Council of Faculties Chairman's Section

Economic and Social Perspectives on Educating the Theoretical Pharmacy Graduate

William F. McGhan

Philadelphia College of Pharmacy and Science, 600 South Forty-Third Street, Philadelphia, PA 19104-4495

INTRODUCTION

There is an inextricable link between the value of pharmacy educators and the value of what pharmacy graduates do for society. Now I am not measuring value simply by monetary success, and I am very proud of the fact that opinion polls in the last several years have ranked pharmacy on the top followed by clergy. It may be that the public gives high marks to pharmacists next to clergy because pharmacists and clergy serve the public well without high remuneration. As pharmacy faculty, we should periodically evaluate ourselves on how our teaching, scholarship and service activities contribute to the social and professional outcomes generated by our former undergraduate and graduate students. For the substantial economic investment in their education, pharmacy graduates are often not a fully utilized resource in the delivery of pharmaceutical care and health care. One can certainly expect gaps in graduates' achievements versus their education, and faculty are criticized unduly for overtraining (or training for the future) instead of training for today. Pharmacists are the most accessible of all health professionals, and we should train them for many possible health roles. It has been estimated that every two and one-half weeks, the number of patient visits in the nation's pharmacies equals the population of the entire United States. The concepts of clinical pharmacy and pharmaceutical care began expanding when it was realized that an increasing number of drugs were being used inappropriately and causing serious adverse drug effects. Pharmacists have extremely important roles to play in reducing drug related morbidity and mortality which has recently been estimated to cost society $76 billion dollars per year(1). With the growth of automation, technicians and prepackaging there continues to be a precipitous drop in pharmacy prescription compounding. These practice changes provides fantastic opportunities for more direct patient contact and care. Pharmacy education has a critical role to play in maximizing the societal benefit of the pharmacy graduate. To analyze these societal benefits, various evaluative tools are available(2). There are several sociologic and economic principles often applied to the health professions and these principles can be useful in evaluating the pharmacy graduate's roles in patient care and society's well-being.

SOCIAL PRINCIPLES

Authors in the nursing literature have suggested very assertive theories for the professions(3) They have defined the term theory as "a conceptual system, model, or framework created to attain some societal purpose." This assertive perspective would suggest that practice theory should go beyond the usual predictive theory, to theory at the highest level, namely situation-producing theory. In this context, we are not bound to defining what pharmacy currently is through consensus, but we are free to be more creative and assertive in shaping pharmacists' and patients' realities. As expressed in some nursing literature, a professional is a doer who continually improves reality rather than a technician who tends reality according to currently accepted patterns.

Many authors and reports have posited various directions for the pharmacy profession. Francke said we should separate pharmacies from drug stores and Brodie suggested that we should be involved with drug-use control(4). Hepler and Strand have stated that we have a covenant with the public and that, in addition to performing information functions, we must accept responsibility for the appropriate use of drugs and patient outcomes(5). These approaches relate primarily to pharmacy practice but there are also broader concepts which faculty might consider for a wider array of pharmacy graduates.

THE THEORETICAL PHARMACY GRADUATE: AS THE INTERFACE BETWEEN MANKIND AND PHARMACEUTICALS

To better understand the type of theoretical model that I advocate, one should visualize the relationships between the professions and society as depicted in Figure 1(6,7) The priest is responsible for

serving mankind (*i.e.*, human beings or the public) as the interface between mankind and the spirit; the teacher or professor is the interface between mankind and knowledge; and the lawyer is the interface between mankind and mankind (mediating disputes). All the health professionals are the interfaces, or catalysts, between humanity and health. The physician is often depicted as the interface between humanity and disease. Nursing and other professions have been critical of physicians' apparent preoccupation with disease, and nurses have been asserting themselves as the interface between human beings and health with regard to restoration, maintenance, and promotion of wellness. That territory is quite broad and nursing now has its own set of nursing diagnoses. Teamwork can still be a crucial force in this network of professionals, and the consumer (as the center of the model) is becoming recognized more often as the proverbial captain of the team with the right to say yes and no and be more involved in every care decision.

