Charting the Demand for Pharmacists in the Managed Care Era

Katherine K. Knapp

OBJECTIVE: To describe the activities and conclusions of the Pharmacy Manpower Project (PMP) and its Subcommittee to Study Demand Issues.

RESULTS: The PMP evolved out of concerns raised in the late 1980s when the demand for pharmacists exceeded the supply. PMP collects, analyzes, and disseminates data on pharmacy work force variables. PMP's Subcommittee to Study Demand Issues was formed after the publication in 1995 of the Pew Health Professions Commission report projecting dramatic surpluses of pharmacists. In 1996–1997, the PMP subcommittee held a series of sessions to discuss the future demand for pharmacists and their services. The panel identified a wide range of work force projections.

CONCLUSIONS: The PMP subcommittee concluded that medication

management problems in the context of increasing prescription numbers and the emergence of data-driven health care support a scenario of a steadily increasing demand for pharmacists and pharmaceutical services. The data did not show that higher penetration by managed care is associated with smaller pharmacy staffs or job loss in institutions. There is little reason to expect the dramatic downsizing of the pharmacy work force predicted by the third report of the Pew Commission. However, retaining pharmacy roles that are useful to the system and satisfying to pharmacists will require a continuation of current proactive measures by the profession.

KEYWORDS: Pharmacist, Manpower, Workforce, Managed care

J Managed Care Pharm 1999; 324-28

AUTHOR

KATHERINE K. KNAPP, PH.D., is Professor and Associate Dean, School of Pharmacy, University of the Pacific, Stockton, CA.

AUTHOR CORRESPONDENCE: Katherine K. Knapp, Ph.D., School of Pharmacy and Health Sciences, University of the Pacific, Stockton, CA 95211.

ACKNOWLEDGEMENTS: In addition to the author, members of the Subcommittee to Study Demand Issues included Mary Jo Reilly, American Society of Health-System Pharmacists; C. Edwin Webb, American Association of Colleges of Pharmacy; Judith Cahill, Academy of Managed Care Pharmacy; Lucinda Maine, American Pharmaceutical Association; and Fred Paavola, U.S. Public Health Service. The panel members are acknowledged for their contributions to the study. Ms. Reilly and Dr. Webb additionally are acknowledged for organizing the meetings that structured this study.

Supported by the Pharmacy Manpower Project, Inc., Alexandria, VA. Presented in part at the Annual Conference of the Academy of Managed Care Pharmacy, Seattle, WA, October 31, 1997, and the National Association of Boards of Pharmacy Executive Officers Conference, Sanibel Island, FL, November 18, 1997.

This article is being published simultaneously in JMCP, The American Journal of Health-System Pharmacy, and the Journal of the American Pharmaceutical Association with permission of all publications.

Copyright© 1999 Academy of Managed Care Pharmacy, Inc. All rights reserved.

Changes in the economy, health care policies, and public health needs continually affect the ability of pharmacists to find positions and the ability of employers to fill their needs for pharmacists. During periods of apparent oversupply or undersupply, work force issues naturally receive particular attention. The late 1980s was such a period, because the demand for pharmacists exceeded the national supply. During this period, several professional organizations and the Bureau of Health Professions (BHP) forged a consortium to respond to unanswered questions about the pharmacy work force.¹ The consortium, originally called the Pharmacy Manpower Steering Committee, was later incorporated as an independent nonprofit organization called the Pharmacy Manpower Project (PMP). PMP continues to collect, analyze, and disseminate data on the supply of licensed pharmacists in the U.S., the demand for pharmaceutical services, and related pharmacy student and work force variables for educational, scientific, and charitable purposes. Current member organizations are listed in Table 1.

A NATIONAL CENSUS

One of the consortium's first efforts was to coordinate a national census of pharmacists based on licensure data from individual states. The census results, published in 1993, revealed a near-coincidence of BHP projections of pharmacist numbers and census findings.² Although the census report answered the need to assure an accurate estimate of the national supply of pharmacists, PMP faced decisions about maintaining the newly created database. Other health professional groups, including physicians, dentists, physician assistants,

nurse practitioners, and nurse midwives, maintain databases of licensed providers that are regularly updated and include geographic locations. These data explain not only the general availability of providers, but also their availability in specific areas, such as rural settings. Recognizing the importance of providing similar data about pharmacists, PMP is working with the National Association of Boards of Pharmacy to develop an online reporting system to allow state-based boards of pharmacy to provide concurrent data about licensed pharmacists.

SHORTAGE OR SURPLUS?

