THE CENTER
FOR THE HEALTH PROFESSIONS
University of California, San Francisco

Pharmacy staffing: A silent but critical concern

Tina McRee

Pharmaceutical policy issues have become everyday news in the United States where drug costs as a percentage of health expenditures more than doubled 1993-2000 to $112.1 billion (8.5 percent of health costs in 2000), and the number of prescriptions dispensed in ambulatory settings increased 44 percent from 1.9 billion to 2.8 billion between 1990-98 (HRSA Bureau of the Health Professions, 2000a). Advances made in drug therapies and technology, the shear number of prescriptions being written for American consumers, and concerns about aging patients likely to increase pharmaceutical usage has severely impacted the dynamics of supply and demand for pharmacy-related workforces.

In California and the nation, although the headcount of licensed pharmacists has outpaced general population growth, the demands for pharmacy services and changing character of pharmacists' work has put pressure on this workforce that is unlikely to be relieved for up to two decades. A recent national survey of hospitals indicated that 94 percent of respondents perceived a shortage of pharmacists in their area, 70 percent believed the shortage was severe; half of the hospitals reported vacancies, with 43 percent reporting vacancies higher than 5 years ago (Dunn, 2000). HRSA (2000a) found that the number of hospital pharmacy managers reporting higher vacancy rates and difficulty to hire quadrupled in 1998-99 alone. Safety net providers reported even greater difficulty with average vacancy rates of 11 percent. Thirty-three percent of safety net providers reported time to fill pharmacist vacancies between 6-12 months with 18 percent reporting over 12 months. HRSA (2000a) found that the most common response to pharmacist shortages was limiting services, however additional studies have found that shortages are resulting in increased job dissatisfaction and stress, fear of increased errors, inability to monitor patient compliance and health outcomes for at risk populations and critical vacancies in academic training programs as a result of competitive hiring by private dispensing and insurance organizations.

There is a widely-held perception that chain drug stores lure pharmacists away from public sector work, although data through 1999-00 do not support this. In fact, the expansion of pharmacy services into supermarkets and large retail stores (i.e., Wal-Mart, Kmart, etc.) has had the most effect on competition. These employers not only pay an average of $6000 per year more than hospitals, but also provide services for up to 24 hours per day, increasing the demand for number of staff. While the number of pharmacists employed in government and health services positions increased by between 1.3 percent and 2.6 percent from 1990-98, the overall number of pharmacists employed by drug stores declined by 7 percent (HRSA Bureau of the Health Professions, 2000a). During this same period, pharmacists employed by supermarkets and general merchandise stores increased by 3.2 percent and 1.4 percent respectively. Both in a UCSF Center for the Health Professions study of California's public hospitals and community clinics (Dower, McRee, et. al., 2002) and the federal government's look at the pharmacy workforce (HRSA Bureau of the Health Professions, 2000a), anecdotes describing

signing bonuses of up to $10,000, cars, and other premium perks abounded. With an average national salary of $62,510, it is easy to understand why private employment bonuses would attract staff away from public sector jobs. Nationally, about 30 percent of pharmacists are employed in health service settings: including 24 percent in hospitals, 3.8 percent in long term care, and 2.4 percent in home health care. Between 1998-00, long term care pharmacy employment grew 11 percent while hospital employment declined, and there was a 5 percent increase in home care programs providing pharmacy services.

Trends in pharmacy employment in hospitals indicate that a further pressure on public sector employment for pharmacists is the staffing decisions being made by hospitals themselves. Bond and Raehl (2000) found that while overall hospital employment increased by 13 percent between 1989-98, there was a 23 percent decline in hospital pharmacist staffing. During the same period, the increase of pharmacy technician and clerk positions rose 43 percent and 25 percent respectively. The authors of the study speculated that cost concerns shifted hiring priorities for hospitals, although several studies have indicated that increasing pharmacist involvement in clinical teams (particularly with in-service education, drug information, drug protocol management and medication admission histories) can lower drug costs and improve health outcomes for patients (Bond & Raehl, 2000; Cohen, March/April 2002; McCombs et al., 1998). Citing the expanded scope of care provided by pharmacists in public and private settings, HRSA (2000a) agreed that evidence supports the need for more pharmacists in direct patient care. Health administrators and policy makers must begin to evaluate the use of pharmacists in patient care settings based on an understanding of their work qualifications beyond simply dispensing tasks.

Pharmacist work patterns[1]

Across the U.S., over 55 percent of pharmacists work in community pharmacy settings. Of these, the largest percentage work in chain drug stores (25 percent); nearly 25 percent work in hospitals, about 14 percent in other community pharmacy settings, and just over 13 percent in independent pharmacies. Other settings where pharmacists work include HMO's, long-term care facilities or home health care, mental health settings and prisons.

