levels of socioeconomic development.[1] Schools of public health should therefore aim to address health systems and policies through research and teaching as well as through the traditional public health approaches to understanding the causation of disease, the determinants of health and the evaluation of specific interventions.

Interdisciplinarity

Modern public health is an interdisciplinary endeavour that needs to integrate within broader development policies, requiring closer linkages with a range of sectors and disciplines such as agriculture, education, veterinary sciences and development economics. While schools of public health clearly need to maintain their focus on improving population health and reducing inequalities, they also need to reach out more broadly into the academic community. At London School of Hygiene and Tropical Medicine (LSHTM), for example, we have been engaged in setting up the London International Development Centre (LIDC), which will bring together staff in a range of disciplines from six colleges of the University of London (http://www.bloomsbury.ac.uk) to promote interdisciplinary research, teaching and capacity-building to address international development from an intersectoral perspective.

Scaling-up research and teaching

Meeting the growing needs for more public health professionals, including the expansion of the research workforce, will require international cooperation, increased resources and long-term commitment. LSHTM's experience of free licensing materials for course development in low-income settings has assisted in establishing local teaching programmes. It has often been difficult to get research funders to support long-term capacity-building initiatives but the situation is changing, and several major research funding bodies are now actively discussing how best to provide support. It will be essential to develop strategies for expanding masters' and doctoral training programmes, and also to ensure that able researchers can be sustained in their country of origin through the use of postdoctoral fellowships and international collaborations that allow them to develop as independent researchers.[2]

Governments and multi- and bilateral donors must also prioritize the development of human resources to underpin the attainment of international goals such as the Millennium Development Goals (MDGs). In addition to the formation of large numbers of new public health professionals, a further challenge is the need to improve the retention and performance of the existing public health workforce. Schools of public health need to respond to the needs of 21st-century students and to think ambitiously about scaling-up access to appropriate education and training. This should include how they can provide on-going support for lifelong learning, conducted as far as feasible in the workplace, which in turn will require provision of learning opportunities that are flexible in terms of location, time, approach, pace and content. Information technology used appropriately can support the necessary changes, which should capitalize on both distance and classroom-based learning to create new opportunities for scaling up access to education and training throughout the careers of public health professionals. ■

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Strategic training for health in Brazil

Antônio Ivo de Carvalho[a]

Brazil's Unified Health System (*Sistema Unificado de Saude – SUS*) is probably the largest public health system in the world today.

In 1988, the Sergio Arouca National School of Public Health of the Oswaldo Cruz Foundation (*Fundação Oswaldo Cruz* – FIOCRUZ) set up the School of Health Governance (*Escola de Governo em Saúde*), and embarked on a substantial "reorientation of its teaching and research programmes with a view to helping expand health governance capability and quality in Brazil". This new school has had a history of health achievements and social results including health improvements for citizens in large and previously often marginalized portions of the population. It is now imperative to managerial capability and quality, and to make health care effective, humane and comprehensive. In future, the challenge will be to consolidate the school as a centre for intersectoral policies and foster a new leading role for society and citizenry in the social production of health and well-being.

The school provides ongoing training and is directed to the production and large-scale dissemination of new professional and institutional competences to meet the challenges of the SUS. It gives special priority to the 100 000 managers at different spheres and levels of the SUS.

The school has expanded, and now involves some 40 000 practitioner-students in new teaching programmes as well as around 50 institutional partnerships in Brazil. The new model sees training as a component of the work process, directly oriented to the health system environment.

The school works within an agenda agreed with the SUS management, and developed from a shared perception of the deficits in managerial competence and resultant training needs.

The school proposes an educational path that fosters competence in mobilizing scientific knowledge for management practice. In view of the regional inequalities in existing training capacity in Brazil, the School of Governance model is being set up progressively as a single training system for the SUS. It is organized as a network of government schools, and the extensive use of new information, communication and distance-education technology allows these institutions to combine efforts and share resources in an appropriate time frame and at a tolerable cost. For FIOCRUZ, it has been stimulating to develop and coordinate, using this School of Governance model, Brazil's network of Schools of Public Health (about 30), SUS Technical Schools (about 50) and the Public Health

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Virtual Campus (in cooperation with the Pan American Health Organization).

