Training Doctors for Botswana, 1966 to 2017

Oatlhokwa Nkomazana, [*] ***Thabo Mokoena,*** [§] ***Edward Maganu,*** [♦] ***and Loeto Mazhani*** [♠]

Abstract

This piece is a straight forward account of how Botswana trained its medical doctors from the country's independence in 1966 to 2017, the latter constituting roughly the first decade after the University of Botswana (UB) started to enrol medical students in 2009. By 2008, Botswana was one of the five countries in Sub-Saharan Africa without a medical school. With a relatively high Gross Domestic Product (GDP), Botswana was able to meet some of her medical doctors needs through training doctors in regional and international medical schools and recruitment of expatriate doctors. This strategy was eventually deemed unsustainable, as many of those trained overseas did not return to work in Botswana. After a number of consultative steps, a presidential directive was issued in September 1998 to start a phased medical school at UB. To facilitate this directive a high ranking committee was established to coordinate the planning and resource mobilization for the project. The committee expedited the requisite infrastructural development as well as the development policies and regulations that would enable medical education and training. As part of the phased development of the medical school a four semester pre-medical programme was developed at UB after which students transferred for medical training in four South African and two Australian medical schools. Finally, a fully-fledged medical school at UB enrolled its first class of medical students and specialist trainees in 2009 and 2010. By October 2017 the school had graduated 171 doctors and 21 specialists, significantly increasing the number of Batswana doctors in the country, which stood at only 382 in 2012. Botswana's brave decision to invest huge resources in training her doctors is already reaping dividends but there are grave challenges and serious concerns boding ill for the facility.

Introduction

The 1978 Alma Ata declaration garnered the global effort to develop and implement primary health care systems, especially in developing countries, to realise 'health for all the people of the world by the year 2000' (International Conference on Primary Health Care 1978). Primary health care was to be accomplished through a health care team of doctors, nurses, midwives, auxiliaries and community workers supported by an effective referral system. Despite the best national and global efforts, by 2006 it was evident that health had not been realised by all. In fact, many low and middle income countries were worse off than before 1978 with some of their situation compounded by political instability and the HIV and AIDS epidemic (WHO 2006). While the HIV and AIDS pandemic decimated the health workforce and simultaneously increased the workload through increased morbidity and mortality, political unrest fuelled their migration to higher income countries (Chen *et al.* 2004).

'Health Care Workers Save Lives' was the pivotal message of the World Health Report of 2006. The report demonstrated that there was a critical number of health care workers per population necessary to deliver the most basic primary health care package (WHO 2006). It was evident that without significant increases in the number and quality of Human Resources for Health (HRH) many low and middle income countries would once more fail to realise another global aspiration called the Millennium Development Goals (Chen *et al*. 2004). Sub-Saharan Africa stood out as the worst of all World Health Organisation

[*] Oatlhokwa Nkomazana, Faculty of Medicine, University of Botswana. Email: nkomazanao@ub.ac.bw
[§] Thabo Mokoena, Department of Chemistry, University of Botswana. Email: mokoenat@mopipi.ub.bw
[♦] Edward Maganu, Independent Public Health Consultant, Gaborone. Email: eddiemaganu@gmail.com
[♠] Loeto Mazhani, Department of Paediatrics and Adolescent Health, University of Botswana. Email: mazhanil@ub.ac.bw

(WHO) regions with just over 3% of the global health workforce, and about 2% of the global number of doctors in the face of more than 25% global disease burden (WHO 2006). The density of physicians per 10,000 population is only 2.7 in the Sub-African region compared to 5.9 to 32.1 in other regions (WHO 2015). The relatively fewer numbers of doctors in this region is a result of migration to higher income countries and inadequate numbers trained (Mullan *et al*. 2011).