So now, where do pharmacy graduates fit among these models? This simple, or parsimonious, theoretical model applied to pharmacy is that pharmacy graduates are the professionals who serve as the interface between human beings and pharmaceuticals. Extrapolation from this unadorned model can mean that ultimately pharmacy graduates should be involved in all phases of therapeutic drugs from research, discovery, scholarship, manufacturing, distribution, consulting, educating, prescribing, prevention and diagnosis. I realize that this may sound idealistic, but it is a framework for the situation-producing, self-actualizing theory that is possible for pharmacy now and in the future. From this type of model the opportunities should also be great for our involvement in genetic therapies, drug delivery devices, even substance abuse problems and biotechnology.

I believe that using the word prescribing for pharmacists is appropriate. Now if I told you that pharmacists everyday are actually, by definition, prescribing OTC drugs for patients, you may not be too bothered by that terminology. But if I tried to suggest to you that logically pharmacists should be performing a diagnosis as part of these nonprescription decisions, many pharmacists might rather not use that term. You probably would admit that pharmacists who consult with the patient and then recommend a nonlegend drug are at least confirming a patient's diagnosis.

The Family Medical Guide of the American Medical Association has stated that patients will be able to perform self-diagnosis using the book(8). Why should organized medicine be bothered if pharmacy uses this text or more sophisticated books or computer programs to thus diagnose minor ailments and prescribe for patients? Although only a few states currently allow pharmacist prescribing, the door is certainly wide open for pharmacy roles with nonprescription drugs and self-care.

There have been studies demonstrating that pharmacists can recommend and prescribe drugs safely and effectively and I hope that pharmacists will continue to expand this activity for society(9-11). Just because we include prescribing and diagnosing in our theoretical model does not mean every pharmacist has to do it every day. I realize that there may be an adequate supply of physicians in most areas of this country, so along with other factors such as not enough technicians to help us with dispensing right now, I do not expect that every pharmacist will be moving into the prescribing role any more than every physician performs surgery every day. However, I do believe, that, like nursing, we should not be afraid to creatively define our profession within the context of theories of high aspirations and maximal contributions for the patient. These ideas should assist us in the exploration and understanding of the tremendous potential of pharmacists and pharmacy graduates.

PRODUCING REALITY

As emphasized in the nursing literature. Isaac Newton's genius was not necessarily in gathering additional data, but in developing a scientific vocabulary (such as force and mass) in which observations could be interpreted and shared. Thus pharmacy should not

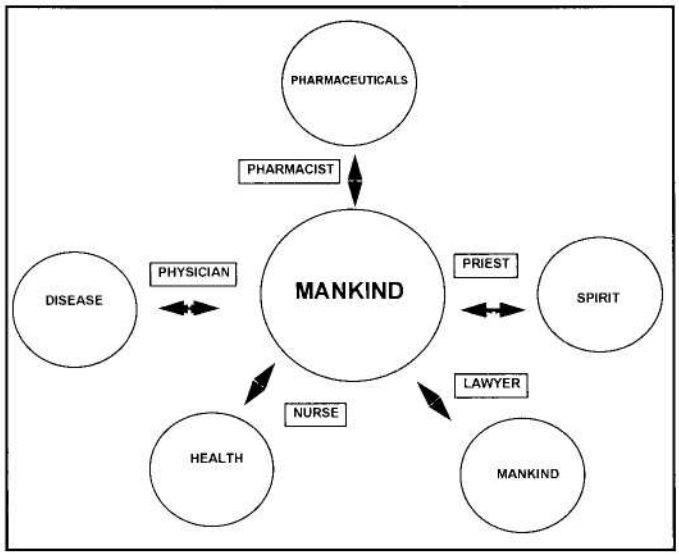

Fig. 1. The theoretical pharmacist and the societal interface between mankind and pharmaceuticals and the relationships of other professions. Note: From this model a pharmacy faculty's responsibility would be to train pharmacy graduates for patient care, research, manufacturing, compounding and all societal needs related to the discovery, distribution and use of pharmaceuticals. Pharmaceut icals include drugs, vaccines, biological products, gene therapy, and drug-related devices.

be afraid to use a vocabulary for our roles like prescribing and diagnosing that all consumers, health professional, and policy makers understand.

