states.

Participation in the lectures and laboratory sessions described above allows students to:

- Identify any general risk factors they may have for chronic and infectious disease, including obesity, smoking, lack of exercise, and excessive alcohol use ("Introduction to Public Health Objectives")
- Assess their own risk for hypertension, hyperlipidemia, type 2 diabetes mellitus, and osteoporosis by identifying specific risk factors ("Cardiovascular Screening", "Screening for Type 2 Diabetes", and "Measuring Bone Mineral Density")
- Perform the following screening tests on another student, so that most students will receive personal results of the following health screenings:
  - Blood pressure measurement (afternoon laboratory session)

- Lipid panel (afternoon laboratory session)
- Diabetes Risk Test provided online by the American Diabetes Association at <http://diabetes.org/risk-test/text-version.jsp> (assigned as homework)
- Blood glucose reading (afternoon laboratory session)
- Bone density measurement
- Identify options for behavioral change to address any risk factors or disease states identified ("Cardiovascular Screening", "Screening for Type 2 Diabetes", "Measuring Bone Mineral Density", "Essentials of Nutrition")
- Assess their own personal readiness for change according to the transtheoretical model ("The Pharmacist's Role in Screening/Risk Assessment")
- Administer the influenza vaccine to another student, so that most students in the course will be vaccinated with the most current influenza vaccine

These activities encourage healthy behavior among students and raise awareness of students' own vulnerability to the risk factors and disease states discussed. Indeed, past PHARM 445 course participants have pursued follow up due to screening test results suggesting hypercholesteremia, hypertension and osteopenia. Overweight, smoking, and lack of exercise are other risk factors that students have been motivated to address as a result of the course. By providing this first-hand experience with the challenges of successful behavior change and follow-up care, the course aims to improve students' personal health as well as their effectiveness as promoters of lifestyle modification and healthy behavior. It should be noted that issues of confidentiality should be taken into account when reporting test or questionnaire results in the classroom setting. Schools and colleges of pharmacy that are considering developing a course such as PHARM 445 are advised to ensure that classroom activities are in compliance with the Health Insurance Portability & Accountability Act of 1996 (HIPPA) and Family Educational Rights and Privacy Act (FERPA).

### **Special issues involving planning/promotion/implementation**

#### Timeframe

PHARM 445 is designed to be completed in three days immediately prior to the start of the second professional year. By offering the course over this short period of time in the fall, the University of Washington School of Pharmacy is able to quickly train a large number of students to provide immunizations and health screenings in the community in the following months. The School, students and community all appear to benefit from this approach. However, the disadvantage of this abbreviated course format is that it allows little time for students to familiarize themselves with pertinent literature or process the extensive amounts of information they are provided in the course. Other schools and colleges of pharmacy who wish to provide students with a more in depth exploration of the educational outcomes discussed above might consider offering a similar course in a more traditional timeframe.

#### Preceptor involvement

As a result of the extensive amount of material covered in a very limited amount of time, PHARM 445 requires careful coordination and advance preparation. In particular, the course involves eleven guest lecturers and preceptors who assist in afternoon laboratory sessions. These pharmacists are critical to the success of the course, since they serve as role models who have successfully promoted public health goals in community pharmacy practice. In addition, their expertise in screening device operation and vaccine administration ensures that students benefit from one-on-one practical training despite a large class size. However, generating a list of preceptors who are willing to volunteer their time for the course and

coordinating their schedules clearly poses a challenge that entails significant advance planning.

#### Student assessment and evaluation

Currently, the majority of the second year class at the University of Washington School of Pharmacy elects to enroll in PHARM 445. In addition, some third year students enroll. This produces a large class size, with 67 students enrolled in fall of 2006. While the popularity of the course indicates that it occupies an important place in the curriculum, student assessment and evaluation in a class this size remain a challenge. The final examination given on the last day of the course includes the test developed by the Washington State Pharmacy Association (WSPA) in conjunction with the CDC for certification as an "Immunization Provider". However, this test currently focuses on a variety of theoretical concepts that are not emphasized in lecture and are not consistent with the practical emphasis of the course. Plans for a revised exam that will still meet the requirements for certification by the WSPA are currently under discussion and will hopefully improve student assessment. However, while this will enable a more consistent evaluation of students' conceptual understanding of course topics, assessment of practical skills such as student injection technique, blood pressure measurement and screening device operation requires a different approach. Currently, each student is personally evaluated in these areas by a preceptor during the afternoon laboratory sessions. As mentioned above, this requires a large number of preceptors to assist with the course, as well as development of evaluation forms to ensure that preceptors are assessing student performance as objectively as possible.