Although training of doctors in Sub-Saharan Africa started in the 1900s, with the University of Cape Town in 1919, the majority of the 168 medical schools identified by the Sub-Saharan African Medical Schools Survey, in 2009, opened between 1990 and 2000 (Monekosso 2012). Despite the number of medical schools in Sub-Saharan Africa the enrolment and graduate numbers were very low (Mullan *et al*. 2011). One of the challenges that still seems to elude solutions is the migration of medical graduates to higher income countries, which is reported to be up to 25% within five years of graduation (Chen *et al*. 2012).

Botswana with only four doctors per 10,000 population, does not have enough medical professionals to satisfy its health system's needs (Nkomazana *et al*. 2014). With a relatively higher GDP, earning her a middle income status in the early 1990s ahead of many Sub-Saharan African countries, the country has been able to recruit doctors from the region and South East Asia (Willcox *et al*. 2015). Bilateral agreements with China in 1981 (Anshan 2011) and Cuba in 1989 (*Mmegi* 30 May 2006) also help meet some of the needs for medical doctors. Effective medical training should be informed by the health needs of the country (Frenk *et al*. 2010). It is, therefore, conceivable that dependence on expatriate health workforce, especially in the face of weak regulatory environment, can significantly compromise Botswana's ability to provide high quality sustainable medical services.

Although nurse training in Botswana started in the 1920s, training Batswana (citizens of Botswana) doctors only started in the 1960s, in African medical schools. Even as late as 1975, there were only nine citizen doctors in the country (Personal communication with Dr Edward Maganu 23 March 2018).

This article gives a historical account of the development of training Batswana doctors and seeks to understand the policies that informed the different training strategies and the outcome of the adopted strategies. All the four authors of this article were involved at different stages of the development of medical training in Botswana. Dr Edward Maganu was one of the early proponents of localising medical education as the Deputy Permanent Secretary and Director of Health Services and then Permanent Secretary in the Ministry of Health from 1986 to 1996. He retired from the civil service in December 1996 after the government of Botswana turned down the 1995 feasibility study which recommended a start of a medical school in the country. He was also a member of the 1988 Task Force on Medical Education. Dr Thabo Mokoena was a member of the 1988 Task Force on Medical Education and also led the 1998 University of Botswana Working Group on the Development of the Medical School and was the interim Dean of the new Faculty of Health Sciences in 2007. Dr Loeto Mazhani was a member of the same Working Group from 1998, and Deputy Permanent Secretary and Director of Health Services in the Ministry of Health from 2005 to 2008. In 2009 he retired from government service to be among the founding faculty of the Medical School at UB in 2009. Dr Oatlhokwa Nkomazana joined the Medical School at its inception in 2009 and was responsible for facilitating the development, approval and accreditation of its undergraduate and postgraduate programmes.

Outsourcing the training of doctors

In 1979, there were 50 medical schools in sub-Saharan Africa (Monekossa 2014) and Botswana being a very poor and sparsely populated (population only 574,094 and 941,027 in 1971 and 1981 respectively) (Statistics Botswana 2016) country sought to secure training for her doctors in these African medical schools. This was before the diamond 'bonanza' that brought significant revenue to government coffers

starting in the 1980s. The number of training slots Botswana could secure at these medical schools, however, was limited. This was exacerbated by the small number of Botswana secondary school leavers qualifying for medical school enrolment. During the economic boom of the 1980s, very few Botswana students chose medicine as a career because they felt the training was too long and too difficult with poor salaries after completion. On the other hand, those with shorter degree programmes or diplomas were confident of finding jobs and fast promotion. There was no graduate unemployment at the time (communication with Maganu 12 December 2017). The 1980s were truly the lost decade in medical training, because very few Batswana chose to study medicine.

Moreover, medical education in much of Sub-Saharan Africa faced a severe challenge between 1975 and 1990 because of economic downturn, escalating corruption, civil wars and political unrest (Monekosso 2014). The near collapse of medical education in Africa severely constrained Botswana's ability to train doctors in the region. Students were then mostly sent to study in the United Kingdom and a few to the United States of America. The costs, however, were so prohibitive that only a small number could be trained at any one time. Consequently, by 1990 Botswana still had fewer than 50 citizen doctors to serve a citizenry of 1.378 million (Statistics Botswana 2016).