Has this direct approach to terminology worked for nursing? Has this situation-producing, self-actualizing theory approach worked for nursing? Just consider that nurses have made good progress in moving further away from being the handmaidens of physicians. They now have a center for nursing research at NIH. In more than a dozen states, pharmacists are filling prescriptions written by nurses with prescribing privileges.

It does not perturb me if someone claims that with this theoretical model of mankind-pharmacist-drug, we are moving too close to physicians; because physicians' roles can be so broadly defined, all health professionals and self-care consumers could be accused of practicing medicine. Actually nursing has an expression that should help you think more about the patients and worry less about what physicians think about us. Assertive nursing leaders have a provocative slogan, "If you strive to equal any other profession, you lack ambition." Now when I think about that phrase, I still certainly value other health professions very highly. The phrase reminds me, however, that I want to do what is best for the patients and not to feel intimidated by any emotion or territorial remarks that other professionals might generate.

I agree with Schondelmeyer, who has asserted that cost-effectiveness should determine who provides the services(12), and I believe pharmacists function at lower cost and can be more effective than other professionals in the management of drug therapy. Long-term care settings have been ideal for demonstrating pharmacist's competence in essentially prescribing drugs based on the physicians' diagnoses.

PHARMACY'S SOCIAL OBJECT: TO OPTIMIZE THE BENEFITS OF PHARMACEUTICALS FOR SOCIETY

Many sociologists assert that the true professions control certain social objects. Some pharmacists have said that mandating social control and roles like counseling is not professional, but I do not think we should be fearful of mandating our services and at least we need to be allowed to carry out expanded clinical duties under state laws. Nursing and medicine have mandated many of their functions through regulations and laws, thus creating substantial control of

Table 1. Costs And benefits of pharmacy education

Inputs (Faculty)	Outputs (Pharmacist practitioners and researchers)	Societal benefits (Patients)
Salary	Competence	Deceased morbidity & mortality
Training	Skill	Improved therapy
Equipment & Supplies	Knowledge	Fewer adverse reactions
Text and References	Motivation	Increased productivity
Technology	Confidence	Satisfaction & Quality of Life
Facilities		Increased cost effectiveness of care
		Improved patient access to care

Table II Pharmacy graduates potential benefits to society by area of practice

	Prevention and screening	Acute illness	Chronic disease	Research and scholarship
Community Pharmacy	High	Moderate (may need physician diagnosis)	High (often diagnosis has been made by physician)	Moderate (unless part of data network)
Medical Clinic (group practice)	High	High	High	High
HMO, Managed Care	High	High	High	High
Acute-Care Inpatient	Low	Moderate (may need physician)	High (especially readmissions)	High
Long-Term Care	Low	Low	High	High
Home Care	Low	Moderate	High	High

Note: All the practice settings above could be more highly beneficial for research if they are part of a health data network. Other practice areas to be considered in this table would be government, industry, associations, academia, etc.

various domains for them selves. As an example, with the availability of less expensive blood serum analyzer, patients should be allowed to obtain more laboratory tests in pharmacies.

ECONOMIC CONSIDERATIONS

Our mankind-pharmacist-pharmaceutical model is compatible with Brodie's concept of drug-use control, which suggests that pharmacists' role in society is to control the distribution and use of drugs. The control aspect of our theory of pharmacy can be translated to economic parameters. Physicians control about 20 percent of health-care expenditures spent on physician's services, and they certainly control a good amount of the 40 percent spent for hospital care. Nurses and pharmacists are involved a great deal in the 8-10 percent of health-care dollars spent in long-term care. Drugs and sundries represent about seven percent of the health-care expenditures in this nation, or approximately $70 billion(13). One might ask how much of this $70 billion do pharmacists actually control right now? In the long-term care arena, Kidder's analyses found that pharmacists are responsible for the control of much of drug expenditures(14). Although high cost drugs are often criticized, the social benefit of many drugs has been shown to exceed the costs. A goal for pharmacy educator's would be to increase pharmacy graduates' involvement attaining positive patient outcomes through appropriate use of drugs—which means increasing the positive effect that drugs have for society.

