

## TEACHERS' TOPICS

### Pharmacists' Roles in Health Promotion and Disease Prevention

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The *Roles, Environments and Communications* course at the University of Illinois at Chicago consists of an overview of pharmacy and the US health system; pharmaceutical care and roles; communications theory and application for pharmacists; and preparing for a career in pharmacy. One of the lecture and laboratory/discussion topics on pharmacists' roles pertains to health promotion and disease prevention. The topic introduces first-year pharmacy students to a population-based perspective of health. Health promotion, disease prevention, and other public health subject areas are targeted for curricular inclusions by the pharmacy profession and academe. Early exposure to health promotion and disease prevention concepts may help bolster students' desire and expectations to fulfill these expanded pharmacy roles.

**Keywords:** health promotion, disease prevention, student, communications, public health

#### INTRODUCTION

The *Roles, Environments and Communications* course (PHAR 341) at the University of Illinois at Chicago (UIC) is a required 4-credit hour course offered each fall semester to entering first-year pharmacy students (P1s). The course consists of twice-weekly didactic lectures (50 minutes on Mondays; 110 minutes on Wednesdays) and 3 weekly divided laboratory/discussion sections, each lasting 110 minutes. The course utilizes active learning to introduce students to the philosophy and mission of the pharmacy profession, the evolution of practice, elements of the US healthcare system, societal and professional expectations, diverse practice environments, and effective communications skills for a variety of patients and professional audiences. The course begins with a series of lectures on pharmacy and the US healthcare system, then transitions to a series of discussions on pharmaceutical care, trends, and professional roles. One of the topics introduced during the unit on professional roles is pharmacists' roles in health promotion and disease prevention, which is the focus of this paper. This article describes learning objectives for the topic, background information provided to P1 students on health promotion and disease prevention, instructional methods and content, examples of pharmacist and student involvement, and outcomes of teaching and learning.

Health goals have been widely developed and disseminated by the federal government over the past 25

years, including the current Healthy People 2010 initiatives, the set of high-priority national health goals and objectives to achieve over the first decade of this millennium.<sup>1,2</sup> Overarching goals for Healthy People 2010 are to increase the quality and years of healthy life, as well as to eliminate health disparities.

In 1900, the average US life expectancy was 47.3 years, and the greatest percentage of deaths resulted from acute infectious diseases, such as pneumonia, tuberculosis, and diarrhea.<sup>3</sup> Disease prevention programs established during the early part of the 20th century contributed to marked improvements in health and decreases in crude death rates. Public health advances (eg, better nutrition, urban sanitation, recognition of health hazards from tobacco use, advances in medical care) largely enabled a successful response that reversed the earlier leading causes of mortality.<sup>4</sup> Based on the most recent data, the average US life expectancy is about 77.3 years, though disparities remain along racial/ethnic and gender lines.<sup>5</sup> The focus on disease prevention in the United States has primarily shifted from acute infectious diseases in the early 1900s to chronic diseases, though some infectious diseases (eg, pneumonia and influenza) still cause a high number of deaths. The 3 leading causes of death in 2002 (percent of total deaths) in the United States were heart diseases (28.5%), cancers (22.8%), and stroke (6.7%).<sup>5</sup> Nearly half of the leading causes of death from these diseases are considered preventable and related to underlying behavioral factors and exposures such as tobacco use, poor diet, physical inactivity, and alcohol misuse.<sup>6</sup>

Negative health behaviors result not only in mortality, but also years of costly disease and disability. More effective health promotion and disease prevention strate-

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gies and efforts would decrease healthcare costs, decrease morbidity and mortality, and improve the quality of life of individuals and communities.<sup>7</sup> Increased pharmacist involvement in health promotion and disease prevention measures would help decrease the financial and human costs, medication misuse, and drug abuse.<sup>8</sup>

### **Inclusion of Health Promotion and Disease Prevention in Courses on Pharmacists' Roles**

The Code of Ethics for Pharmacists encompasses a public health perspective, stating that the pharmacist should serve needs at the individual, community, and societal levels.<sup>9</sup> Among the myriad of public health-related aspects of pharmacy practice, the most common pertain to health promotion and disease prevention activities. Health promotion and disease prevention is listed as 1 of the 4 domains under the American Pharmacists Association Pharmacist Practice Activity Classification (PPAC).<sup>10</sup> The PPAC domain includes delivering clinical preventive services, public health surveillance and reporting, and promoting safe medication use for communities and society.