By the mid-1990s, the shortfall of pharmacists appeared to diminish. During this period, automation and technician use were emerging as new issues, and there was growing awareness that changes in health care, particularly the rapid growth of managed care, were likely to influence the pharmacy work force.

In 1995, the release of the third report of the Pew Health Professions Commission created a shock wave across the health professions by projecting dramatic surpluses of pharmacists (up to 40,000), physicians (100,000–150,000), and nurses (200,000–300,000).³ These projected surpluses were related to the emergence of managed care and the efficiencies that the new system would likely allow and encourage. Although physicians' groups responded vigorously to one quantitative study⁴ cited in the Pew report that related to physician positions,^{5,6} the report's projections for pharmacy reinforced the lack of data about demand for pharmacists. Because the pharmacist projections were not based on quantitative considerations, the task of either validating or refuting these projections was difficult. This realization led to a new effort by PMP to address the issues that are likely to affect demand for pharmacists in the future.

SUBCOMMITTEE ESTABLISHED

In March 1996, PMP formed the Subcommittee to Study Demand Issues, which included representatives of professional associations, academia, and federal pharmacy who were knowledgeable about health care issues and the pharmacy profession. In 1996 and 1997, it held a series of sessions in which issues on the future demand for pharmaceutical services were reviewed, analyzed, and discussed. In 1997 and 1998, the panel's findings, presented here, were reported to the PMP board.

INFORMATION SOURCES

The PMP subcommittee identified three authoritative sources of projections about future demand for pharmacists: BHP, the Bureau of Labor Statistics (BLS), and the Pew Commission. Their projections were surprisingly different.

Bureau of Health Professions

BHP publishes a biennial report, *Health Personnel in the United States*, that describes the status of health professionals.

Table 1. Current Members of the Pharmacy Manpower Project

▲ Academy of Managed Care Pharmacy
▲ American Association of Colleges of Pharmacy
▲ American College of Apothecaries
▲ American Pharmaceutical Association
▲ American Society of Consultant Pharmacists
▲ American Society of Health-System Pharmacists
▲ Bureau of Health Professions
▲ National Association of Boards of Pharmacy
▲ National Council of State Pharmacy Association Executives
▲ National Pharmaceutical Association
▲ National Wholesale Druggists Association
▲ Pharmaceutical Research and Manufacturers of America

The most recent report, released in 1994, describes pharmacists as emerging from a period of short supply to one of balance between supply and demand.⁷ Evidence of short supply in the recent past included above-average growth in earnings and educators' reports that demand exceeded supply. Factors contributing to increased demand include "increased use of prescription drugs, especially among the growing aged population; and pharmacy's expanding role under recent Medicaid regulations requiring review of patient drug use and patient counseling." Opposing these forces is "a trend toward using more pharmacy technicians and robotics to help count and dispense drugs."⁷ The report also notes certain regional imbalances in supply and demand.

Bureau of Labor Statistics

The BLS continually compiles and releases data about the U.S. work force and publishes labor projections by type of position in the *Occupational Outlook Handbook*. The most current edition contains projections through 2006.⁸ The focus on positions rather than provider supply differentiates BLS reports from others and relates more closely to demand.

For pharmacists, BLS predicts about average job growth, which equates to an increase of 10%–20% through 2006.⁸ By comparison, BLS projects the demand for both physicians and registered nurses to be above average (21%–35%) over the same period. The primary factors contributing to increased demand for pharmacists are "increased pharmaceutical needs of a larger and older population and greater use of medication," as well as "the likelihood of scientific advances that will make more drug products available, new developments in administering medication, and increasingly sophisticated consumers seeking more information about drugs." Positions also will grow as "pharmacists consult more and become actively involved in patient drug therapy decision-making." In hospitals, "the increased severity of the typical hospital patient's illness, together with rapid strides in drug therapy, will sustain demand for pharmacists." The report predicts that demand will be reduced by "automation of drug dispensing that allows

Table 2. Mean Numbers of Management/Staff, Resident, and Technician Positions (FTEs) per Institution, 1995

Staff Designation	Managed Care Penetration Level			Significance	r*
	High (n=106)	Medium (n=47)	Low (n=21)		
Management	1.2	1.4	1.8	p=0.441	0.046
Clinical	1.0	1.0	1.0	p=0.998	0.015
Distributive	3.2	2.7	2.2	p=0.729	0.015
Both clinical and distributive	2.6	3.4	4.6	p=0.444	0.059
Resident	0.4	0.2	0.1	p=0.415	-0.039
Technician	5.3	7.4	7.7	p=0.687	0.030
All RPhs: management clinical distributive	8.0†	8.5	9.6	p=0.856	0.054

*Represents the Pearson correlation coefficient between staffing responses and the percent of population covered by managed care in the state of the responding institution for all survey respondents (n=713).