Through the efforts of the Ministries of Education and Health, Botswana concluded agreements with the government of Norway (Assistance to the Education of Batswana Medical Students in Norway 2003-2008) and the Irish Medical Schools Consortium, and the numbers of Batswana students studying Medicine in these countries increased drastically. Government scholarships to medical schools in the Caribbean and the Czech Republic also significantly increased the numbers of Botswana students studying medicine to almost 80 new students a year. In addition, government joint ventures with companies like Debswana Diamond mines also provided sponsorships to qualifying Batswana to study medicine with the understanding that they would return to work for mine hospitals. Unfortunately, the optimism with which these major investments were made quickly dwindled as only a small fraction of these students returned to work in Botswana upon graduation. Between 1997 and 2010 an estimated 800 government sponsored students graduated from medical schools in 21 countries. However, in 2012 only 382 of these doctors were registered to practise in the country. The bulk of medical care was still provided by expatriates who constituted 79% of doctors registered by the Botswana Health Professions Council to practise medicine in the country (Nkomazana *et al*. 2014).

Campaign for Localisation of Training of Doctors

In the early 1980s the Ministry of Health started a campaign for local training of doctors as the only reliable and sustainable solution for inadequate numbers of Batswana doctors. However, government believed that Botswana population was too small, being only 94,1027 in 1981, and local training of doctors would not stand to cost-benefit analysis. The Ministry of Health persisted with the proposal and brought the Ministry of Education and UB into an alliance to advocate for a medical school. The Ministry of Health made a strong argument that:

1. a situation where only a fraction of doctors in the country were citizens was unsustainable because if salaries in Botswana became unattractive to expatriates, health services would collapse;
2. very few countries have ever managed to train enough doctors outside their own borders;
3. Running a health care system with doctors trained in different systems was difficult, even if they were locals, mainly because their training reflected the philosophies and needs of the health care of the countries they trained in. Training doctors locally would infuse in them Botswana's own philosophy of health care (communication with Maganu 12 December 2017).

With these arguments in 1988 the Ministry of Health prevailed upon the Ministry of Education to appoint a Task Force on Medical Education. The mandate of the Task Force was to study the problem and recommend remedial measures. As part of its work, the Task Force sent a team to various East and Southern African countries to benchmark on the essential modalities for starting and running a medical school. The team was led by Bursaries Secretary in the Ministry of Education, Festinah Bakwena, with Deputy Permanent Secretary and Director of Health Services in the Ministry of Health, Dr Edward Maganu and Dean of Science of UB, Dr Thabo Mokoena as members.

The Task Force produced its report in 1989 and recommended that if Botswana was to achieve 50% localization of medical practitioners by the end National Development Plan (NDP) 8 (1998-2003), then the country should aim to graduate, from the earliest feasible date, 30 to 35 medical doctors per year (Republic of Botswana 1989). As a means of meeting this target, the Task Force considered the following courses of action:

1. the *status quo* of external training;
2. establishment of a link arrangement between the University of Botswana and an external medical school;
3. establishment of a fully-fledged medical school in Botswana.

In a concurrent development, in 1989 UB Council appointed an international Review Commission to advise on the future development of the University. The Review Commission, like the Task Force on Medical Education, advocated for the establishment of a Faculty/School of Medicine at the University of Botswana (UB 1991). In January 1991, UB Council accepted this recommendation in principle whilst awaiting for government decision on the recommendations of the Task Force.