Educational outcomes published by the American Association of Colleges of Pharmacy (AACCP) Center for the Advancement of Pharmaceutical Education (CAPE) address the need for public health aspects in pharmacy education to increase students' knowledge of prevention and population-based health issues.<sup>11</sup> The CAPE educational outcome on pharmaceutical care describes the need to provide population-based care, which would involve interdisciplinary collaboration and communications. A separate CAPE educational outcome is devoted to pharmacy curricular areas on health promotion, wellness maintenance, and disease prevention.

This lecture introduced P1 students to the concepts of health promotion and disease prevention. Learning objectives for the lecture on pharmacists' roles in health promotion and disease prevention are listed below.

1. Define, compare and contrast the terms health, health promotion and disease prevention.
2. Explain the significance of health promotion and disease prevention efforts.
3. List and distinguish examples of promotion and prevention activities.
4. Describe the need for pharmacist and pharmacy student involvement in health promotion and disease prevention.
5. Identify opportunities and challenges for pharmacists to provide health promotion and disease prevention services.

### **INSTRUCTIONAL METHODS AND CONTENT**

The topic entitled, "From Patient to Population: Pharmacists' Roles in Health Promotion and Disease Prevention," was presented in a 50-minute lecture format, and corresponding laboratory/discussion exercises and assignments were presented the following week.

The content was primarily delivered in a slide-and-lecture format and included a short musical performance and ample opportunity for student questions and comments. The topic on pharmacists' roles in health promotion and disease prevention segued from the previous discussions on pharmaceutical care. Through minor prompts for key words, P1 students collectively reiterated the definition of pharmaceutical care and its 4 definite outcomes; preventing disease was emphasized as one of the principal goals.<sup>12</sup>

Public health activities are primarily targeted to populations and communities, rather than individuals. While a pharmacist's clinical role focuses on an individual patient, his or her public health role focuses more on the population or community at large. The population approach to helping people is exemplified by this quote from Dr. Georges Benjamin, Executive Director of the American Public Health Association<sup>13</sup>: "... when one person comes in with a rat bite, you take care of the bite. When five people come in, you take care of the rats."

The World Health Organization (WHO) defines health as the "state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity."<sup>14</sup> This WHO definition emphasizes wellness and the social, environmental, and economic factors that may influence behaviors affecting people's health. Public health is defined as organized community efforts to protect, promote, improve, or restore the community's or population's health.<sup>15</sup> Health promotion and disease prevention technologies and interventions encompass the 3 core functions of public health, which are: (1) assessing and monitoring at-risk populations to identify health problems and priorities; (2) formulating public policies in collaboration with community and government leaders; and (3) assuring that people have access to appropriate and cost-effective care.<sup>15,16</sup>

Health promotion is any combination of interventions (ie, health education and related organizational, economic, and/or political interventions) designed to facilitate behavioral or environmental changes that will improve or protect public health.<sup>17</sup> Health promotion strategies focus on community-based interventions and partnerships to maintain wellness and to help modify individual behaviors, such as unhealthy lifestyles. In other words, health promotion involves community

interventions that help a person increase control over and improve his or her own health.<sup>18</sup>

Disease prevention is defined as activities that are aimed to prevent and control disease, stop the disease processes, or reduce the consequences of disease.<sup>15,18</sup> Disease prevention activities focus on individuals and communities with identifiable risk factors that can be targeted for effective intervention. Thus, in contrast to health promotion, disease prevention efforts emanate more from health providers than from individuals.<sup>18</sup>

### **Disease Prevention Categories**

Primary prevention activities are aimed at preventing disease or injury from occurring by reducing exposure to identifiable risk factors.<sup>15</sup> An example would include influenza vaccinations. Primary prevention is often accomplished through media campaigns and information dissemination. Message examples are: "Don't use tobacco," (eg, this message might be developed as part of an effort to prevent cancers or heart disease) or "Eat a healthy diet." Secondary disease prevention is targeted at specific diseases and attempts to identify and control a particular disease in early stages, before signs and symptoms become apparent.<sup>15</sup> Examples include hypertension monitoring and medication management programs. Tertiary prevention efforts focus on preventing disability from or complications of a disease by restoring individual functioning to an optimal level after damage occurs.<sup>15</sup>

Distinctions between the types of disease prevention measures are sometimes unclear. For example, osteoporosis screening programs would be considered primary prevention for people found to be without the disease and secondary prevention for those in whom latent disease is detected. Other primary prevention measures to prevent osteoporosis might include counseling and education on the need for adequate dietary calcium intake, weight-bearing exercise, and tobacco avoidance or cessation. Secondary prevention measures might include bone density tests, pharmacologic interventions, patient monitoring to prevent osteoporosis-related bone fractures, and exercise regimens; these interventions, however, could also be considered tertiary preventive measures if designed to limit disability or aid in rehabilitation.