Average full-time hours for pharmacists in the U.S. is 42 hours per week. While about 14 percent of pharmacists work part time (average 21 hours per week), about 13 percent of part- and full-time pharmacists moonlight – contributing around 10 hours per week - meaning that over 30 hours per week of pharmacy services are provided by part-timers and moonlighters. This high rate of supplemental hours is somewhat unique among the major health professions and merits further study. Nearly 31 percent of pharmacists working part-time are employed by independent pharmacies. Among full time pharmacists, the most common second job was in hospitals (29 percent), less than 11 percent was in chain stores. Although the proportion of pharmacists working in chain stores dropped between 1995 and 2000, from 24.8 percent to 23.3 percent, those working in independent pharmacies plummeted from 19 percent to 16.5 percent (HRSA Bureau of the Health Professions, 2000a).

Salary variability and mean weekly work hours have narrowed steadily since 1969 (Shih, 2000). This means that regardless of

[1] There is limited data about the California pharmacy workforce that would enable similar analysis of work settings and practice patterns although the challenges of this important workforce merit further study.

Rural areas suffer greater shortages

Smaller economies of scale, including fewer and less variety of care delivery sites and fewer physicians in an area to prescribe treatments, results in a greater pharmacy workforce challenge for rural areas. The age and income of rural patients tends to make many health services less cost beneficial. The proportion of rural residents over age 65 is 15 percent compared to 12.8 percent in metropolitan areas. There is also higher chronic health and age-adjusted mortality in rural areas, and income and insurance coverage is lower. These socio-economic factors create an inverse relationship between the cost of staffing and salary levels in rural areas, putting rural pharmacies at a competitive disadvantage to recruit from urban areas. Also, the decline in independent pharmacies and solo employment nationally has impacted rural areas more where these have been the primary modes of employment. Sadly, economic dynamics mean that rural communities are more likely to see their local pharmacy close than to be able to replace a pharmacist who retires or dies. If supermarkets and discount stores do not replace these pharmacies, there will be lack of service in many rural areas. (HRSA Bureau of the Health Professions, 2000a)

work hour status and female participation in the profession, wages have equalized and increased while work hours per week are less variable for all pharmacists (Midwest Pharmacy Workforce Research Consortium, 2000). Across the U.S., about 46 percent of pharmacists are women.

Between male and female pharmacists, there are different work patterns. Male pharmacists are nearly twice as likely to work outside pharmacy, while female pharmacists are over twice as likely to work part-time. A higher proportion of female pharmacists are employed in hospitals. About 12 percent of licensed pharmacists not working in health care (HRSA Bureau of the Health Professions, 2000a).

Pharmacy as an innovator in gender and ethnic diversity?

Pharmacy, the third largest health profession in the United States, could be a model for increasing female workforce participation while countering feminization of a profession (a condition where salaries drop as female participation increases). The number of women in the pharmacy workforce continues to grow - in 2000, 46 percent of pharmacists were women, yet salaries in the profession have increased due to the competition for workers (HRSA Bureau of the Health Professions, 2000a; Shih, 2000).

There is further work to be done in terms of expanding racial and ethnic representation in the profession. In 2000, African American graduates of pharmacy programs totaled 7.9 percent and 21.3 percent for Asian/Pacific Islander Americans, while Latino or Hispanic graduates comprised only 2.7 percent (American Association of Colleges of Pharmacy, 2002). California produces a higher percentage of female pharmacy graduates than other U.S. states, and three times the number of Asian/Pacific Islander American pharmacy graduates, while graduating just over a third the number of White graduates and only 6 percent as many Black graduates as the rest of the country (American Association of Colleges of Pharmacy, 2002; California Board of Pharmacy, 2001).

Pharmacy in California

The ratio of pharmacists per 100,000 population in California dropped sharply through the 1990s, likely as a result of rapid population growth (California Board of Pharmacy, 2001; California Department of Consumer Affairs - Public Information Unit, 2002; California Economic Development Division - Labor Market Information, 2001).