Following the above initiatives, government commissioned a study on the advisability and feasibility of establishing a medical school in Botswana, in December 1994. The Ministry of Health was tasked with putting together an international team to conduct the study. The team was duly set up under the chairmanship of Dr David Sebina, former Permanent Secretary in the Ministry of Health, who had also worked for the World Bank as a Public Health Specialist. Other team members were academics from community-based medical schools namely Professor John Bryant (Aga Khan University, Pakistan), Professor Gabriel Anabwani (Moi University Faculty of Health Sciences, Kenya), Professor Bjorn Straume (Institute of Community Medicine, University of Tromso, Norway) and Dr Toralf Hasvold (District Medical Officer, Bardin and University of Tromso). The advantage of Dr Toralf Hasvold as a member was that he was already familiar with the Botswana district health care system. The team also included health economists in the form of Professor Kenneth Lee and Professor Geoffrey Hoare (both from Keele University, England). The key recommendations of the Feasibility Study Team were that:

- a Medical School be established as a component of a Faculty of Health Sciences at the University of Botswana at the earliest opportunity;
- the School be planned to receive an annual intake of 20 to 30 students;
- Princess Marina be designated as a national referral teaching hospital;
- the medical curriculum be population-based and community-oriented;
- early attention be given to seeking international collaboration with other universities and networks of institutions and donors with common interests;
- the planning and action necessary for establishing a Medical School be incorporated in the 8th National Development Plan (1998-2003) (Republic of Botswana 1995).

The Team presented its report to government in June 1995. However, the proposal was rejected on the advice of the Ministry of Finance and Development Planning (MFDP) which purportedly maintained that the proposed project was not economically feasible, despite extensive evidence to the contrary (communication with Maganu 12 December 2017).

The Government of Botswana reconsidered the recommendations of the feasibility study team after three years, presumably owing to political pressure (communication with Maganu 12 December 2017). Perhaps, this led to a presidential directive duly issued on the establishment of a medical school in September 1998. (The directive was issued during the presidency of Festus Mogae, who became President of Botswana on 1 April 1998). The Ministry of Education was instructed to implement this directive. The medical school was to be established in a phased manner by:

- parallel to external students placement, establish a pre-medical programme through a link arrangement between the University of Botswana and a medical school or consortium of medical schools;
- allowing a fully-fledged medical school to evolve from scenario; and
- setting up a high-ranking committee to plan and cost a phased medical school project. (Republic of Botswana 1998)

In September 1998 the Ministry of Education, through its Permanent Secretary, Philemon Ramatsui, enjoined UB to work on the following aspects of the presidential directive: i) 'identification of possible link partner institutions; and ii) review of the UB Bachelor of Science (BSc) Year1 and Year 2 curriculum in order to provide pre-medical training to prepare students selected for medical training' (Mr P Ramatsui to UB 4 September 1998).

In order to plan for and institute the process, UB set up a University Working Group on the Establishment of a Medical School in October 1998, led by Dr Thabo Mokoena. The Working Group had representation from the Ministries of Health, Local Government Housing and Lands, Finance and Development Planning and Education, the country's two government-owned referral hospitals, Princess Marina and Nyangabgwe, and the private sector (UB 1998). Acting on recommendations from the Working Group, UB:

i) initiated a 4-semester premedical programme with an annual enrolment of sixty (60) students from August 2000;
ii) ensured that in addition to the study of the full Year 1 academic programme, the premedical programme included:
    - 3-weeks of exposure in the two referral hospitals; and
    - weekly talks by medical doctors and other health professionals.
iii) signed, in 2001, 10-year partnership agreements with medical schools of the Universities of KwaZulu Natal, Pretoria, Free State and Cape Town, guaranteeing 30 medical school places annually from 2002 until 2011.
iv) signed two more agreements in 2003/2004 with the Universities of Melbourne and Monash (Australia) that provided 18 more places until 2011.
v) in December 2000 UB endorsed the Working Group's phased plan which were:
    - Phase 1: Establishment of the premedical programme and UB link partnerships; (November 1998 – March 2005)
    - Phase 2: Establishment of the Medical School with continued use of link partnerships: (March 2005 – 31 March 2009)

- Phase 3: Operation of the Medical School: (August 2009- 2015)
- Phase 4: Consolidation of the Medical School: (2015 onwards) (communication with Mokoena 12 December 2017)

