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Commentary

A successful hybrid emergency medicine postgraduate partnership in Southern Africa

Megan Cox[a,b,*], Japhter Masunge[b], Heike Geduld[c]

[a] University of Sydney, Faculty of Medicine and Health, Australia
[b] University of Botswana, Faculty of Medicine, Botswana
[c] University of Cape Town, Division of Emergency Medicine, South Africa

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ABSTRACT

Emergency Medicine (EM) development is established worldwide and fast developing in Sub-Saharan Africa. Medical specialty development requires multiple human resources and logistics which are frequently not available in LMICs. This article describes an innovative hybrid EM specialization program in Botswana that involved partnership with a neighbouring country in Sub-Saharan Africa. Many initial problems challenged its development, but significant local and regional support led to success. Botswana graduated its first three EM specialists in 2018 and now has an ongoing and sustainable EM program. This regional partnership resulted in numerous academic, research and clinical EM developments for Botswana and SA. UB-UCT EM training Partnership Model is a novel and sustainable cross- African collaboration with significant benefits for both health systems as well as for the individual trainees. This hybrid arrangement should be considered by other LMICs looking for EM specialty training and development.

The specialty of Emergency Medicine (EM) began in USA and UK in the 1960s, Australia in the 1980s, Europe in the 1990s and continues to spread worldwide [1]. Eighty-one countries are currently listed as having EM Specialty recognition with the International Federation of EM and ongoing collaborations continue towards an International EM curriculum [2]. In Sub-Saharan Africa, EM specialty training commenced in 2004 in South Africa. Over the last 10 years Tanzania, Ghana, Ethiopia, Botswana and Rwanda graduated EM Specialists from their successful in-country EM programs. New EM specialty programs also recently commenced in other Sub-Saharan African countries including Uganda, Kenya, Mozambique and Cameroon. This article describes the development, challenges and successes of a novel hybrid model of EM specialty training established in Botswana; partnering with an established EM postgraduate program in a neighboring country, South Africa (SA).

The University of Botswana (UB) opened the first medical school for Botswana in 2009, after recruiting numerous local and expatriate specialists [3]. EM was one of six postgraduate specialty training programs started in these enthusiastic early years of the school and was officially recognized as a specialty by the Botswana Health Professions Council, the country's medical registering body [4].

The EM curriculum at UB was established based on the postgraduate EM regulations used in SA. The UB Master of Medicine (MMed) in Emergency Medicine also included the SA academic, clinical and research requirements in a 4-year program. These consisted of the two Colleges of Medicine of South Africa (CMSA) examinations (primary and fellowship) and a research-based dissertation. The SA primary written EM examination covering the basic sciences was accredited to be taken under supervision in Botswana. The dissertation requirement was agreed to be an 8000-word research thesis supervised by UB EM academic staff, submitted at UB with internal and external marking. The final SA EM fellowship examination, a highly clinical based exam, required mandatory clinical exposure in SA to be attempted successfully.

Many of the clinical rotation components of the EM program were not yet available in Botswana, so initial clinical rotations were arranged in the major teaching hospital in Botswana; but others such as prehospital medicine, Intensive care, ENT and ophthalmology were scheduled for rotations in SA hospitals. (Table 1) The conclusion was that EM specialist training doctors who were also postgraduate students of UB (also called registrars) would start the MMed in Botswana for 2- 3 years and then move to a partner institution in SA for up to 2 years to complete the clinical rotations and the final fellowship examination.

On successful completion of all these components of the Masters they would graduate with a MMed from UB and a Fellowship of the College of EM [FCEM(SA)].

* Corresponding authors.
E-mail address: megan.cox@sydney.edu.au (M. Cox).

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Table 1
Clinical rotations requirements for UB Master of Medicine (Emergency Medicine) Curriculum.

