Chapter 10

The Consortium of New Southern African Medical Schools: A new South–South–North network

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AFRICA BEARS 24 PER CENT of the world's burden of disease but harbours only 3 per cent of its health workers. The shortfall of health workers extends beyond Africa however, and the World Health Organisation (WHO) estimates the global shortage to be 4.3 million (quoted in Crisp 2010). It has been suggested that even the United States will experience a physician shortage within the next 10 to 15 years.[1] In Africa, the HIV and AIDS pandemics and the 'brain drain' have further aggravated the problem. How to increase the size of the health-care workforce is therefore an ongoing conundrum preoccupying governments and health agencies across continents.

At the 2011 conference of the Association of American Medical Colleges, Jim Yong Kim, president of the World Bank Group and co-founder of Partners in Health, gave two reasons why he believed that medical schools should provide the innovative momentum in global health. First, he argued that medical schools provide the locations, infrastructure and resources for the training of physicians and health workers, so interventions at this level are most likely to affect medical practice 'downstream'. Second, medical schools are located in universities, and are thus in a position to co-opt a wide range of additional disciplines to ensure a more comprehensive delivery of health care.

A new consortium emerges

The (US) President's Emergency Plan for AIDS Relief (PEPFAR) seems to have staked its bets on the African continent's medical schools. Since the establishment of the Medical Education Partnership Initiative (MEPI) in 2010, PEPFAR has focused on medical education and training as a path to capacitating and retaining health workers in Africa. However, the US$133 million that MEPI disbursed in 2010 to 13 African medical

schools attracted some criticism. Although modest by American standards, the award was sizeable in the African context, and several medical schools felt excluded from the initiative. This was particularly the case among the newer schools, several of which were floundering with inadequate funding, scarce resources and uncertainty regarding their sustainability. Eichbaum et al. (2012) suggested that dividing the funding cake more equitably, and giving smaller awards to more schools might have been more effective in enhancing the capacities of a wider range of schools.

Since its inception, however, MEPI has instructed its member schools to create 'networks, alliances and consortia' with other medical schools and health agencies. This approach to strengthening alliances within the health sector was also advocated in Frenk et al.'s landmark article on global health education, published in *The Lancet* in 2010. In accordance with this, MEPI subsequently created partnerships with the University of Zambia, Ibadan University in Nigeria, Addis Ababa University in Ethiopia, and with a consortium of five medical schools in Uganda known as MESAU (Medical Education for Equitable Services to All Ugandans).

Nonetheless, medical schools outside of this MEPI network still felt impelled to establish their own collaborative networks. With facilitating Northern partners in the US and Finland, the Consortium of New Southern African Medical Schools (CONSAMS), emerged, with the aim of supporting one another through South–South and North–South collaborations, as well as by sharing resources and innovations (Eichbaum et al. 2015). The founding members of CONSAMS were the University of Namibia, Copperbelt University (in Zambia), the University of Botswana, Lurio University (in Mozambique), the Medical School of Lesotho, Oulu University (in Finland) and Vanderbilt University (in the USA). Two additional medical schools subsequently joined: Masinde Muliro University in Kenya and the Catholic University in Mozambique. CONSAMS's educational niche comprises medical schools that are less than five years old at the time of joining (Eichbaum et al. 2014, 2015).

The Northern partners provide guidance in the form of:

- Staff training (including via academic exchanges).
- Access to better-developed research infrastructure through collaborative research projects.
- Links to other international organisations and resources.
- Raised visibility through joint publications and presentations at research conferences.
- Training for research staff and administrators.
- Assistance with research-grant applications (Eichbaum et al. 2014).

One way in which Northern partners stand to benefit is through 'reverse innovation', whereby innovations developed in low-resource settings are efficiently adopted in the high-resource settings of the global North, as Crisp eloquently describes in his book *Turning the World Upside Down* (2010). All partners stand to benefit through joint grant applications and research projects.

In these ways, the network is envisioned as cultivating equal bi-directional relationships in which all partners benefit mutually, rather than 'neo-colonialist' relations in which the Northern (high-income) countries 'help' or exploit the Southern (low/middle-income) states.

CONSAMS plans to expand to include most of the new medical schools within the southern African region, and ultimately, to include new medical schools across the entire African continent, via the Consortium of New African Medical Schools (CONAMS) (Eichbaum et al. 2015). However, this expansion is being hampered by the lack of funding necessary to support and sustain a larger number of members.