Ratio Pharmacists per 100,000 population, U.S. and California, 1973-1998			
	1973	1991	1998
CA	52.8	70.9	51.3
US	54.7	68.1	65.9

Source: HRSA, 2000a; HRSA, 2000b

California active, licensed pharmacists	
1998	25,922
1999	26,243
2000	26,744
2001	27,389

Source: California Department of Consumer Affairs, Public Information Unit, 2002

Yet, California (and Florida) is further disadvantaged at recruiting pharmacists educated out-of-state because it requires a separate unique licensing exam (HRSA Bureau of the Health Professions, 2000a). In 2001, first-time pass rate among California graduates for this exam was only 60 percent. After up to four attempts, only 41 percent of out-of-state graduates passed the California exam, as did 80 percent of California graduates (California Board of Pharmacy, 2001). In the HRSA study, expansion of reciprocity was indicated as a possible intervention to ameliorate regional shortages; elimination of the additional state exam in California could bring over 400 additional pharmacists per year into the workforce[2]. Within the past two years, two bills (California Assembly, February 20, 2002; California Assembly, January 18, 2001) have been introduced in the California legislature to address the issue of pharmacist licensing reciprocity, each has been withdrawn or tabled.

Californians use fewer prescriptions than the rest of the country, averaging 8.1 per year compared to 10.9 nationally. (Kaiser Family Foundation & Verispan Scott-Levin Source Prescription Audit, 2001). While estimates of enrollment in U.S. pharmacy schools declined 33 percent since 1994 (HRSA Bureau of the Health Professions, 2000a), production of California pharmacy graduates fell or remained flat for the past decade[3].

Graduates from California Pharmacy Schools*					
	1995	1996	1997	1998	1999
UCSF	117	118	123	104	113
UOP	189	197	180	201	189
USC	157	155	160	166	162
Total	463	470	463	471	464

Source: CPEC, 2000

New licenses granted by California Board of Pharmacy, FY1997-2001	
1997-98	666
1998-99	743
1999-00	902*
2000-01	909*

Source: CA Board of Pharmacy, 2002

* Recent rise in number of graduates/new licensees reflects the increase in pharmacy graduates as a result of opening of a new program at Western University of Health Sciences.

[2] Derived from figures on pass/fail rates for out-of-state graduates of pharmacy training programs who could be eligible to practice in California should the state exam be discontinued (California Assembly, February 20, 2002; California Assembly, January 18, 2001; California Board of Pharmacy, 2001)

[3] Number of graduates from established programs has remained flat or declined, however a new pharmacy training program at Western University of Health Sciences is likely to increase the number of graduates by about 100 per year.

Pharmacy technicians and assistants

The number of licensed pharmacy technicians in California has risen rapidly since the mid-1990s (California Board of Pharmacy, 2002; California Department of Consumer Affairs - Public Information Unit, 2002). Although little is known about pharmacy assistants, a 2001 pharmacy task force in California recommended further study of this position and of pharmacy technicians, and examined the benefits of expanding opportunities in these occupations (Pharmacy Manpower Task Force, 2001). There has been little study of the career paths of these workers and whether they may later enter graduate programs in pharmacy. Although there are two-year degree programs for pharmacy technicians in the state, all that is required for licensure is a GED and work experience/on-the-job training hours (California Board of Pharmacy, 2002). Recent legislation (California Assembly, February 21, 2001) limiting the number of pharmacy technicians who can work independent of pharmacist direct supervision, a ratio of one-to-one, is likely to restrict pharmacies and health facilities from attempting to substitute technician staff where pharmacists are lacking. Pharmacy technicians working in correctional and state mental health facilities were exempted from this law.

California active pharmacy technicians	
1998	22,698
1999	25,128
2000	27,021
2001	29,185

Source: CA Board of Pharmacy, 2002

Technology as a solution?

The expectation that technology such as computerized refilling and robotic dispensing systems will decrease the demand for pharmacists reflects neither these health providers' expanded roles in patient care, nor the monitoring and management tasks associated with these technologies. Even in roboticized departments, there is no decrease in the number of pharmacists needed to oversee prescription management and monitoring (Dower, McRee, et. al., 2002). That pharmacists are being used increasingly as clinical team members providing direct counseling and health management services to patients in clinics and hospitals only supports the notion that the current pharmacist shortage will not be abated by full enrollment in the nation's pharmacy schools. Indeed, HRSA (2000a) indicated that both public and private employers reported undeveloped potential in pharmacy services that will remain as long as workforce shortages persist. Meeting dispensing needs alone presents enough of a challenge, and frustrates efforts to utilize pharmacy professionals in ways that reflect their full capacities.

References

American Association of Colleges of Pharmacy. (2002). *Pharmacy's vital statistics, Pharmacy student facts, and Table 29*. Alexandria VA: AACP.

Bond, C. A., & Raehl, C. L. (2000). Changes in pharmacy, nursing, and total personnel staffing in U.S. hospitals, 1989-1998. *American Journal of Health System Pharmacists, 57*(May), 970-974.