To help illustrate the concept of disease prevention, lecture content included the brief performance of a song. Other authors have noted how the current generation of pharmacy students is more receptive to information that is presented in an entertaining manner.<sup>19,20</sup> A live example of a secondary disease prevention campaign was performed in a dramatic fashion by the course coordinator

(instructor), course co-coordinator, and 3 graduate teaching assistants. The group, which called itself the PharmDivas, sang the following lyrics from a public service announcement (PSA) the instructor remembered from approximately 30 years ago. The only change to the PSA lyrics was an update on the prevalence of hypertension in the United States, now estimated at 65 million.<sup>21</sup> Students were informed that the lyrics used the vernacular of the early 1970s. This instructional performance was intended to show application of a targeted secondary disease prevention message, for that era, which included health education. The performed lyrics were as follows:

*So you went to see your trusted M.D.  
and he checked you over thoroughly.  
So you said to him, "Hey! What's up Doc?"  
And he said, "Your Blood Pressure! That's what!"*

*But you can live with it baby,  
You can live with it baby,  
If you do what the man tells you to.*

*You've got lots of company  
Over 65 million have H.B.P.  
It hits the sisters and it hits the brothers  
black people tend to get it more than others.*

*Your high blood pressure situation  
can be controlled by medication.  
Though you may feel better day to day,  
you've got to stay with it, all the way.*

*But you can live with it baby,  
You can live with it baby,  
It's strictly up to you.*

[The source of the lyrics used in the PSA is indeterminate.]

### **Pharmacist Involvement in Health Promotion and Disease Prevention**

Through education and training, experience, accessibility, and societal need, most pharmacists are well situated to promote healthy behaviors and disease prevention. Pharmacist participation in the public health aspects of practice could be at either the implementation ("micro" or provider) level or planning ("macro") level.<sup>22,23</sup> Examples of pharmacist participation in public health activities were listed in the class lecture handout. Strategic practice-related efforts that could possibly enable pharmacists to provide health promotion and disease prevention services would include:

- Knowledge of the clinical and demographic characteristics of the community;
- Targeted activities based on assessment of diseases associated with the service population in the community;
- Development of a written plan for informational and preventive efforts;
- Identification of stakeholders and collaborative community partners, such as health departments, community and advocacy groups, homeless shelters, institutions, and payers;
- Marketing, documenting, and billing of professional services associated with health promotion and disease prevention in order to provide sustainable pharmacy-based interventions; and
- Utilization of educational materials, eg, handouts, brochures.

Brief examples of pharmacists' roles in preventive care were presented during lectures on arthritis, asthma, cholesterol screening, diabetes, hypertension, nutrition, pediatric healthcare, and pregnancy. Additional time was spent on 2 examples, immunizations and terrorism (bioterrorism and chemical terrorism). When this lecture was presented in October 2004, the usable supply of influenza vaccine was in unprecedented short supply, which necessitated more stringent screening and identification of priority groups in accordance with guidelines of the Centers for Disease Control and Prevention.<sup>24</sup> Examples of pharmacists' roles included working in collaboration with other community partners in identifying at-risk patient populations, communicating with other providers and patients, providing health education and counseling, and administering vaccinations. The responsibility of the pharmacist to inform patients and other customers of alternative prevention strategies (eg, hand washing, disinfecting, nasal mist vaccine) and treatment options was briefly discussed.

Bioterrorism has rarely occurred in the United States, though preparedness is necessary. Students were informed that a pharmacist led one of the Commissioned Corps Readiness Force medical teams that provided health services after September 11, 2001, at sites adjacent to "Ground Zero," and pharmacists have served on response teams for at least 5 anthrax events in this country.<sup>22,25</sup> History was provided on the tainted Tylenol poisonings that occurred in Illinois in 1984, when pharmacists worked with corporate pharmacy leaders, public safety officers, and federal agents to help solve the case and ensure the safety of the medication supply. Specific examples were given on how pharmacists might participate in surveillance and reporting. For example, pharma-

cists might recognize a pattern of:

- acute febrile illness (outbreak) that is inconsistent with known illnesses, such as a number of young people who come in with fevers or rashes;
- an abnormal number of sales of prescription or nonprescription drug products for flu symptoms in the middle of the summer; or
- unusually high sales of nonprescription products to treat diarrhea, which might be an early sign of an outbreak of infectious diarrhea, for example.