The implementation schedule was endorsed by the High Ranking Committee (HRC). The HRC was established by Cabinet to oversee the planning and costing of the establishment of (phases 1 to 3 above) of the medical school. Importantly, the HRC was a decision making platform for all the important stakeholders who were Botswana Health Professions Council, the Tertiary Education Council (later renamed Human Resource Development Council), the Directorate of Public Service Management and the Ministries of Finance and Development Planning, Health and Education (Republic of Botswana 1998). The committee's mandate was very broad and entailed facilitating all the stakeholders to complete their particular assignments expeditiously and efficiently. This included the promulgation of enabling policy and legislative framework for medical education and training (including the use of cadavers or human dead bodies and organ transplant); infrastructural development; human resources planning and development of a joint staff agreement between Ministry of Health and UB to facilitate sharing of resources (Republic of Botswana 1998).

Establishment and Operation of the Medical School at UB, 2005-2009

In 2007 UB established the Faculty of Health Sciences with Dr Thabo Mokoena as its interim Dean. The Faculty constituted four schools namely School of Medicine, School of Nursing, School of Allied Health Sciences and the School of Public Health. During NDP 9 (2004-2009), government released funds for the construction and equipping of the Faculty of Health Sciences complex. This was to be the hub for biomedical teaching, research and service as well as the administrative centre for the Faculty of Health Sciences. The building was ready for occupation in 2011. In addition, government allocated development funds to the Ministry of Health for the construction of the teaching hospital and other requisite facilities at UB.

Although the Feasibility Study on the development of the Medical School recommended Princess Marina Hospital as the national referral teaching hospital (Republic of Botswana 1995), this was turned down by cabinet in favour of what they termed a 'greenfield'. Their argument was that upgrading Princess Marina Hospital was very costly and they, therefore, believed it would be cheaper to have a purpose built hospital to support medical training.

In July 2007, under the leadership of the interim founding Dean of the School of Medicine, Professor Major Bradshaw, an undergraduate curriculum retreat was convened in Gaborone. This was attended by members of the HRC, UB partner medical schools, community representatives, health professionals from public and private health facilities, traditional healers and regional and international medical education experts. The goal of the retreat was to define the type of doctor Botswana needs which would inform the curriculum of the Bachelor of Medicine Bachelor of Surgery (MBBS) degree programme (Application for Approval, MBBS 2007). In 2007 UB Council approved the MBBS programme to be offered as a five year degree programme after one year of BSc or a two year A' Level programme or equivalent (Mokone *et al*. 2014).

A historical development took place in August 2009 when UB enrolled its first class of 36 medical students that would complete all their training in Botswana. The integrated spiralling curriculum gives students early patient and community contact, as students spend one day a week in primary care clinics and four weeks a year in the community during the first two years of training. The last three years are made up of eight week clinical and public health rotations. Training takes place in distributed sites in Gaborone,

Mahalapye, Maun, Lobatse, Molepolole and Serowe spanning both rural and urban centres (Arscott-Mills *et al*. 2016).

The Medical School at UB attracted biomedical and clinical teachers from 17 different countries including South Africa, United States of America, Australia, India, Ethiopia, Uganda, Nigeria, Tanzania, Malawi, Kenya, and the Democratic Republic of Congo. These had varied experiences and convictions about medical education. In addition, many of them had no experience of problem based learning (PBL), the mode of instruction used by the school. In order to ensure implementation of the primary curriculum, the school developed a PBL training programme with the initial facilitation by the University of the Witwatersrand (Johannesburg). The University of the Witwatersrand and Hull York Medical School also facilitated faculty training in assessment. As part of the localisation of the faculty, UB funded staff development training in biomedical and medical disciplines to develop junior faculty. This was halted prematurely, however, on account of budget constraints.