†Differences between column sums and totals are due to rounding.

pharmacists to fill more prescriptions and greater use of technicians.⁸ Overall, the balance between forces supporting growth and forces favoring contraction results in the prediction of average growth.

Pew Health Professions Commission

Over the years, the Pew Health Professions Commission has comprised persons holding leadership positions in diverse areas of health care and government; the commission's activities are funded by the Pew Charitable Trusts. Since 1991, the Pew Commission has issued a series of reports about health care in the United States. In its third report, issued in 1995, the Pew Commission projected a surplus of up to 40,000 pharmacists,³ as well as a surplus of physicians and nurses. Overall, the projections for decreased demand for health personnel were tied to the emergence of managed care and the efficiencies that the new system would allow and encourage. The decreased demand for pharmacists was linked to the use of new technologies in the areas of information, communications, and robotics.

ANALYSIS OF TRENDS

Because forecasts of the demand for pharmacists and their services differ, the PMP subcommittee investigated recent health care trends and examined data to clarify which forecast these data best support. Managed care, which had been identified as a major force in altering demand, became a principal focus in the continuing study of demand issues. Several insights emerged from this analysis.

Growth Pains

Historically, the demand for pharmacists has been linked to annual prescription numbers, which have increased steadily from 2.2 billion in 1994 to 2.6 billion in 1997.⁹ Linking pharmacist demand to prescription growth has been criticized because it does not consider other pharmacist activities, such as cognitive services, that are not directly related to dispensing.

One domain of pharmacy cognitive service that has received

increasing attention in recent years is reducing errors in medication use.¹⁰ The financial implications of reducing medication use errors are significant. An estimated \$76.8 billion was spent on medications in 1995, and an almost equal amount was spent on problems related to medication misuse.¹¹ Since 1992, a substantial number of studies and articles have demonstrated that pharmacists successfully detect and resolve medication-related problems, thereby avoiding errors that could harm patients and increase the cost of care.^{9,11-21} A subset of these publications addresses the ambulatory care setting, where more than 70% of prescriptions by dollar volume are dispensed. However, evidence also showed that community pharmacies' systems, which should provide a valuable checkpoint for identifying prescribing errors, were far from optimal. For example, in August 1996, a lead article in *U.S. News & World Report* highlighted the lack of consistency in detecting prescription-related problems in pharmacies across the United States.²²

Medication error problems are receiving growing national attention. In October 1996, "Examining Errors in Health Care: Developing a Prevention, Education, and Research Agenda," a conference cosponsored by the American Association for the Advancement of Science, the American Medical Association, the Annenberg Center for Health Sciences, and the Joint Commission on Accreditation of Healthcare Organizations included presentations on, but did not emphasize, error issues in both institutional and community pharmacies. At the conference, the American Medical Association announced the launching of the National Patient Safety Foundation, dedicated to fighting health care errors.

Community pharmacies, where two-thirds of pharmacists practice, can be important sites for detecting and resolving medication-related problems.^{9,14,19,20} A recent study suggested that in a capitated, managed care-dominated practice environment, 4% of prescriptions should generate interventions in the areas of: appropriate medication selection (50%), evidence of clinical problems (30%), errors in prescription writing (10%) and patient needs for education and counseling beyond what is legally mandated (10%).⁹ The same study

Table 3. Mean Numbers of FTE Changes Per Institution, 1995–1996

Staff Designation	Managed Care Penetration Level			Significance	r*
	High (n=106)	Medium (n=47)	Low (n=21)		
Management	–0.1	0.0	0.0	p=0.645	–0.003
Clinical	0.1	0.0	0.1	p=0.836	–0.033
Distributive	0.2	0.0	0.0	p=0.164	–0.012
Resident	0.0	0.0	0.0	p=0.602	–0.006
Technician	0.1	–0.2	0.0	p=0.134	–0.005
All other staff	0.0	–0.2	–0.1	p=0.310	–0.017
Total changes	0.4†	–0.3	–0.1	p=0.250	–0.024

*Represents the Pearson correlation coefficient between staffing responses and the percent of population covered by managed care in the state of the responding institution for all survey respondents (n=713).

†Differences between column sums and totals are due to rounding.

showed that medication-selection interventions resulted in a 65.8% saving on average in prescription costs. Other studies have estimated the financial impact of resolving medication problems and thus avoiding the use of urgent care, emergency department services, or hospitalization.^{19,20} In all these studies, prescribers accepted a very high percentage of pharmacists' recommendations for change, suggesting that pharmacists can and do identify valid problems and offer valid solutions. Overall, the findings suggest that managed care organizations (MCOs), because of unresolved problems related to medication use, will show increasing interest in programs to improve such use and that these attempts are likely to involve pharmacists.