Students were also informed of the need for pharmacist members on local public health response teams (eg, vaccination response teams, medical reserve corps). Pharmacists' roles in emergency response actions might include mass distribution of appropriate pharmaceutical agents; suggesting alternative sources if certain medications are in short supply; screening patients; and providing information on contraindications for drugs, adverse events, and drug interactions.

### **College Participation in Health Promotion and Disease Prevention**

In 2004, Lang called for the pharmacy academe to improve the public's health through teaching, research, and service.<sup>8</sup> Examples of UIC faculty member activities in health promotion and disease prevention were shared with the P1 students. Faculty members' efforts had included hosting a call-in radio program on health issues; participating in volunteer efforts (eg, homeless shelters and clinics, health fairs); conducting research on new pharmaceutical compounds to reduce the threat of anthrax, malaria, and cancers; conducting population-based pharmaceutical health services research; analyzing prescription-benefit plans; and providing/establishing bioterrorism preparedness training for community-based pharmacists and nurses.

Student participation in health promotion and disease prevention was also noted. A college-wide initiative to assist in providing influenza and pneumococcal immunizations to the community was underway in fall 2004 by the UIC student chapters of the American Pharmacists Association, Illinois Council of Health-System Pharmacists, and Student National Pharmaceutical Association, in collaboration with the American Lung Association of Metropolitan Chicago. The lecture ended with examples of additional opportunities for students to participate in activities, undertake elective coursework, and work with faculty members involved in health promotion and disease prevention activities.

Table 1. Health Promotion and Disease Prevention Topic Selections for Laboratory/Discussion Exercises

<b>Health Promotion Topics</b>	<b>Examples of Preventable Consequences</b>
Accident or poison prevention	Falls, poisonings
Environmental quality efforts	Allergies, asthma, communicable diseases
Immunization programs	Hepatitis B, influenza, pneumonia, tetanus
Injury or violence prevention	Bioterrorism, domestic violence, gunshot wounds, paralysis, workplace injuries
Men's health	Cardiovascular disease, prostate cancer
Mental health	Dementia, depression, suicide
Nutrition	Diabetes, dyslipidemia, hypertension, malnutrition, obesity
Oral health	Heart disease, tooth disease
Physical activity and exercise	Hypertension, obesity, osteoporosis, stress
Sexual health or family planning	Sexually transmitted diseases, unintended pregnancy
Substance abuse prevention	Alcohol misuse, domestic violence, drug abuse, HIV infection
Tobacco/smoking cessation	Cancers (eg, lung, oral, throat), heart disease, respiratory diseases
Women's health	Cancers (eg, breast, cervical, uterine), cardiovascular disease, osteoporosis, pregnancy complications

### **Laboratory/Discussion Sessions**

Teaching assistants met with the course coordinator a week ahead to discuss the intended outcomes and to coordinate procedures. During the recitation, P1 students worked collaboratively in groups to: (1) design a pharmacy- or pharmacist-based program in health promotion and disease prevention; and (2) present and explain the program to the recitation section. Since the P1 students had not been taught how to develop, implement, and evaluate community programs at that point in the curriculum, the pedagogic exercise was designed to get them to think about the issues and open their minds to expanded pharmacist roles in health promotion and disease prevention.

Students in each section organized into groups of 5 or 6. Each group selected one health promotion topic from a list. Examples of disease states were listed alongside the health promotion topics (Table 1). Student groups were allowed to add other topics to the list, as desired. Each group developed a program in health promotion, with an associated disease prevention initiative. The groups were given 30 minutes to design the initiatives. Each group elected a member to write the plan and another to present the plan. The spokespersons presented to the full laboratory section in the latter part of the laboratory and anyone present was given the opportunity to comment or ask questions of the group. Only one group (per laboratory section) could select and present on any one of the topics for health promotion. The order of topic selection was determined by drawing numbers. Since the same diseases might fall under a number of health promotion topics, each group was allowed to select the disease state that was most applicable or of greatest interest.

