erbate work-force shortages in health systems that are struggling to cope with increasing demands.4,6

**Human resource planning and policy**

It is the responsibility of all countries to ensure that a sustainable domestic work force can be generated, retained, and adequately supported to perform. Comprehensive work-force planning is needed to address the challenges of drivers largely outside of the profession’s influence, such as increasing work-force demands, patient safety, resource constraints, and health work-force policy reforms. Some countries, like Canada, are also moving toward work-force planning paradigms that aim for self-sufficiency.7

Tools such as the Human Resource for Health Action Framework advocate for country- and context-specific work-force planning and describe phases for human resource management and development, including situational analysis, planning, implementation, monitoring, and evaluation around the broad fields of policy, finance, leadership, partnership, and education.8

With the growing feminization of the pharmacy work force worldwide, the attrition of females out of the pharmacist work force poses a potential significant loss and emphasizes the need for gender-sensitive retention strategies. There is a greater movement within the U.K. work force toward part-time work, especially for more experienced female pharmacists.9

**Information systems and evidence**

The lack of adequate national pharmacy work-force plans and the reluctance of health authorities to develop these and resource their implementation, particularly for services beyond supply chain management, may be due to the scarcity or lack of an appropriate human resource information system and evidence base. Compared with other health professions, pharmacy is severely lagging in developing an evidence base related to its education and work-force development.10 The documentation of indicators for determining work-force needs based on workloads and the existing work force are scant, particularly for workloads relating to nondispensary functions.11 Strategically, the profession must take leadership to ensure that pharmacy work-force issues are researched and appropriately planned for to capitalize on unprecedented global policy attention and momentum.

Canada’s Moving Forward: Pharmacy Human Resources for the Future program is an exemplary national initiative between professional bodies, government, and other stakeholders to develop a comprehensive evidence base to examine pharmacy work-force issues and propose action to address work-force challenges.12

**Integrating human resource strategy into service development**

For the purpose of understanding work-force and training needs, it may be useful to consider three interrelated dimensions of service delivery and work-force development. First, the level (advancement) of practice is determined by the competence of the work force. Second, the extent of service coverage (hours and hospitals) is dependent on the size of the work force. Third, the scope (specialties) of hospital pharmacy services is a function of work-force capacity. In mapping out the hospital pharmacy service needs, it can be useful to consider the related work-force development dimensions (Figure 1). Different enabling work-force strategies can be used when developing hospital pharmacy services, depending on the type of development sought (level, coverage, or scope). As hospital pharmacy services strive to move towards the top right-hand corner of this cube, the way in which developments are implemented will vary among countries due to local specificities and needs. A one-size-fits-all approach would not be appropriate for service delivery development or for work-force development.

**Service level and work-force competency.** Competency development is critical to the development of service provision. Competency frameworks can facilitate identifica-
tion of relevant training needs, enable self-assessment of performance, and link to job descriptions and career development pathways.

New policy developments in extending the role of pharmacists as advanced level consultant practitioners, supplementary and independent prescribers, and pharmacists with special interest in the United Kingdom are expected to increase the demand for pharmacists as well as place demands on training. Workplace-based programs offer practical modalities for training and competency development compared with traditional models. The Joint Programme Board was established in 2006 with the support of the U.K. National Health Service, schools of pharmacy, and professional bodies to provide a structured workplace-based learning system that uses general and advanced competency frameworks for pharmacist development.

Advancement in the level of pharmacist practice also necessitates the formalized education, regulation, and competency development of midlevel cadres, such as pharmacy technicians. The period of training may be less than six months, as is the case in 15% of countries, but is generally one to two years (32%) or over two years (36%). Many countries lack formalized education programs for midlevel pharmacy cadres. In Australia and the United States, it was projected that the standardized training and accreditation of technicians would enable systematic extension of technician roles in the handling and preparation of medicines and free up pharmacists to provide clinical services. Only 5% of surveyed countries do not have pharmacy technicians and related cadres in their hospital pharmacy departments.

**Service coverage and work-force size.** The extent of the existence and coverage of hospital pharmacy services is dependent on the size of the pharmacy work force. This is mostly determined by the resources available to train, recruit, retain, and appropriately deploy the work force. Pharmacists in the hospital sector in some countries have reported less job enrichment and satisfaction and a greater intention to leave their positions than have community pharmacists.