#### "Immunization Provider" certification

PHARM 445 was first offered at the University of Washington School of Pharmacy twelve years ago. It was developed in close collaboration with members of the Washington State Pharmacy Association (WSPA) and thus has been able to offer students the opportunity to become WSPA-certified "Immunization Providers" even before pharmacist-managed immunization clinics achieved the popularity they enjoy today. It should be noted, however, that this certification is not required for pharmacists or pharmacy students to provide vaccinations in Washington State, since the state's Pharmacy Practice Act permits all pharmacists and the interns they supervise to provide this service within the framework of collaborative practice agreements. Rather, WSPA designed its immunization certification program as a way of increasing pharmacist recognition and credibility in the area of immunization administration. Given that most other states have laws similar to the Pharmacy Practice Act, the majority of schools or colleges of pharmacy should not be discouraged if they do not have close ties with a certifying body such as the WSPA since such certification is likely unnecessary. However, the American Pharmacists Association (APhA) provides a certification program in immunization administration and is an option for schools or colleges of pharmacy in other states who wish to provide students with an option for certification (see <http://www.pharmacist.com/CTP/immunization.cfm> for further details).

#### Legal considerations

The University of Washington School of Pharmacy requires all students to sign a waiver absolving the School of any liability for exposure to diseases such as tuberculosis, hepatitis, or AIDS, with particular mention of exposures due to needlesticks. Although needlesticks have been a very rare occurrence in the entire twelve-year history of PHARM 445, use of such a waiver is recommended to any school or college that decides to develop a similar course.

As mentioned above in the section "Health promotion among students", issues of confidentiality may arise with respect to the reporting of students' health screening results

during laboratory sessions. Schools or colleges of pharmacy should ensure that such results are handled in compliance with the Health Insurance Portability & Accountability Act of 1996 (HIPPA) and the Family Educational Rights and Privacy Act (FERPA).

Finally, schools or colleges of pharmacy are also advised to contact their respective state Attorney Generals in order to inform themselves of any state-specific legal issues pertaining to proposed course activities.

#### Coordinating practicum sites

The coursemasters of PHARM 445 have found that community pharmacies are eager to host students seeking to complete the required vaccine injection practicum. Indeed, sites have reported that they have had students administer over two hundred immunizations during their practicum shift. As a result, many sites contact the coursemaster in late fall with offers to host students in need of practicum sites. However, the majority of students who intern at community pharmacies choose to complete the required practicum at their work sites. Thus those students who are not interning or who work in hospitals where nurses supervise immunization administration represent the majority of students who require practicum placement. It should not be difficult to arrange sufficient sites for these students. It should be noted that, in years where there has been a nationwide shortage of influenza vaccine, it has occasionally been difficult for all students to complete the practicum requirement. The coursemaster has made special allowances for these students to complete this requirement at a later date.

#### Obtaining screening devices, supplies, and influenza vaccine

The University of Washington School of Pharmacy obtains a number of the screening devices (e.g. Cholestech®, Osteoanalyzer®) used in the laboratory sessions of PHARM 445 from local community pharmacies. However, the transportation and set-up of these devices has proven somewhat inconvenient, particularly in the case of exquisitely sensitive machines such as OsteoAnalyzer®. Ideally, this problem would be avoided by having the School purchase machines for student use. Cost concerns prohibit this, however, although the School has been able to purchase a sufficient number of smaller, less-expensive devices such as blood glucose meters and sphygmomanometers. Thus, other schools considering offering a course such as PHARM 445 are encouraged to either purchase screening devices or contact local community pharmacies well in advance to ensure availability of an adequate number of instruments for student use. In addition, consideration should be given to the cost of the influenza vaccines and screening supplies (e.g. test strips) used in the course. The University of Washington School of Pharmacy allocates a budget for PHARM 445 to cover these costs, so that students only pay the fee charged by the Washington State Pharmacy Association to provide "Immunization Provider" certification. Other schools may choose to charge students a nominal fee to offset these costs, however.

#### **Assessment**

On the last day of the course, students complete anonymous course evaluations that are used to implement improvements. In addition, the extensive preceptor involvement in the course allows the coursemaster to receive continuous feedback from current practitioners who are aware of the latest developments in community practice.

## Checklist of planning steps

- Determine timeframe of course
- Determine budgetary constraints
- Contact state Attorney General to determine legal constraints
- Design course goals and objectives
- Develop syllabus
- Coordinate guest lecturers
- Coordinate preceptors to assist in laboratory sessions
- Reserve rooms for lectures and laboratory sessions
- Obtain screening devices, supplies, and other equipment for use in laboratory sessions
- Obtain supply of influenza vaccine
- Generate list of injection practicum sites
- Develop student waivers and HIPPA/FERPA compliance forms, if needed
- Develop evaluation forms for preceptors to use in laboratory sessions and at practicum sites
- Determine whether students will be offered the opportunity to obtain a certificate in pharmacy-based immunization delivery and, if so, develop a process for students to complete their certification
- Design final examination
- Design course evaluation for students to provide feedback about course

## Resources/References

### Attachments

PHARM 445 course syllabus

Sample needlestick waiver

Sample "Preceptor's Evaluation Form" for use at practicum sites

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### **Contact persons for additional information**

Jacqueline Gardner, Ph.D.  
Professor & Acting Director, Institute for Innovative Pharmacy Practice,  
University of Washington Department of Pharmacy  
Tel. (206) 685-4128  
[jsgardne@u.washington.edu](mailto:jsgardne@u.washington.edu)

Jeff Rochon, Pharm.D.  
Director of Pharmacy Care  
Washington State Pharmacy Association  
Tel. 425-228-7171 extension 12  
[jrochon@wsparx.org](mailto:jrochon@wsparx.org)