To facilitate discussions, groups were asked to consider and address the following questions:

1. What is the practice setting for your pharmacy- or pharmacist-based program?
2. What is the profile of the community being served?
3. What services or activities will you provide?
4. How will you structure the program?
5. How will you market the program and increase public awareness?
6. Where will the prevention activities be held?
7. What organizations (ie, groups, associations, professions) will you partner or collaborate with for your programs, if any?
8. How much, if anything, will you charge for the activities?
9. What technologies, if any, will you use in the health promotion/disease prevention activities?
10. How would you find more information (ie, research and literature review) in the development of such programs?
11. What process or outcomes indicators would you recommend to evaluate whether these services are of value to the consumer?

Each group was instructed to submit its written plan for the program, which needed to be signed by each group member to verify attendance and participation. Group reports were turned in by the end of the day's laboratory/discussion session. As an added incentive for continued student involvement, the teaching assistants provided more information about the Secretary's Award for Innovations in Health Promotion and Disease Prevention competition,<sup>26</sup> which had been briefly mentioned during the lecture portion.

## OUTCOMES

Six questions pertaining to the topic of health promotion and disease prevention were included on the second examination for the course. The percentage of correct answers for the 6 questions was 80.7%, on a 50-item examination where the overall mean  $\pm$  standard deviation percentage score was  $84.5 \pm 7.1\%$  (out of 100%). In addition, students submitted written group reports that addressed the questions in the laboratory/discussion exercises. Out of a possible 10 points, the mean  $\pm$  standard deviation score was  $9.6 \pm 2.7$ . According to teaching assistants, several students commented that the exercise was hard to do, but they had delved into the assignment and done their best.

Subsequent to the lecture and/or semester, several students contacted the instructor to express their interest in learning more about pharmacists' roles in public health. This included their desire to take courses for independent study and/or research that emphasized health promotion and disease prevention, referral to appropriate faculty advisors, and volunteering in various community-based initiatives.

Since fall semester 2004, student course evaluations have been completed online and outside of class time at UIC College of Pharmacy. Student response rates have decreased with the online format, and College faculty are considering methods to ensure high response rates for future course evaluations. Fewer than half of the students ( $n=77$ ) submitted an online evaluation of PHAR 341 at the end of the fall 2004 term. This instructor typically receives evaluation responses from about 85% of students. Reasons for the lower response are unknown, but possible reasons included student fatigue from completing numerous course and instructor evaluations during the semester and a short time interval for submitting the new online evaluations. Specific topic evaluation questions were not included on the overall evaluation forms, though the general ratings may partially reflect their attitudes on this topic. The PHAR 341 course has generally been well received by the students. On a scale that ranged from 1 (low) to 5 (high), the overall rating of the teacher's effectiveness was  $4.9 \pm 0.3$ . Similar ratings (4.8 to 5.0) were provided on the instructor's evaluation form for items that the instructor made course content relevant with references to practical applications, explained difficult concepts in more than one way, presented up-to-date developments in the field, used appropriate instructional supports, and communicated enthusiasm and excitement toward the subject matter. Comparable ratings were provided on the course evaluation form.

The fall 2004 lecture provided the opportunity for faculty development via a peer observation completed by the instructor's department head and the assistant dean

for academic affairs. The instructor met with each separately to go over the class objectives and materials the week prior to and following the lecture and laboratory/discussion. Overall peer evaluation ratings were high. Observers noted that the lecture flowed well, the instructor remained professional (even during humorous moments), and the students were engaged in the discussion. They stated that the live entertainment underpinned the content being delivered well and that the examples of pharmacist activities in health promotion and disease prevention were very effective. Useful feedback was provided and their suggestions will be incorporated in the future, such as repeat novel presentations twice (eg, after the live performance, have students analyze phrases for message type) and provide students with supplemental readings.

## CONCLUSIONS

This paper described an early lecture and laboratory/discussion content on pharmacists' roles in health promotion and disease prevention. Some concepts from the lecture on health promotion and disease prevention were reinforced in remaining lectures for the course in the units on communications skills and preparing for the future. In addition to important clinical and other service roles under pharmaceutical care, public health-related aspects of pharmacy practice are needed. Pharmacists can play an integral role in promoting health and well being, as well as providing preventive care for targeted disease states. The profession and academe encourage early introduction to public health concepts to increase pharmacy student knowledge and involvement.

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