In an attempt to increase the number of clinical teachers, train specialists for Botswana and retain junior doctors in the country, graduate medical (residency) training programmes were started concurrently with the MBBS. In order to comply with UB regulations and in keeping with regional practice, UB's residency programmes include a thesis so that the trainees graduate with a Masters in Medicine (MMed). Therefore, in January 2010 UB enrolled its first two MMed classes in paediatrics and adolescent health and internal medicine. These were closely followed by MMeds programmes in anaesthesia, emergency medicine, family medicine, public health medicine and anatomical pathology (Mokone *et al.* 2014). The residency training takes place in Botswana and South Africa, except for Family Medicine and Public Health Medicine, which take place solely in Botswana. The 18 to 24 months training in South Africa is mandated by the lack of sub-specialties in the different disciplines at the UB Medical School. It is envisaged that the opening of Sir Ketumile Masire Teaching Hospital at UB (the building of which already exists) will significantly reduce the need for this expensive external placement. To date close to 171 junior doctors and 21 specialists have graduated from the Medical School.

The Ministry of Health remains the major strategic partner in all aspects of the Medical School, especially in clinical training as all clinical teaching and training takes place in the Ministry's facilities and their staff form a very important human resource. The School of Medicine Advisory Board, with representatives from the community, practising clinicians, Ministry of Health and the Botswana Health Professions Council (BHPC) (regulatory body), ensured the new school curriculum continued to be grounded on the health needs of the country and played a critical advocacy role.

The Medical School also benefitted from a number of regional and international strategic partners. For instance, the Baylor College of Medicine, Texas, USA, supported Professor Major Bradshaw to be the interim founding Dean of the School of Medicine in 2006, by seconding him to UB while continuing to pay his salary; the University of Pennsylvania contributed to curriculum development, bedside teaching and research mentoring (Pumar *et al*. 2014). The University of the Witwatersrand assisted with faculty development while Hull York Medical School contributed to curriculum and faculty development. Different colleges of medicine in South Africa shared their curricula with their counterparts in Botswana and the MMed trainees, except for those in Public Health Medicine and Family Medicine, sit the colleges' examinations. Medical schools at the Universities of Cape Town, Witwatersrand and Stellenbosch in South Africa also provide one and a half to two years placement for UB postgraduate trainees. Stellenbosch (South Africa) and Ghent (Belgium), Universities facilitated the development of the family medicine programme. Additionally, the public health medicine programme benefitted greatly from the curriculum and faculty development input from Harvard School of Public Health and the University of the Witwatersrand.

Accreditation of the MBBS and MMed programmes is done by the BHPC. The accreditation of the

MBBS programme is based on the World Federation of Medical Education standard (World Federation of Medical Education 2015). The MBBS programme was given temporary accreditation in 2011 pending graduation of its first cohort and an evaluation of their performance in the field. The MMed programmes are further accredited by the relevant colleges of medicine of South Africa.

In 2009 the Centre for Disease Control (CDC) office in Botswana offered the School of Medicine US$300,000, for information technology development which was especially needed in decentralised training sites. Furthermore, in 2010 the School of Medicine successfully competed for a US$10 million grant from the Health Resources and Services Administration (HRSA) of the United States government to support medical education. These funds acted as a catalyst to support the infrastructural developments of the decentralised teaching sites, faculty development, the development and support of the MMed programmes through funding of visiting professors as well as staff and student exchanges. The grant provided the flexibility the young or new Medical School needed to innovate. The school promoted eLearning by using mobile devices to access medical information at the bedside, thus engendering evidence based practice (Witt *et al.* 2016). In addition, the Human Resources Council (HRDC) availed P5,239,748 (US$500,000) to support the development of the medical internship programme administrative and training structures.

In anticipation of the return of the first batch of graduates from the initial four partner South African medical schools, UB, Ministry of Health and BHPC developed an accredited internship programme. The programme, however, collapsed for lack of effective administrative support. Therefore, in 2014 in preparation for the graduation of the first class of UB Medical School, the University and Ministry of Health resuscitated the one year internship programme and jointly sourced funds from HRDC, to establish an administration office for the programme.

Challenges and Serious Concerns at UB Medicine School

One of the major challenges the school is still grappling with is recruitment and retention of clinical instructors (Mokone *et al*. 2014). The MMed Anaesthesia programme collapsed in 2013 when the programme lead resigned from UB and trainees either quit or secured funding to complete the training in South Africa. The human resources challenge is compounded by the UB policy on faculty recruitment and promotion which is heavily skewed towards research. The school is trying to mitigate the shortage by recruiting graduates of its MMed programmes.