The educational context

Frenk et al. (2010) have suggested that medical education is experiencing 'a slow burning crisis' and is in urgent need of innovation. They ascribe this to the explosive growth in medical knowledge, rapid globalisation, and shifting patterns of migration and disease, which have left the older medical schools with their standardised curricula struggling to keep up. They went on to propose critical reforms in global health education that are significant for the new schools – such as those in CONSAMS – presenting a strong argument for the establishment and promotion of new medical schools. New schools, they argue, have the potential to be more agile in adapting to 'rapidly changing local conditions drawing on global resources' than established schools, which may be 'encumbered by curricular rigidities, professional silos, static pedagogy [and] insufficient adaptation to local contexts' (Frenk et al. 2010: 8).

As Bleakley et al. (2011) cautioned, medical educational strategies should not be cooked up in Western universities and then exported, without taking into account needs of local populations and environmental contexts. They recommended that curricula and education strategies be context specific, fit for purpose, and formulated 'in the heat of practice' (Bleakley et al. 2011: 179).

Educational strategies

Community-based education at the University of Namibia School of Medicine

CONSAMS's approach has been to work towards formulating medical competencies for African medical schools from within this 'heat of practice'. An example of this approach is being piloted at the University of Namibia School of Medicine (UNAMSOM). Students translocate for some months to semi-urban areas or to rural areas in the north of the country, where they live among local families and learn about people's lifestyles, diets and medical issues. The students also work day shifts at local clinics. This form of training is referred to as community-based education and service, and is compulsory for all medical students from first to the fourth year of their studies. During these community placements, students are exposed to families at household level to facilitate their understanding of the socio-economic and cultural determinants of health.

In particular, students are expected to gain insight into health-seeking behaviours, levels of access to, and demand for, health services, as well as the cultural determinants relating to income disposal and the proportion of income allocated to health. After initially living with families for several weeks, students then continue to visit the families weekly over a period of 24 months to discuss and observe health-seeking behaviours. The health of pregnant women, and of children, is monitored and discussed, as are chronic diseases among the elderly. The role of family members in assessing and analysing their own health problems is emphasised, and attention is paid to how they allocate resources to health. Getting to know families so well gives students opportunities to observe some of the root causes of health problems and to suggest interventions to improve the health of the family. Working in this way, students are able to gain an understanding of the country's health-care challenges, and the kinds of competencies required to work in rural contexts. Community-based education and service encourages transformative learning and aims to produce the kinds of enlightened change agents that are essential for health-care advocacy and for strengthening the health sector (Crisp 2010). The application of this programme has the potential to transform individual students, but also families and communities, making them all better informed, more self-reliant and more empowered.

Transporting students to their community-based placements is expensive and places enormous strain on the limited resources of an emerging school of medicine such as UNAMSOM. To alleviate this, the university teamed up with the University of Oulu, Finland, resulting in UNAMSOM receiving two 13-seater buses and a sedan to facilitate the transportation of students during their community placements.

Transformative learning and transprofessional education at Lurio University

Frenk et al. (2010: 11) argued that the goals of strengthening health-care and capacity building in resource-limited settings should be guided by two outcomes, namely: 'interdependence' and 'transformative learning'. Instead of struggling in isolation, medical schools should strive for 'interdependence' with one another, and work together collaboratively in 'networks, alliances and consortia' (such as those created by MEPI, MESAU and CONSAMS). They also advocated 'transformative learning' that would be able to produce the 'enlightened change agents' necessary to strengthen the health-care sector (Frenk et al. 2010: 6).

One example of transformative learning is the 'One-Student-One-Family' programme created by CONSAMS partner, Universidade de Lurio (UniLurio), in Mozambique. Students in this programme are each paired with a particular family in a rural community for the duration of their medical degree. As in Namibia, students initially live with families for several weeks and then continue to visit the families every few weeks to discuss their health issues. This allows the students to serve as a family's health advocate and gain a deeper understanding of the issues affecting their health. The main aims of the initiative are to:

- Give students the opportunity to learn how to build a 'case study' as a practice in the teaching and learning process.
- Encourage lecturers to design innovative curricula that can address the problems that contribute to underdevelopment.
- Allow lecturers and students to pursue relevant research for community development.

This offers students opportunities to learn how to work with communities and alongside ancillary health workers within the health-care system. The mutual learning and relationship of deep trust that develops between students and families is transformative, and strengthens the delivery of health care. Throughout the process, students are encouraged to conduct research that contributes to improving the well-being of families, and to enhancing community development.

This programme also includes community health workers and represents an example of 'transprofessional education'. That is, workers outside the health professions, such as community workers, traditional healers, volunteers, and possibly even lawyers and entrepreneurs, are also encouraged to contribute to the delivery of health services where appropriate (Frenk et al. 2010). The inclusion of these other sectors and professions is aimed at strengthening health care, and is particularly effective in settings where resources are limited.

