Meeting the Unmet Needs of Patients: The Future of Our Profession and The Ohio State University College of Pharmacy

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Introduction

Pharmacists have always endeavored to meet the needs of their patients, but as our society has evolved from an agricultural, to an industrial, and now an information age, the nature of pharmacy practice and the needs of patients have evolved as well. Anandi Law et al recently described the “unmet needs” of contemporary patients in the medication use process. Among physicians and pharmacists in their survey sample, four principle patient needs were identified: (1) the need to see a physician at the right time, (2) the need to use medications as directed, (3) the need to receive adequate counseling on medications, and (4) the need to be appropriately monitored regarding their medications. Obviously, pharmacists are in a position to impact all of these unmet needs but particularly those relating to medication counseling, adherence, and monitoring.

There is a substantial amount of evidence that demonstrates the impact of these unmet needs in our health care system as well as the role pharmaceutical care can play in diminishing this impact. And our educational programs have evolved to position pharmacy graduates to be better prepared to deliver patient-centered, outcomes-oriented care toward that end. The remainder of this article will focus on the health care ramifications of the unmet needs of patients, the demonstrated impact of pharmaceutical care, and the changes in our curriculum in response to these needs.

What is the Impact of the Unmet Needs of Patients in the Medication Use Process?

A number of studies have exposed the fiscal and human ramifications of drug-related problems in virtually every component of our health care system. These effects are felt by patients in hospitals, long-term care institutions, physicians’ offices and, importantly, in the community. For example, Johnson and Bootman’s study in 1995 estimated that at least $76.6 billion was spent in the U.S. annually due to “drug misadventuring” among ambulatory patients. This amount was comparable to that spent on the treatment of diabetes, cancer or cardiovascular disease. The drug-related problems they identified included untreated indications, improper drug selection, subtherapeutic dosing, failures to receive drugs, overdosing, adverse drug reactions, drug interactions, and drug use without indication. They referred to these drug-related problems as a “behavioral disease” and described this as one of the leading “diseases” with regard to cost in our health care system. Ernst and Grizzle provided an update to these costs five years later and estimated that we spent over $177 billion on drug-related problems (DRPs) in the community sector in 2000. They noted that, “Since 1995, the costs associated with DRPs have more than doubled.”

Lyle Bootman and co-authors have also studied the fiscal impact of drug-related morbidity and mortality in nursing facilities. In 1997, they estimated that $7.6 billion was spent on such problems in this sector of health care. Furthermore, they estimated that for every dollar spent on pharmaceutical products, $1.33 was spent on drug-related problems.

Lazarou et al studied serious and fatal adverse drug reactions (ADRs) in hospitalized patients. An examination of 39 prospective studies that had been conducted over a 32-year period showed an overall incidence of 6.7 percent for “serious” ADRs and 0.32 percent for fatal ADRs. In 1994, over two million people in the U.S. experienced serious ADRs and more than 100,000 died as a result of these effects. These staggering statistics placed adverse drug reactions as the fourth to sixth leading cause of death over three decades.

Additional evidence of the need for enhanced pharmaceutical care in the community sector can be found from various perspectives. Aparasu has determined that, in 1995, an estimated 2.01 million visits to office-based physicians in the U.S. were due to medication-related morbidity. The most common reasons related to skin rashes, nausea, and shortness of breath. The most common therapeutic culprits were hormones or synthetic substitutes, antibiotics, and cardiovascular drugs. And, as a worst-case scenario, we know that deaths due to medication errors are on the rise. Phillips et al examined all U.S. death certificates between 1983 and 1993. They found that medication error related deaths increased 2.57 fold during this period of time. This rate of increase was 6.5 times higher for outpatients. In 1993, 7,391 patients died as a result of such errors. They concluded that, “Medical personnel need to compensate for changes in medical care by increased vigilance in the delivery
and monitoring of medications, especially for outpatients" (p. 644).

Can Pharmacists Affect the Impact of These Adverse Drug Events?

Pharmacists can and do prevent adverse drug events every day. But could a more intensive pharmaceutical care model have a greater effect on drug-related problems? Several studies would suggest that it could. Perhaps the most visible of these was Project ImPACT.8 This effort to "Improve Persistence and Compliance With Therapy" involved 26 community-based ambulatory care pharmacies (several in Ohio) and focused on patient outcomes relating to hyperlipidemia and dyslipidemias. Nearly 400 patients were involved in monthly interactions with pharmacists until they reach treatment goals. Quarterly interactions were scheduled thereafter. The results of this model were impressive: 93.6 percent of patients persisted with their therapies, 90.1 percent adhered to their therapies, and 62.5 percent reached/maintained National Cholesterol Education Program lipid goals. These progressive improvements were significantly better than outcomes previously reported in the literature.