It is felt by many individuals, most of them outside the pharmaceutical industry, that industry should more strongly support pharmacists' increasing involvement in drug therapy because pharmacists can increase the safety and cost-benefit of industry's products. Although pharmacists are often cited as reducing the number and cost of drugs (such as in long-term care) I feel that pharmacists need to become more involved in increasing the use of drugs where undertreatment and noncompliance are problems, such as vaccinations, hypertension, diabetes, and hyperlipidemia.

Allowing pharmacists to prescribe even a third class of drugs could be of great benefit to patients. From an economic point of view, Temin and others have presented some interesting arguments on the possibility of moving various prescription agents to OTC status, such as hydrocortisone, thiazides, and even penicillin. He estimates that consumers have saved over $400 million after topical hydrocortisone was moved to OTC status. These calculations were based on 1981 data with consumers saving $30 for the average dermatologist's fees and $10 for the value of the consumer's time to see a physician(15).

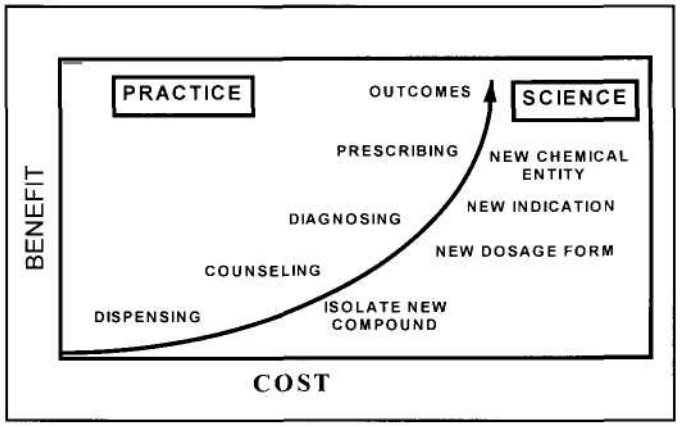

Fig. 2.Hypothetical cost-benefit matrix as targets for pharmacy education.

Each of these socio-economic concepts has implications for pharmacy education. If pharmacy is advocating greater efficiency in health care by allowing pharmacists to prescribe drugs, pharmacy will have to continue to increase the use of technicians to potentially improve the efficiencies in the dispensing process. It does appear that, for professional functions, pharmacy is moving toward more advanced training requirements and as for handling

technical functions, we do have pharmacy technician programs and increasing developments in automation and robotics. Certainly there are many people who say that technical dispensing functions will not need to be done by pharmacists in the future, and, therefore, pharmacy must expand its professional activities, such as counseling and prescribing,.

Two physician authors in separate books have written that, in the future, physicians will not need to be involved in direct patient care and they, instead, will become health care managers working with sophisticated technology and other health professionals(16,17). Nurses are already playing an increasing role in prescribing(18).

We could add some extra parameters to this mankind-pharmacist-drug theory. An assumption is that not all pharmacy graduates will want to prescribe and pharmacy will become more specialized. Certainly we specialize already around the roles we perform as educators, researchers, manufacturers, or managers. For now, pharmacy still has a great deal more it can do to maximize its patient care roles related to appropriate drug use, monitoring and distribution. In the future, pharmacy will become more involved in the turf struggles among physicians, nurse practitioners, optometrists, and others over roles in dispensing, prescribing and diagnosis.

Beyond this mankind-pharmacist-pharmaceutical model, consider the futuristic question of how should pharmacy be involved as the professional interface between mankind and the emerging biotechnologies and biomedical devices that may diminish the contribution of traditional pharmaceuticals? How about diagnostic devices and technology that might be used in a pharmacy or at home? And surely pharmacy is already involved with durable medical equipment and some medical technology related to drug assays. Our theoretical model should allow us to consider the pharmacy graduate as the interface between mankind and the evolving biologic technologies.

