

VIEWPOINTS

Seven Billion Humans and 98 Trillion Medicine Doses

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In 2008 a contemporary art exhibition at the British Museum called *Cradle to Grave* aimed to represent modern approaches to health and explore the medicine histories of a typical British man and woman. Each of the “pill diaries” in this exhibit consisted of a 13 meter long by 0.5 meter wide net of fabric, into which were stitched more than 14,000 tablets and capsules, representing the prescription medicines that a typical person would take in his or her lifetime. The exhibit was a powerful reminder that people all over the world, even people we would consider healthy, take a lot of medicines over the course of their lives. Anywhere there are a lot of medicines, we might assume there will be a corresponding number of pharmacists; however, this remains an assumption. Pharmacists serve as medicines experts in health systems and communities worldwide. But our planet has a population of 7 billion people. How many of these medicines experts are needed, for what specific roles should they be prepared, and which (if any) of the current educational models are appropriate for achieving these goals? Furthermore, what roles should professional organizations play in creating an infrastructure for safe and effective medicines systems?

Capacity: How Many Pharmacists Do We Need?

We know that the number of students enrolled in pharmacy training programs has been increasing in many countries. This is due to a combination of drives and imperatives including, for example, in the case of the United Kingdom, government policy that has encouraged an expansion of higher education with the aim of creating more educated workers to enter a national economically driven workforce. When this is coupled with *marketization* of the educational system – universities typically generate more income from larger enrollments – this has, in some cases, resulted in conflicts between supply and demand. Some (eg, Australia) have argued for more control over the number of and enrollment in pharmacy training programs, while others have chosen to rely on market forces to drive these decisions.

On the demand side of this are countries where the pharmacist-to-population ratio is not as favorable. The most recent global pharmacy workforce study revealed that those

countries with fewer pharmacists per head of population are also the ones least likely to have pre-service education and training capacity for pharmacy.¹ In fact, of the 56 countries responding, 4 (Brazil, Japan, Egypt, and the United States) produced more than 8,000 graduates each year and 3 (India, more than 500; Brazil, 306; United States, 113) had more than 100 colleges and schools of pharmacy. After accounting for outliers, there was a weak but significant association between the number of colleges and schools of pharmacy and pharmacist density in a country ($R^2 = 0.062, p = 0.008$).

What Do We Need Pharmacists to Be Able to Do?

Since at least the late 1990s, pharmacists in many developed countries have been aspiring and transitioning to positions directly involved in patient-focused care. This model has been called by many names (eg, clinical pharmacy, pharmaceutical care, medication therapy management), and although reimbursement mechanisms for this have lagged, the contributions of such practitioners are now described widely in the professional literature. In parts of the world where there is still a substantial shortage of pharmacists, however, increasing access to and improving use of medicines has meant that the relatively few pharmacists available have focused more on providing competent leadership for managing the supply of quality-assured medicines. In these cases, pharmaceutical management activities to support the selection, procurement, and distribution of medicines may take precedence over direct patient care roles. Although this model is different from the one commonly discussed in professional arenas, it should be acknowledged that such tasks also require a high level of knowledge, skills, and accountability, and serve to improve health outcomes at the population level.

At the same time, while developing countries have made substantial improvements in their approach to combating infectious diseases there is an increasing global burden centered around longer term conditions like diabetes, coronary heart disease, and cancer. Because the “vertical” multi-donor supply chains supporting medicines for human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS), malaria, and tuberculosis can in

some cases overwhelm the pharmaceutical management systems, there is an even greater need for pharmacist leaders who can supervise the forecasting and inventory control activities for products needed for chronic noncommunicable diseases.

How Can We Get There?

Until recently there has been little research or policy analysis about the pharmacy workforce and this lack of data has probably led to oversight of our profession in wider health workforce planning. Additionally, lack of cohesiveness among professional organizations has divided our voice. Both of these factors serve as barriers to our preparedness for more interprofessional health care teamwork and training programs to support this as advocated for by the Lancet commission.² Recent work in Australia, Canada, the United Kingdom, and the United States, as well as in profession-wide reports, have added to our understanding of these issues.¹⁻⁸ Nevertheless, there is a need to develop more robust models for comprehensive pharmacy workforce planning that incorporate local health needs and circumstances based on the number of practitioners needed, the skills required to provide services, and the appropriately resourced academic institutions to train professionals with these capacities.

Collating and maintaining good quality data on academic/faculty capacity is essential if workforce development strategies are to meet local, regional, and global needs. One key barrier to academic faculty workforce retention and quality needs-based education, particularly in developing countries, is poor physical institutional infrastructure where basic facilities as well as learning and teaching resources may be insufficient or nonexistent. Another barrier is misinterpretation of workforce needs when reform of educational systems is viewed through the lens of another culture. Increased research and review of strategies to build academic workforce capacity, particularly shared experiences and acceptance of equality in multinational partnerships, is warranted.

As part of the Global Pharmacy Education Taskforce (PET), the World Health Organisation (WHO) and the International Pharmaceutical Federation (FIP and FIP Education Initiatives) are undertaking a collaborative program to develop evidence-based guidance and frameworks through which to facilitate the sustainable development of higher education for the pharmacy workforce. As part of this work, the WHO and FIP are now implementing a global survey of pharmacy training institutions to describe the educational background of the local pharmacy workforce, to explore the

capacity for production of health professionals, and to determine quality assurance accreditation mechanisms and processes that support these systems. The data will be used to identify gaps and cooperative opportunities, and will provide the evidence-based information needed for investment policies that will increase pharmacy education capacity. The submission of data from all schools of pharmacy is vital for providing a better understanding of current pharmacy education issues, and will assist in the development of global pharmacy education policy recommendations. We know that many colleges and schools of pharmacy are engaging in global outreach and collaboration activities and we ask pharmacy educators to advocate for all programs to submit data for this project. If each of the 7 billion people on Earth is exposed to 14,000 prescription medicines across a lifetime, then that represents a tremendous opportunity for pharmacy services, from pharmaceutical management to patient care. (For more information about the FIP-WHO Global Survey of Pharmacy Schools, please contact education@fip.org.)

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