Shortage of doctors and frequent outages of essential drugs and equipment not only make medical training difficult but also demoralises instructors and learners. In fact, UB medical students have cited the comparatively greater shortages of essential drugs and equipment in rural areas as a reason not to consider working in rural Botswana by the UB medical students (Arscott-Mills *et al*. 2016).

These problems and difficulties were exacerbated by the collapse the HRC in 2013 as UB no longer saw its usefulness. The new Vice Chancellor, Professor Thabo Fako, was of the opinion that the school no longer needed the special project status but should function as all other schools and faculties at UB. This collapse, however, aborted many of the early gains and significantly delayed others including:

- the creation of training positions for the MMed programmes,
- the implementation of the joint staff agreement and
- commissioning of the teaching hospital.

Training positions and MMed programmes

Research has confirmed that the leading causes of migration of health workers were dysfunctional health systems, lack of professional support and postgraduate training opportunities (Moosa *et al*. 2014). The

status quo, with limited opportunities for residency training, will make retention of doctors very difficult. A vibrant postgraduate medical training is central to clinical training in the undergraduate programme, retention of clinical faculty and fostering subspecialty training. Lack of support for the postgraduate programme threatens to collapse the entire medical school project.

Lack of postgraduate training opportunities will also render the country perpetually dependent on an expatriate health workforce even after the huge investments in medical education. Sub-specialty training at the Sir Ketumile Masire Teaching Hospital is mandatory for localisation of all MMed training programmes and also to ensure sustainability of the multibillion pula investment in the construction and equipment of the hospital. Sub-specialty training, however, is dependent on adequate output from the MMed programmes.

Failure to establish training positions for the MMed trainees, as recommended by the HRC, is significantly impairing the school's ability to train specialist doctors for Botswana as the Ministry of Health and Wellness's training budget has shrunk, limiting its ability to support potential trainees.

The Joint Staff Agreement

Failure to implement the joint staff agreement between UB and the Ministry of Health has rendered the clinical training sites dysfunctional, ineffective and sometimes outright hostile. This is unfortunate as the clinical service, teaching and research are not able to get the full benefit from all those in the clinical platform and the two employers are not accountable to each other. These bedevil many new medical schools and, therefore, should be tackled early in the founding of any medical school (Cookson 2013).

The Teaching Hospital

On 10 August 2011 the HRC hosted an expert panel on 'Academic Hospital at University of Botswana'. The panellists were medical academics and experts in running teaching hospitals from South Africa, Australia, the United Kingdom and the United States. Two of the co-authors of this paper, Drs Mazhani and Nkomazana, participated in the workshop, and the panel made the following major recommendations:

- Decide governance and management arrangements for operational phase of the teaching hospital;
- Move planning of the teaching hospital from being building driven to mission driven;
- Integrate teaching hospital planning with national health system planning;
- Urgently make key appointments especially CEO and executive management;
- Decide upon policy and arrangements for clinical academic staff appointment and compensation in line with international best practice and global markets;
- The teaching hospital to be more autonomous.

The collapse of the HRC destroyed the vehicle that was driving the commissioning of the academic hospital, named Sir Ketumile Masire Teaching Hospital on 29 June 2017, which is still not operational, four years after completion of its construction.

The decision to start a medical school locally was important as it is the most cost effective way of developing an adequate health workforce (WHO 2010) which also ensures that the doctors will have the right competencies to meet the health needs of the population of Botswana. Experience from countries with long history of medical education, however, has shown that training alone is inadequate in developing the health workforce. Uganda, for instance, with one of the first five African medical schools, has one of the lowest densities of doctors per population in the world (Willcox *et al*. 2015). Botswana, therefore, has

to do a lot more than just produce doctors in order to actualise her goal of training doctors for her health system. Evidence based interventions are urgently required before the huge investments go down the drain.