More recently, in a joint venture with the Ministry of Health and universities, the Federal Nucleus of the School of Government was set-up. Under the coordination of the National School of Public Health (ENSP), it will develop advanced courses directed to the upper echelons of government, with a view to enabling various sectors to take a stronger role in the social construction of health. ■

Setting-up in a transitional country

Maksut Kulzhanov[a]

Kazakhstan is a new independent country formed after the dissolution of the Soviet Union. The health-care system of the Kazakh Republic has been reformed dramatically. The results of this reform process show that the national health-care system needs new types of public health specialists. In 1997, the Kazakhstan School of Public Health (KSPH) was established with the support of WHO, the United States Agency for International Development (USAID) and other international agencies. During the 10 years of its history, the KSPH has had a partnership programme with the Virginia Commonwealth University in Richmond, Virginia, United States of America, and collaborates with many other institutions that provide public health education in Europe and in the Americas. We have now created and adopted in our legislation a two-year master's programme in public health (MPH), as well as a one-year certificate programme and more than 30 short-term programmes for existing managerial staff of health facilities.

In the past five years, more than 100 MPH students have graduated from the KSPH and most of them returned back to their "oblast" (province) health-care system. Some of our MPH graduates have taken up high-level administrative positions and influenced the regional health-care reform process.

Research

We are building research capacity in the KSPH with projects from the Ministry of Health and collaboration with other universities. From the research done at the school, the students learn issues and challenges in global health. The students choose a topic from among the many health reform plan activities in Kazakhstan for their final end-of-course thesis.

To support public health research in central Asia, the KSPH created the *Central Asian Health Services Research* journal (http://journal.ksph.kz/indexe.htm), which is published quarterly in two languages – English and Russian. The annual scientific conference organized by the KSPH every September is now the platform for health professionals from central Asia to present and share their experiences.

Training

A short training course started in 1999 and the first master's degree course began in 2001. The faculty has grown by recruiting from the school's own graduates. The KSPH now has five departments with 40 full-time professors. To overcome staff shortage and to bring diversity, we have adjunct faculty from partner institutions who also train our faculty in good teaching practices.

Curriculum development is an ongoing process and we constantly review it for further improvement and relevance. A priority is to introduce distance-learning. The KSPH promotes a field- and problem-based learning approach.

The summer school network for central Asia is an important KSPH activity and supports close collaboration with neighbouring countries, including Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. ■

Lessons, challenges and future plans from Kerala, India

K R Thankappan[b]

The Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), an institute in Kerala established by an act of the Indian parliament in 1980, introduced India's first master's programme in public health (MPH) in January 1997, and so far, nine batches of students have graduated. Today, it remains the only MPH programme recognized by the Medical Council of India, the accrediting body for medical degrees in India.[1] It was implemented when the MPH was not a required qualification for any job position in India. Despite this, the course has gained demand and recognition, and all the graduates have been able to find gainful and meaningful employment. Several institutions in India are now planning to start an MPH programme and the demand for guidance from the SCTIMST for such initiatives is increasing. Demand for the MPH programme is also increasing from the student community, as is evident from the increase in the number of applications for the entrance test at SCTIMST since 2006.

Over 40% of our graduates work with the various Indian state government health departments, 21% with nongovernmental organizations, 16% with academic institutions, 10% with WHO/United Nations Children's Fund (UNICEF), 8% work outside India, while the remainder are enrolled for advanced (PhD) studies. Obtaining employment for our graduates is easy, as the demand for qualified public health professionals in India is huge. It has been estimated that more than 10 000 public health professionals at different levels are required by the Indian government health system alone every year and the current availability is less than 400.[2] In addition, there are several opportunities for short-term appointments with the WHO-supported polio eradication programme, revised national tuberculosis control programme and several other vertical programmes.

The major challenge for the programme is recruiting and retaining good faculty; this is consistent with the expected challenge for a developing country, even in an innovative educational setting. Ours is a multidisciplinary programme

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