

Local generation of high-quality human resources for health research

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As illustrated on the cover of this issue of the *Bulletin*, vaccination and vaccine development remain a challenge in health research. Developing countries, usually the most affected by epidemics, should be building their own health research systems yet the shortage of specialized human resources remains a major hurdle. In Africa, for example, the classic approach to educate young fellows at postgraduate level has been to send them to study Masters of Science (MSc) or Doctor of Philosophy (PhD) programmes in Europe or the United States of America (USA). The benefits of this approach are counterbalanced by several disadvantages: high costs; relatively low numbers of beneficiaries; education of scientists on topics that do not necessarily constitute a priority for Africa; and higher probability of "brain drain" to high-income countries,^{1,2} which has a devastating impact on developing countries.³ To promote a much-needed change in this scenario, various initiatives must be triggered (or augmented) simultaneously.⁴⁻⁶ Among them, the rapid and large-scale education of specialized human resources for health sciences is mandatory.

The strategies developed in Brazil over the past 25 years are enlightening: an increase in the number of postgraduate programmes has been paralleled by an enhancement in scientific publications, also resulting in augmentation of the Brazilian contribution to scientific production in Latin America.⁷ This correlation can be extended to the increasing numbers of Brazilian patents and to the balance between the amount of money received and spent on royalties and technology transfer.⁷ Interestingly, fostering the establishment of postgraduate programmes aligned with

the needs of a given country is a strategy that is also being used by developed countries.⁸

In this context, the Oswaldo Cruz Foundation (Fiocruz, a key Brazilian governmental institution for research and innovation in health) recently established an initiative with the Mozambican National Institute of Health (INS) to create a masters in health sciences, with the goal of providing qualified human resources for health research and innovation for Mozambique. The theoretical and practical contents of the course are tailored to the priorities of the Mozambican health system. Theoretical discussions and practical lessons take place in Mozambique, involving Brazilian and Mozambican lecturers. Each MSc in health sciences project is co-supervised by a Brazilian and a Mozambican scientist and is developed partially in both countries. A period spent in Brazil allows students to learn and perform methodologies not yet established in Mozambique and to benefit from the academic environment in established scientific institutions. All MSc dissertations in health sciences must focus on themes that constitute national research priorities in Mozambique.

The first course started in April 2008 with 15 students taking 6 months of intensive course work and then working on their dissertations with a deadline of March 2010. It is envisioned that promising graduates will progress to enter a PhD programme. Assuming that 10 students obtain a masters degree every 2 years, we can estimate that around 50 fellows will graduate in a 10-year period. Even if only one-third continues to a PhD, we expect to have around 20 new PhD health scientists from this single programme. In addition

to having a direct impact on the number of qualified health personnel in Mozambique, this strategy provides a powerful momentum for collaboration between developing countries on health research and public health issues.

Thus, the expansion of local postgraduate programmes, resulting from international cooperation but focused on local priorities, should be envisioned as a strategy for the rapid expansion of high-quality health scientists in Africa. Young scientists, involved in either public health activities or biomedical research using modern biotechnology, will act as catalysts to fostering an overall development of health systems and finding practical solutions to local health needs, including the development of new vaccines.⁹ The two decades of Brazilian experience, revealing a parallel enhancement of postgraduate courses with scientific publications and international patents,⁷ clearly show that these goals can be achieved and must be pursued by developing countries. ■

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