MCO demand for pharmaceutical services increases

A recent report identified growing numbers of MCOs that are reimbursing pharmacists for cognitive activities.²³ Surveyed plans projected that in 1999 MCOs will provide pharmacists financial incentives for adherence to a formulary (20%), switching to appropriate drugs (20%), adhering to disease management guidelines (8%), and patient education (12%). Pharmacy benefit management companies (PBMs) support the feasibility of implementing these pharmacy-based services for health plans or employers by creating pharmacy networks. The network infrastructure allows such plans to reach large population groups and geographic areas. Survey data revealed that MCOs and employers support PBM-based programs that include reimbursement for formulary management, compliance, prior authorization, physician and patient education, and outcomes management.^{9,23}

Data-driven health care

Data collection and analysis increasingly drive cost containment and improved patient outcome efforts in MCOs. Analysis has shown that a small percentage of patients account for a large percentage of costs.

Once an MCO identifies a population within its membership (e.g., Medicare patients), it can develop special programs that address that population's special needs, particularly focusing

on members with the highest utilization of resources. For example, high-utilization members may be assigned a case manager who can take steps to reduce the most intensive use of resources, usually hospitalization. Members at lower utilization levels will be offered programs to maintain their health and keep the level of utilization (such as physician office visits) at a minimum. Levels of care will emerge within special populations, and many are likely to have a pharmacy component. Pharmacists are likely to find themselves in new teams and relationships, working with nurse case managers, primary care physicians, and physician specialists to manage the care of special patient groups.²⁴

Another impetus for data collection and analysis is the health plan accreditation process. To achieve an accredited status, primarily through the National Committee for Quality Assurance or the Joint Commission on Accreditation of Healthcare Organizations, health plans must demonstrate performance outcomes for members in a number of categories.²⁵ Typically, these assessments require integration of data from several sources, including the patients' medical records, ambulatory care encounter records, PBM claims data, and health plan claims data for hospital and emergency department use.

Pharmacies have the advantage of access, data, an existing facility for participating in these programs and activities and, more recently, pharmacy networks. Populations that are traditionally heavy users of health care resources often visit pharmacies frequently to refill medications and replenish medical supplies. These visits offer opportunities for assessment and monitoring—for example, weight, blood pressure, and blood glucose checks—that can prevent or supplant physician office visits. Medication claims data generated in community pharmacies often are useful in identifying patients with particular medical conditions who can benefit from special programs. The pharmacy itself can be considered an ambulatory care clinic where additional care can be delivered.^{24,26} Data-driven health care is likely to increase the use of pharmacies as ambulatory clinic facilities and of pharmacy data for analytical and reporting efforts.

Institutional Settings

The American Society of Health-System Pharmacists provided the PMP subcommittee with data from its annual survey of hospitals for 1996.²⁷ From this database the subcommittee determined the mean institutional pharmacy staff size, both overall and by position type for each state in 1996, and the mean number of position changes (measured as full-time equivalents [FTEs]) for each state. In a separate exercise, the 50 states were ranked by the percentage of the population participating in a managed care health plan.²⁸ The five states with the highest penetration of managed care were Massachusetts, New Hampshire, Oregon, California, and Minnesota, with 44.2% penetration. The five states with the lowest penetration were West Virginia, Idaho, North Dakota, Montana, and Mississippi, with 3.5% penetration. Vermont, Utah, Ohio, Virginia, and Nevada ranked around the median for all states with 20.7% penetration.

The relationship between managed care penetration and institutional pharmacy positions was examined under the null hypotheses that managed care penetration is not related to pharmacy staff size and is not related to changes in the number of jobs. One-way analysis of variance was used to test these hypotheses in the three groups of five states. The *a priori* level of significance was set at 0.05. Table 2 shows the results for pharmacy staff size, and Table 3 shows the results for changes in FTEs. Both null hypotheses were rejected.

To include responses from all states, Pearson correlation coefficients were determined for each staff category in Tables 2 and 3 between survey responses (n=713) and percent penetration into the responding institution's state. All correlations were in the range of -0.1 to 0.1, suggesting no relationship between the variables. It was concluded that the continued expansion and penetration of managed care did not necessarily portend a permanent downsizing of the pharmacy work force in institutions. A similar exercise for the ambulatory care pharmacy setting (especially community drugstores) would be useful to the further study of demand for pharmacists.