FUTURE

Pharmacy educators should consider the cost-benefit and cost-effectiveness of the outcomes that pharmacy graduates deliver for society. Pharmacy graduates as practitioners, researchers, primary care givers and prescribers can produce very positive outcomes for society. Table I provides a conceptual list of factors related to costs and benefits that could be associated with various pharmacy education activities. A finding of positive net benefits minus costs does not guarantee the rapid or complete adoption of a service or program by society. There are always competing services that may have a higher net benefit or be more cost-effective. Economic evaluations provide a framework for organizing information about the effectiveness and efficiency of health programs. These evaluations enable the public and administrators to make more enlightened decisions about which service or research programs to support. Table II summarizes various environments and activities, and it suggests the relative values for each situation in the matrix. Figure 2 provides a graph of hypothetical benefits versus costs of various aspects of pharmacy practice and research. Pharmacy faculty and the pharmaceutical professions need to continually examine their present and future roles and evaluate how societal contributions can be enhanced. With these continual theoretical and empiric analyses, pharmacy faculty and pharmacy graduates will have healthy futures.

References

(1) Johnson, J.A. and Bootman, J.L., "Drug-related morbidity and mortality: A cost-of-illness model," *Arch. Intern. Med.,* **155,** 1-8(1995).

(2) McGhan, W.F., "Pharmacoeconomics and the evaluation of drugs and services," *Hosp. Formulary,* **28**, 365-378(1993).

(3) Dickoff, J. and James, P., "A Theory of theories: A position paper," in *Readings in Nursing Research. Approaches to Nursing Research and Theory Development,* Nursing Research, New York, NY (1969) pp. 31-37

(4) Brodie DC. Need for a theoretical base for pharmacy practice," *Am. J. Hosp. Pharm.,* **38**, 49-54(1981).

(5) Hepler, C.D. and Strand, L.M., "Opportunities and responsibilities in pharmaceutical care," *ibid.,* **47**, 533-543(1990).

(6) Brodie, D.C., McGhan, W.F. and Lindon, J., "The theoretical base of pharmacy," *Am.J.Hosp.Pharm.,* **1**, 63-65(1991).

(7) McGhan, W.F., "A theoretical base for the pharmacy profession," *Consultant Pharm.,* (March/April 1988) pp. 145-147.

(8) American Medical Association, *Family Medical Guide,* Random House, New York NY (1990).

(9) Thompson, J.F., McGhan, W.F. and Ruffalo, R., "A comparison of pharmacists and physicians drug prescribing for patient in skilled nursing facilities," *J. Am. Geriatrics Soc,* **32**, 154-159(1984).

(10) Bjornson, D.C., Hiner, W.D., Potyk, R.P., *et al*., "Effect of pharmacists on health outcomes in hospitalized patients," *Am. J. Hosp. Pharm.,* **50**,1875-1884(1993).

(11) MacKeigan, L.M. and Bootman, J.L., "A review of the cost benefit and cost effectiveness of clinical pharmacy services," /. *Pharm. Marketing Manage.,* **2**, 63-84(1988).

(12) Schondelmeyer, S.W., "Strategy to effect change in pharmacy practice," *Am. J. Hosp. Pharm.,* **39**, 2137-2142(1982)

(13) Bonk, R.J., Myers, M.J. and McGhan, W.F., "Drug expenditures in a balanced strategy for healthcare policy," *PharmacoEconomics.,* **7**, 534-542(1995).

(14) Kidder, S.W., "Cost-benefit of pharmacist-conducted drug-regimen reviews," *Consult. Pharm.,* **2**, 394-398(1987).

(15) Temin, P., "Costs and benefits of switching drugs from prescription to OTC," in *Rx to OTC: New Resources in Self Medication....A Symposium,* Proprietary Association, Washington DC (1982).

(16) Maxmen, J.S., *The Post Physician Era: Medicine in the Twenty-First Century.* John Wiley & Sons, New York NY (1976).

(17) Lesse.S., *The Future of the Health Sciences: Anticipating Tomorrows,* Irving Publishers, New York NY (1981).

(18) Cooke, J. and Standing, V.F., "Nurse prescribing: Advantages, disadvantages and future implications," *Pharmaco Economics,* **8**, 1-274(1995).