Distance learning and virtual microscopy

With the help of MEPI funding, the medicine faculty at the University of Botswana developed a simulation laboratory for training and service provision. Another MEPI-supported project is the mobile-learning project through which academic staff and students are provided with android tablets to access teaching, learning and clinical resources, especially when at off-campus teaching sites. Each device comes pre-configured and loaded with a robust collection of medical applications (for example, Epocrates, Medscape, uCentral, and PubMed mobile), research databases (including EBSCOhost), as well as various health-care guidelines and protocols specific to Botswana.

Linked to this, a CONSAMS project was established that involves the Universities of Botswana and Namibia and Copperbelt University acquiring virtual microscopy software from the University of Alabama (UAB). UAB and Vanderbilt University, both in the US, also provided a trainer who trained African academics and students to use the software. Virtual microscopy substantially reduces infrastructure costs and faculty time, thereby freeing these resources for other projects. The software is used extensively by pathology and anatomy students. Since all students now evaluate the same digital histological images, slide-to-slide variability is eliminated, thus enhancing and ensuring standardised learning. The incorporation of digital slides in medical training also enhances interaction between faculty and students and facilitates classroom discussions. This project highlights the benefits of the South–South and North–South relationships forged by CONSAMS. It also demonstrates the kinds of roles that established Northern universities can play in the teaching and delivery of health care in new Southern medical schools (Eichbaum et al. 2014, 2015).

Innovative admissions policies

The global shortage of health workers raises questions about medical school admissions policies. Are current policies equitable? Are they aligned to increasing the number of health professionals? Do they lead to physician retention or do they aggravate 'brain drain'? Traditional admissions policies in medical schools are based mostly on 'merit'. This often places applicants from rural areas, who tend to have less access to education, at a competitive disadvantage. Ultimately, these policies have also resulted in rural areas suffering a deficiency of health workers since students from urban areas are less likely to choose to practise in rural settings. Conversely, students from rural areas are known to have a greater tendency return to practise in those areas (see Strasser and Lanphear 2008; Wilson et al. 2009). Evidence from a number of countries demonstrates that medical students from rural areas tend

to subsequently practise in rural areas (De Vries and Reid 2003; Laven and Wilkinson 2003; Playford et al. 2006; Rabinowitz 1993).

UNAMSOM has attempted to solve this problem by introducing an innovative quota system, whereby each region of Namibia is allocated a quota of student admission slots. This admissions policy seems to be enhancing physician retention in rural areas. However, effective medical practice in rural settings does not necessarily require fully qualified medical specialists (who may require over a decade of training). Horrocks et al. (2002) have argued that nurses working in primary care can provide care virtually equivalent to that provided by doctors, and can be trained in half the time and at half the cost. In fact, they state that, in countries such as Namibia and Mozambique, nurses and 'medical officers' (who receive a similar level of training as physician assistants in the United States), provide appropriate (and often excellent) care to patients at a level virtually equivalent to physicians (Horrocks et al. 2002).

A thorny issue linked to this has been how wide to open the doors of the medical schools. Eichbaum et al. (2010) describe a potential model (in the United States) in which candidates are initially admitted as 'pluripotential' students. These students initially engage in self-paced learning through various online modalities before 'differentiating', through competency-based apprenticeships, into more specific career paths – choosing to become physicians, nurses/nurse practitioners, physician assistants, case managers or health administrators, etc.

Aspects of this model may be feasible for new African medical schools as well. The prodigious availability of online and distance learning – via massive open online courses for example (especially those that have self-assessment tools, such as the Kahn Academy, NextGenU and Coursera) – means that the teaching of medicine can extend beyond the classroom to allow also for self-directed learning. This has the potential to free up some lecturing staff and allows students to engage in a wider range of courses or to seek ancillary learning. The availability of such open-access and distance-learning modalities may also serve to attenuate regional 'brain drain'. In this regard, Jamison et al. (2013) have drawn attention to the role of open-access learning resources for professional development, and to the power of information technology for worldwide learning, including distance learning. The CONSAMS schools are therefore exploring broadband internet connectivity and, in some schools, iPads are being used to facilitate online learning.

The conundrum of 'standards' and 'standardisation'

Discussions about admitting larger numbers of students to medical schools inevitably lead to concerns about 'standards'. Many question whether it is

possible to ensure that health-care workers that are educated via distance learning will be adequately trained as well as motivated and mature enough to treat patients. Experience from Namibia's 'quota-based' system of admissions and their effective use of both medical officers and nurses in rural settings suggests that such innovations are feasible and can strengthen health systems.