CONCLUSION

The results of the PMP subcommittee's work suggest that pharmacy has little reason to expect the dramatic downsizing of the work force predicted in the third report of the Pew Commission. The evidence points instead to a steadily increasing demand for pharmacists and their services. However, retaining roles that are useful to the system and satisfying to pharmacists in a changing system will require that pharmacists continue to take proactive steps. Pharmacists must continue to prove their worth by documenting interventions, participating in population-based patient management programs, facilitating the compilation of data, adapting to new relationships with other providers, and improving patient outcomes. Pharmacists must also improve the consistency of their performance across the work force.

References

1. Knapp KK. Pharmacy manpower: implications for pharmaceutical care and health care reform. *Am J Hosp Pharm*. 1994; 51: 1212-20.
2. Pharmacy manpower project: state and national survey reports. Ann Arbor, MI: Vector Research, 1993.
3. Pew Health Professions Commission. Critical challenges: revitalizing the health professions for the twenty-first century. San Francisco: UCSF Center for the Health Professions, 1995: v.
4. Weiner J. Forecasting the effects of health care reform on the U.S. physician workforce requirements: evidence from HMO staffing patterns. *JAMA* 1994; 272: 222-30.
5. Goodman DC, Fisher ES, Bubolz TA, et al. Benchmarking the U.S. physician workforce. *JAMA*. 1996; 276: 1811-17.
6. Kletke PR. Physician workforce requirement under health system reform: a critical review of a recent analysis by Jonathan Weiner. Chicago: American Medical Association, 1994.
7. Health personnel in the United States. Washington, DC: U.S. Department of Health and Human Services, 1994; DHHS publication no. HRS-P-OD-94-1.
8. Bureau of Labor Statistics. 1998-1999 occupational outlook handbook. Washington, DC: U.S. Department of Commerce, 1998.
9. The chain pharmacy industry profile 1998. Alexandria, VA: National Association of Chain Drug Stores; 1998: 40-47.
10. Knapp KK, Katzman H, Hambricht JS. Community pharmacist interventions in a capitated pharmacy benefit contract. *Am J Health-Syst Pharm* 1998; 55:1141-45.
11. Johnson JA, Bootman L. Drug-related morbidity and mortality. *Arch Intern Med* 1995; 155: 1949-56.
12. Manasse HR Jr. Medication use in an imperfect world: drug misadventuring as an issue of public policy, part 1. *Am J Hosp Pharm* 1989; 46: 929-44.
13. Lesar TS, Briceland LL, Delcours K, et al. Medication prescribing errors in a teaching hospital. *JAMA* 1990; 263: 2329-34.
14. Rupp MT, DeYoung M, Schondelmeyer SW. Prescribing problems and pharmacist interventions in community practice. *Med Care* 1992; 30: 926-40.
15. Leape LL. Error in medicine. *JAMA* 1994; 272: 1851-57.
16. Leape LL, Bates DW, Cullen DJ, et al. Systems analysis of adverse drug events. *JAMA* 1995; 274: 35-43.
17. Bates DW, Boyle DL, Vander Vliet MB, et al. Relationship between medication errors and adverse drug events. *J Gen Intern Med* 1995; 10: 199-205.
18. Prescription drugs and the elderly. Washington, DC: General Accounting Office, 1995 Jun.
19. Fincham J, Hospodka R, Scott D. The true value of pharmacist care. *NARD J* 1995; 117 Mar: 29-32.
20. Fincham J, Hunter J. Documenting the worth of pharmacist care. *NARD J* 1996; Apr 29-32.
21. Panel to Identify Actions for Prevention of Adverse Drug Events. Top-priority actions for preventing adverse drug events in hospitals: recommendations of an expert panel. *Am J Health-Syst Pharm* 1996; 53: 747-51.
22. Headden S. Danger at the drugstore. *US News & World Rep* 1996; 28 Aug: 46-52.
23. Novartis pharmacy benefit report. East Hanover, NJ: Novartis, 1998: 17-18, 21-23.
24. Managed care group uses JNC VI to identify high risk patients. *Manag Healthc News* 1998; 14(7): 35.
25. O'Malley C. Quality measures for health systems. *Am J Health-Syst Pharm* 1997; 54: 1528-35.
26. Berg SZ. Pharmacists ditch old roles. *Manag Healthc News* 1997; 13(10): 1, 16-7.
27. Reeder CE, Dickson M, Kozma CM, et al. ASHP national survey of pharmacy practice in acute care setting-1996. *Am J Health-Syst Pharm* 1997; 54: 653-69.
28. Managed care digest series: HMP-PPO digest 1996. Kansas City, MO: Hoechst Marion Roussel, 1996.