However, financial incentives alone do not determine work-force retention as nonfinancial incentives have an important role to play in increasing the motivation of health workers, particularly in enabling a supportive environment for work and professional development, and acknowledging professionalism and career goals. Work-force levels and competency, management support for pharmacy practice, professional development opportunities, and access to further training have also been cited as incentives to stay. Half of U.S. pharmacists who intended to stay in their positions indicated flexible schedules as a key factor, with the most common reasons for retention including good salary and good relationships with colleagues. Insufficient or unqualified staff was cited as a key factor by 72% of U.S. pharmacists who planned to leave their position within a year, with the most common reasons also including a desire for change and stress or workload issues. Pharmacy technicians in the United States cited poor salary, lack of advancement opportunity, and insufficient staffing as reasons for their intention to leave.

Members of the Society of Hospital Pharmacists of Australia in 2007 recognized the staffing crisis as the most important issue affecting their ability to provide patient care. An estimated 400–500 pharmacists (30% increase in the current work force) will need to be recruited into hospital pharmacy in Australia within the next two to five years to meet hospital pharmacy work-force needs. Bond et al. argued that attention should be focused on achieving universal coverage of core clinical pharmacy services, within U.S. hospitals, such as participation on resuscitation teams, inservice education, drug information, adverse-drug-reaction management, drug protocol management, medical rounds, and admission drug histories, as these were most likely to improve health care outcomes and require only a moderate increase in the clinical pharmacist work-force.

Vacancy rates in high-income countries (e.g., United Kingdom, Australia, United States) have subsided over recent years. The total number of hospital pharmacist and technician positions increased by 54% and 58% between 2001 and 2006, respectively, in the United Kingdom. A vacancy rate reduction from 23% to 2% was observed in one Australian state that had a fourfold increase in the domestic pharmacist supply. Between 2001 and 2005 in Ghana, there was a 40% increase in the pharmacist work force and an 80% increase in the hospital setting due to an increased number of pharmacist graduates. However, work-force levels have since stabilized in Ghana due to work-force attrition matching work-force entry.

Pharmacists with two to five years of hospital experience were least represented in the work-force in one Australian study, possibly indicating the lack of retention strategies that target newly qualified pharmacists. Twelve percent of hospital pharmacist positions in England and Wales were vacant in 2007, with the highest vacancy rate for junior pharmacist positions at 17%. Pharmacists with fewer years of experience cited low income as a more important issue than did pharmacists with more experience.

Nestled in the work-force shortages in most countries is an imbalance in the distribution of the pharmacy work force between rural and urban areas. Uganda has just 1 pharmacist per 140,000 population and a work-force availability of 30%
Service scope and work-force capacity. Investment in human resources, particularly in the public sector, has stagnated or declined over recent decades, despite the increasing demand for health services. The implications of resource limitations coupled with such demands affect the capacity of the work force to perform and place constraints on the scope of services offered. There is a need to ensure a supportive working environment that affords the required capacity for proper safety, infrastructure, supervision, interdisciplinary team work, and skill mix. Effective skill mix can utilize competencies at each level with improved productivity and cost-effectiveness and provides a career pathway for development of each cadre, a motivator for retention.

In the United Kingdom, there is also some evidence of the delegation of routine roles from technicians to pharmacy assistants, and thus greater demand for pharmacy assistants, as the pharmacy technicians scope and competence develop. In Canada, 85% of pharmacists stated that they would be willing to delegate more responsibilities to technicians should they become an upgraded and regulated work force. Hospitals unable to fill pharmacist vacancies in Australia utilized nurses to provide services or supervise pharmacy technicians. Nurses specializing in dispensing and administration have also been utilized to improve efficiency and reduce medication errors on wards in one U.S. case study, which also enabled pharmacists to expand clinical services.

Conclusion

In the domain of human resources and training for hospital pharmacy, it is difficult to make global generalizations and recommendations, given various local contextual, cultural, and historical considerations that have shaped the development of hospital pharmacy practice and the pharmacy work force. Despite variations between countries worldwide, common drivers have influenced hospital pharmacy practice, including resource constraints, patient safety, and the demand for greater efficiency from hospital services.

All countries will need a pharmacy work force to procure, dispense, and advise on the prescribing and rational use of medicines; manage dispensaries and formularies to ensure access to medicines; develop clinical guidelines and provide medicines information and advice; and, in many instances, provide advanced cognitive services. The composition, skill mix, and size of the work force needed for each of these roles will be different depending on local needs. Policy guidance is severely lacking, and the future of hospital pharmacy is dependent on the profession’s ability to generate a robust body of evidence to inform work force development. The challenge for health care authorities and hospital pharmacy will be to develop an evidence-based approach to sustainable hospital pharmacy work-force planning that is integrated into hospital pharmacy service development.

References