Specialty rotation	EM (Botswana and SA)	Orthopaedics (Botswana)	Surgery (Botswana)	Paeds/Neonatal medicine (Botswana and SA)	Adult Internal Medicine (Botswana)	OB/GYN (Botswana)	ICU/A naesthetics (SA)	ENT and ophthalmology (SA)	Pre-hospital (SA)	Total
Weeks required and accredited (minimum to maximum)	116–124	4–12	0–8	8–16	8–16	4–12	20–28	8	8	192

Eight local EM registrars were recruited for the UB MMed (EM) program in 2011-12, all students receiving sponsorship from the Ministry of Health. Six local EM registrars sat the CMSA primary EM exam in the academic year 2011-2 and all were successful, increasing morale and continuing the vision for EM at UB. After the first 2 years various logistical, human resource and financial challenges led to uncertainty in all postgraduate programs [5]. This crisis was so severe that by 2013, the Anaesthesia program had collapsed and the EM program was reduced to one expatriate lecturer and four registrars. Lack of registrar supervision led to greater EM clinical responsibilities and delays in progression of the compulsory research-based dissertation. It was decided to postpone the completion of the dissertation to expediate transfer to SA for clinical and academic progression.

Significant delays with the SA registration authority led to the first EM registrars starting their rotations later than expected. Once the first EM registrars arrived at the first SA partner institution, they were faced with advanced technologies and treatment regimens for conditions uncommonly seen in Botswana, requiring rapid and intensive mastering. The SA institution's EM department was familiar with international registrars, but the UB training requirements and service delivery expectations led to unexpected issues. The delayed progress of the UB registrars due to delays in completion of the dissertation contributed to the stress on the partnership. The lack of a formal written agreement and ongoing mismatched expectations of clinical and academic responsibilities between institutions, eventually led to suspension of the EM training partnership in 2014.

In 2014, the UB Medical school celebrated the graduation of the country's first 33 locally trained doctors and the first UB MMed registrar in Paediatrics passed their fellowship specialist exam in SA. Recruitment of two Intensive care consultants for UB also renewed interest in clinical EM in Botswana. This allowed the EM MMed program to recruit 4 new local doctors and revitalised discussions with an alternate EM training program in SA. In 2015, an agreement was reached regarding the dissertation submission, education requirements and clinical training of EM registrars. After completion of their dissertation, UB registrars would be eligible to train in SA for 18 months to 2 years depending on their individual training needs and readiness to sit the Fellowship examination. UB EM registrars subsequently moved to Cape Town and joined the EM program at the University of Cape Town (UCT) in 2015 and 2016.

SA frequently receives doctors from many sub-Saharan and other countries seeking to train as specialists, fully sponsored by themselves or by their home country. This requires them to train and work entirely in SA for at least 4-5 years as international registrars. Postgraduate medical training is expensive for these countries and individuals, as well as potentially higher social and psychological burdens related to isolation, loss of family supports and cultural transition. The EM program at UCT was established in 2004 and has numerous international registrars studying towards EM specialisation.

The UB international registrars' experiences, as living in the same region of Southern Africa their cultural transition to UCT may have been easier – including familiarities with the language and similarities in medical practice and epidemiology. As senior registrars, their academic transition was focused only on 18-24 months of training to complete rotations not available in Botswana including pre-hospital medicine and critical care. UB registrars quickly became part of the UCT senior registrar group and the focus on preparation for the final fellowship examination also eased their social transition. The first two UB EM registrars successfully completed the CMSA fellowship exam in October 2017; with another in April 2018. All three completed the academic, clinical and research requirements of the UB MMed in 2018 and graduated in October 2018 as Botswana's first EM Specialists. The cumulative progression of all the EM registrars in this hybrid UB-SA program is seen in Table 2.

EM development is increasingly recognised as integral for health system development and assisting the achievement of the sustainable

Table 2
UB EM Master of Medicine Students progression.