California Assembly. (February 20, 2002). AB 2165 Pharmacy licensure (Strom-Martin). Sacramento CA: Legislative Counsel's Digest.

California Assembly. (February 21,2001). AB 536 Pharmacy technicians (Bates). Sacramento CA: Legislative Counsel's Digest.

California Assembly. (January 18, 2001). AB 108 Pharmacy licensure (Strom-Martin). Sacramento CA: Legislative Counsel's Digest.

California Board of Pharmacy. (2002). *Applicant information/exam pass/fail rates and selected access data*. Sacramento CA: California Board of Pharmacy [March 2002].

California Board of Pharmacy. (2001). A*pplicant information: What is a pharmacy technician?*, [webpage]. Available: www.pharmacy.ca.gov/applicant_pharmacy_technician.htm [2002, July 1].

California Department of Consumer Affairs - Public Information Unit. (2002). *Licensing information for allied health professionals (selected access data)*. Sacramento CA [March 2002].

California Economic Development Division - Labor Market Information. (2001). *Occupational employment projections 1998-2008* (Selected access data file). Sacramento CA.

California Postsecondary Education Commission (CPEC). (2000). *Total degrees awarded by segment by degree type*, [webpage]. Available: www.cpec.ca.gov/OnLineData [2000, Aug 14].

Cohen, J. P. (March/April 2002, 4 (2)). Disease management cuts inpatient costs via greater drug spending. *Tufts CSDD Impact Reports*.

Dower, C., McRee, T., Briggance, B., Vance, J., & O'Neil, E. (2002). *California's open door providers: Ten case studies of the health care workforce.* San Francisco CA: California Workforce Initiative at the UCSF Center for the Health Professions.

Dunn, P. (2000). Just say please to druggists. *Hospitals & Health Networks, 74*(7), 22.

HRSA Bureau of the Health Professions. (2000a). *The pharmacist workforce: A study of the supply and demand for pharmacists* (Report to Congress). Washington DC: HRSA/BHPr.

HRSA Bureau of the Health Professions. (2000b). *State health workforce profiles: California*. Rockville MD: HRSA/BHPr.

Kaiser Family Foundation & Verispan Scott-Levin Source Prescription Audit. (2001). *State-specific Rx drug costs & spending* (selected access data, webpage). Menlo Park CA: Kaiser Family Foundation.

McCombs, J. S., Liu, G., Shi, J., Feng, W., Cody, M., Parker, J. P., Nichol, M. B., Hay, J. W., Johnson, K. A., Groshen, S. L., & Nye, M. T. (1998). The Kaiser Permanente/USC patient consultation study: Change in use and cost of health care services. *American Journal of Health-System Pharmacy, 55*(23), 2485-99.

Midwest Pharmacy Workforce Research Consortium. (2000). *Final report of the national pharmacist workforce survey: 2000*. Columbus OH: Midwest Pharmacy Workforce Research Consortium.

Pharmacy Manpower Task Force. (2001). *A working group to ensure patient access to pharmacist's care and prescription services: Final report*. Sacramento CA: California Board of Pharmacy.

Shih, Y.-C. T. (2000). Trends in full-time pharmacists' labor market characteristics. *Journal of the American Pharmaceutical Association, 40*(1), 26-35.

Acknowledgements

This publication was made possible through the support of the California HealthCare Foundation, which, in partnership with The California Endowment, funds the California Workforce Initiative. The findings and views contained in this publication do not necessarily reflect the views of the California HealthCare Foundation, The California Endowment, the University of California, the reviewers, or contributors to the project.

UCSF Center for the Health Professions

The mission of the Center for the Health Professions is to assist health care professionals, health professions schools, care delivery organizations and public policy makers respond to the challenges of educating and managing a health care workforce capable of improving the health and well being of people and their communities. The Center is committed to the idea that the nation's health will be improved if the public is better informed about the work of health professionals.

California HealthCare Foundation

The California HealthCare Foundation, based in Oakland, is an independent philanthropy committed to improving California's health care delivery and financing systems. Formed in 1996, its goal is to ensure that all Californians have access to affordable, quality health care. For more information, visit us online at www.chcf.org.

The California Endowment

The California Endowment, a private, statewide health foundation, was established to expand access to affordable, quality health care for underserved individuals and communities. The Endowment provides grants to organizations and institutions that directly benefit the health and well-being of the people of California.

California Workforce Initiative
UCSF Center for the Health Professions
3333 California Street, Suite 410
San Francisco CA 94118
Phone: 415.476.8181
Fax: 415.476.4113