Studies have also demonstrated the impact of pharmacists on drug-related problems in the hospital environment. For example, Lucian Leape and co-authors at the Harvard School of Public Health reported, in 1999, that the "participation of a pharmacist on medical rounds can be a powerful means of reducing the risk of adverse drug events" (p.270).9 They found that the involvement of a pharmacist on an intensive care unit team reduced adverse drug events by 56 percent (from 10.4 to 3.5 per 1000 patient days) resulting in an annual cost savings of $270,000. More recently, Kucukarslan et al reported that pharmacists on general medicine rounds at Henry Ford Hospital reduced preventable adverse drug events by 78 percent (from 26.5 to 5.7 per 1000 hospital days).10

Additional support for the pharmaceutical care model for comprehensive drug therapy management comes from the Institute of Medicine (IOM). IOM's Quality of Health Care in America Committee published two reports relating to the need and mechanisms for enhancing the quality of patient care. These were entitled To Err Is Human: Building a Safer Health System (2000)11 and Crossing the Quality Chasm: A New Health System for the 21st Century (2001).12 These reports casted the severity of the patient safety problem in our country and offer recommendations for change. They have suggested that we create a comprehensive approach to improving patient safety and that a "high priority" be placed on medication safety. Selected strategies to improve medication safety include increased pharmaceutical decision support, pharmacist inclusion on patient rounds, enhanced availability of patient information, and efforts to improve patient's knowledge about their treatment.

To prepare the health care workforce for these responsibilities, IOM recommends that we restructure clinical education of health professionals to be consistent with the principles of the 21st Century health system and assess the implications of these changes for provider credentialing programs.

How Have Our Educational Programs Evolved to Prepare Pharmacy Graduates to Face These Challenges?

The Doctor of Pharmacy (PharmD) degree has evolved as the entry-level requirement for pharmacists in the United States in response to these transitional needs in practice. In Ohio, and throughout the country, pharmacy students are now engaged in doctoral level training of a broader scope and greater depth than was possible in previous Baccalaureate programs. At the Ohio State University, our entry-level PharmD has been established in a graduate-professional model, with most of our students completing a Bachelor's degree prior to matriculation. We have done this to position our graduates as equal players on a health care team in which most other practitioners have been educated in a similar manner. We also do not wish to circumvent undergraduate liberal education. Our PharmD students spend four academic years taking courses in human physiology and pathophysiology, medicinal chemistry and pharmacognosy, pharmaceutics, pharmacology, and a variety of content in pharmacy practice and administration. Key changes in our new PharmD curriculum (as compared to the BS in Pharmacy) include:

- expansion of required pharmacology and therapeutics courses to six quarters each (two full years);
- expansion of required management coursework to four quarters;
- expansion of professional experience program rotations to 11 months (beginning with part-time introductory and intermediate experiences in years one and three, and concluding with nine months of full-time advanced practice rotations in year four).

Our didactic and experiential instruction is aimed at preparing generalist practitioners who are prepared to practice in any pharmacy environment. As an example, our Professional Experience Program rotations utilize a comparable number of
community/ambulatory and institutional sites (as well as elective offerings). Our alumni also continue to practice in a variety of settings upon graduation. For the Class of 2003, 47 percent took community pharmacy/ambulatory care positions, 14 percent took hospital positions, 31 percent entered residencies (including institutional as well as community based training), and 8 percent took other types of positions.

Our Nontraditional PharmD program provides an opportunity for practicing pharmacists with the BS in Pharmacy degree to upgrade their skills and credentials for rendering pharmaceutical care. The first graduates of this program took their degrees in 2003, and we currently have 82 students enrolled. This curriculum is delivered in a web-based format, and our's was the first distance-learning degree program at Ohio State.

The academy also endeavors to meet the unmet needs of patients through our scholarship, and the research enterprise at Ohio State continues to thrive. Our graduate-research programs (MS/PhD) enroll approximately 100 students, and Ohio State's faculty received over $8 million in grant support during 2002 and authored 170 referred publications.

Ohio State's pharmacy practice enterprise has also expanded to provide enhanced service to patients and opportunities for student experiential training. In addition to our long-standing strength in institutional practice and educational activities through traditional community pharmacies, we have developed community/ambulatory sites through our University Health Connection (an interdisciplinary primary care clinic located in the College of Pharmacy), Kroger's Patient Care Center, the Columbus Neighborhood Health Centers, and the Columbus VA Outpatient Clinic. These sites model pharmaceutical care practices, develop reimbursement mechanisms, provide clinical training for PharmD students, and host community practice residents.

Conclusion

The "unmet needs" of patients in the U.S. medication use process result in substantial human and fiscal costs. Clearly, the implementation of enhanced pharmaceutical care models could help us meet these unmet needs in our health care system, and our educational programs have evolved to better position pharmacy graduates to do so. At the Ohio State University, through our teaching, research and service efforts, we are striving to prepare our graduates to meet these needs in the 21st Century health care system.

References


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