The standardisation of accreditation is another major debate in global medical education. The accreditation standards developed over decades in the US and Europe might not be feasible, or even appropriate, in African and other contexts, given varying epidemiological patterns, education systems and socioeconomic profiles. As Bleakley et al. (2011: 181) stated, 'At its extreme, this emphasis on standardizing risks echoing the homogenizing process of Western-inspired "McDonaldisation". In this case, however, what is being traded in the global marketplace is knowledge rather than hamburgers.'

We believe that African medical schools should largely develop their own context-appropriate standards of accreditation. Bleakley et al. (2011) draw attention to the nervousness about not being seen to conform to Western educational imperatives that permeates medical institutes in some low-to-middle income countries and drives them to seek US and European standards of accreditation. However, while the exporting of US medical education and accreditation systems to Middle Eastern and South Asian countries (such as Qatar, Oman, Malaysia and Singapore) has become a source of revenue for some American universities, this is not a model that CONSAMS favours. Instead, CONSAMS has established a network of 'external examiners' who form part of a regional committee that is tasked with developing accreditation standards appropriate to the region.

Standardisation also has implications for health worker retention, which is a major issue for many African countries. In other words, by making it easier for African health workers to practise in other countries, standardisation has the potential to aggravate the 'brain drain'. According to De Vries and Reid (2003), one of the reasons health workers give for leaving Africa is that their medical training is often disconnected from the realities they face in practice. Other reasons include the isolation they experience (especially in rural settings), and the lack of essential medical services and specialised support. The collaboration and sharing of resources, combined with the promotion of inter- (and trans-) professional programmes in CONSAMS, alleviates some of these problems. For example, the University of Oulu in Finland has developed several capacity-building and inter-professional education programmes (I-STEP, NEXT-STEP, MEDUNAM I and MEDUNAM II) with UNAMSOM, UniLurio and Copperbelt University. These programmes involve innovative pedagogies aimed at students in medicine, nursing,

pharmacy, public health and optometry, the ultimate goal of which is to improve the quality and accessibility of health care within communities. Judging from our experience, CONSAMS's collaborative networks reportedly help health workers to feel better connected with their peers and colleagues, and so might ultimately also contribute to retention.

Developing research infrastructure

The need for context-specific education also extends to the training of scientific and medical researchers. Currently, very little of the world's biomedical research is conducted in regions that bear the highest burden of disease. Resnick (2004) described this as a '90/10 divide', noting that less than 10 per cent of the world's biomedical research funds are dedicated to addressing problems that are responsible for 90 per cent of the world's burden of disease. Physicians and researchers in African countries might well experience a greater sense of connectedness and commitment to their work if solutions to health-related challenges that they face daily were to be addressed through relevant research conducted in their own contexts.

In alignment with MEPI's aim to develop 'regionally relevant research' (Mullan et al. 2012), one of CONSAMS's major goals is to enhance the research capacity of its partners. All the CONSAMS schools have stressed the importance of conducting relevant research, including on the major infectious diseases (namely, HIV, TB, and malaria), for which grant funding and American or European collaborators are available. However, research on emerging non-communicable diseases, as well as on diseases affecting local livestock and wildlife, are also relevant and deserve attention.

While some of the newer medical schools have state-of-the-art research facilities (UNAMSOM being one example), others lack the basic research infrastructure. This applies not only to a lack of laboratory space and equipment but also to administrative capacities, such as research review committees and research-grant offices that could help to manage the complexities of grants funding. Even more critical, is the inability to access research funding. This is often linked to a lack of expertise in writing grant applications and securing the necessary research partners. The Northern partners within CONSAMS are playing an important role here, assisting with the writing of grant applications and facilitating research collaborations.

A further challenge in situations where resources are sparse is that academics are often overburdened with administrative and teaching duties, and have little time for research. The shortage of postgraduate research programmes in some African universities is also not conducive to the expansion of research capacity, and means that few students even consider

pursuing a career in research. Some of the older medical schools such as those in South Africa, and at Makerere University in Uganda, have relatively strong research capacities, but the newer medical schools struggle to attract researchers and postgraduate students. This is even the case at UNAMSOM, which does have appealing research facilities. CONSAMS's clear focus on enhancing research capacity will need to remain in place for as long as these kinds of challenges persist.

Conclusion

New medical schools in Africa enjoy some unique opportunities, but they face many daunting challenges. Working with others in networks, alliances and consortia such as CONSAMS offers newer medical schools an effective path towards strengthening health-care provision by enhancing staff training, facilitating relevant and locally based research, as well as encouraging professionals to remain in, and be committed to, the development of health-care infrastructure in their own areas.

Note

1 This point was made by a keynote speaker at the 2011 conference of the Association of American Medical Colleges.

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