	2011	2012	2013	2014	2015	2016	2017	2018	Cumulative totals
New EM enrolment	4	4	0	0	4	0	0	0	12
Cumulative enrolment for EM program		7	4	4	8	8	7	4	–
Left the EM program	1		3				1		5
Graduation as EM specialist								3	3

development goals in developing countries [6]. In the initial years, EM specialist training in Botswana repeatedly required justification as many local health professionals questioned the value of an EM program in this developing country. EM staff in the hospital, however soon showed the benefit of their resuscitation, generalist and critical care knowledge, quickly becoming invaluable health professionals with regular and ongoing requests for their input throughout the health care system.

Examples include EM specialists and registrar's involvement in setting up the country's first public ambulance system, participation and supervision in disaster and major event responses such as Botswana's 50-year independence celebrations and the African Youth Games in 2016. Establishment of the EM program was also instrumental in introducing short resuscitation courses such as Basic Life Support and Advanced life Support to train and upgrade essential EM skills for hundreds of health workers all over the country [7].

The EM MMed program introduced EM into the inaugural medical school curriculum and promoted many EM related research projects in critical care education, triage and pre-hospital medicine [8–10]. The dissertation component particularly assisted the establishment of a local EM research agenda, increasing the literature and expertise on trauma in particular, an increasing burden in developing countries [11]. The pioneer registrars' involvement in these projects gave them pivotal roles in the development of trauma and emergency system for the country and region. These first 3 EM specialists who graduated all now work and teach at the major teaching hospital for Botswana. Two also are employed as lecturers with UB EM department, sustaining and developing the medical students and registrar programs, as well as liaising with the SA EM College.

The success of the EM program amongst others at UB, has encouraged the development and implementation of more MMed programs. Program development for Surgery, Obstetrics and Gynaecology as well as Psychiatry are currently underway, researching similar agreements with their College counterparts in SA. Lessons learnt in the EM program regarding formal agreements, dissertation support and registration in SA are assisting these new postgraduate educational developments.

Partnership based EM specialisation in SA is still emerging as a model but the success of these UB EM registrars encouraged many international EM registrars living and working in SA to continue training and complete EM exams. The success of this hybrid EM postgraduate training, and the ability of the UB registrars to work and study in their own local EM network as well as a regional counterpart may encourage developing countries in the region to explore hybrid educational regional partnerships rather than full specialty training out of country. Hybrid programs could also be used to assist in the growth of SA's EM specialists. Currently SA, a country of over 55 million people, has only developed 4 EM specialty training program sites in the country. Hybrid program sites such as Botswana could be utilised by SA to build programs at other sites, which would help train more EM specialists for the country. Regional EM partnerships also hold potential for the development of further EM related specialties of toxicology, pre-hospital care, trauma management, disaster medicine, paediatric EM and Intensive care in Southern Africa through potential partnerships with specialist institutions or academic divisions.

There are a large number of EM training programs in many LMICs, but few publications on the details of their development and progression [12,13]. Many programs describe partnerships with HICs such as the Ethiopian and Haitian programs with North American university support [14,15] and the Nepal and PPNG programs with Australian support [16]. Partnerships such as these have significant benefits but frequently highlight major issues such as the need for long-term institutional partnerships and the inability for outside EM experts to align local EM physician competencies with societal needs [14]. Successful partnerships are long term and multi-sectoral leading to local ownership and development of local continuous quality professional development [17].

This novel hybrid EM program was greatly assisted by pre-existing longstanding regional collaborations between Botswana and SA involving issues of economy, migration, languages, cultural and health practices. Allowing the registrars to initiate training and research in their home country and then develop their higher-level EM training in a regional partner country rather than in a high-income country, encouraged ongoing mentorship, educational collaborations and culturally appropriate sustainable EM development.

This UB-UCT EM hybrid training model is a novel and sustainable cross-African collaboration which has significant benefits for both health systems, the region and for the individual EM registrars. It is possible to have a successful, culturally appropriate and high-quality EM specialization program without all the resources in place, by being innovative and leveraging on external partnerships and collaborations. This hybrid arrangement should be considered by other LMICs looking for EM specialty training and development.

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