Conclusion

Botswana has managed to successfully open a medical school which has already added almost two thirds of the 2012 total number of Batswana doctors in the country, to the country's health system, in only eight years. The determinants of success are multifactorial but the political will and leadership was critical in mobilising the huge resources that were ploughed into the project. Great concern is safeguarding this huge investment by ensuring the school continues to train adequate numbers of the right type of doctors and that these are retained within the Botswana health system.

The decision to disband the HRC in 2013 was premature with negative consequences for the sustainability of the medical school. The provision of quality clinical services, training and research are interwoven and require a high level coordination and input of significant national resources by the Ministries of Health, Education and Finance and Development Planning and Department of Public Service Management (DPSM). The addition of the Sir Ketumile Masire Teaching Hospital to the health system requires critical and holistic decisions to be made looking at the country's service and educational requirements. Isolated and uncoordinated decisions by the ministries and UB are a real threat to the medical school and could potentially lead to its collapse.

It behoves UB, therefore, to look for innovative ways to attract and retain instructors. The first source of clinical trainers is the health system, hence the significance of the Joint Staff Agreement. Despite budgetary challenges, UB should still prioritise staff development fellowships so that graduates from the MBBS and MMed programmes can be trained as future instructors. Increasing the output from the residency programme is essential to supply adequate specialist clinicians as well as clinical teachers. Other novel strategies to explore should include supporting visiting scholars especially in areas of greatest need.

The 'teaching health system' recommendation of the Feasibility Study Team (1995) was the most visionary, had it been acted upon properly by all parties concerned. It provided a necessary ingredient for inter-professional and trans-professional training and thus opportunity to train health care professionals of the twenty-first century (Frenk *et al.* 2010). Implementation of the Joint Staff Agreement is probably one of the steps that would have helped in this regard.

References

Official reports and documents

Botswana Health Professions Council 2011. 'Bachelor of Medicine Bachelor of Surgery accreditation report'. Gaborone: Botswana Health Professions Council.

International Conference on Primary Health Care 1978, 'Declaration of Alma-Ata', Alma-Ata: Union of Soviet Socialist Republic.

Ministry of Finance and Development: Agreement between the government of the Kingdom of Norway and the government of the Republic of Botswana regarding assistance to the education of Batswana medical students in Norway 2003 -2008

Republic of Botswana 1989. 'Taskforce on Medical Education Report 1989'. Gaborone: Government Printer.

Republic of Botswana 1995. 'The Feasibility Study on the Establishment of a Medical School in Botswana'. Gaborone: Ministry of Health.

Republic of Botswana 1998. 'Presidential Directive CAB.29/98 on the Establishment of a Medical School in Botswana'. Gaborone: Government Printer.

Ramatsui PT To Professor Sharon Siverts, University of Botswana. 4th September 1998: 'Establishment

of a Medical School in Botswana'

Statistics Botswana 2016. 'Selected Statistical Indicators, 1966-2016'. Gaborone: Statistics Botswana.

University of Botswana 2007. 'Application for Approval. Bachelor of Medicine Bachelor of Surgery'. Gaborone: University of Botswana

University of Botswana 1998. 'Overview of the Phased Establishment of a Medical School at the University of Botswana'. Gaborone: University of Botswana.

University of Botswana 2005. 'Proposal to Establish a Faculty of Health Sciences'. Gaborone: University of Botswana.

University of Botswana 1991. 'Review Commission of the University of Botswana'. Gaborone: University of Botswana.

University of Botswana 1998. 'Working Group on Establishment of a Medical School'. Gaborone: University of Botswana.

World Federation for Medical Education 2015. 'Basic Medical Education WFME Global Standards', http://www.tandfonline.com/doi/full/10.3109/0142159X.2013.799638 accessed 29 November 2017.

World Health Organisation 2006. 'World Health Report. Working Together for Health', http://www.who.int/whr/2006/en/ accessed 26 November 2017.

World Health Organisation 2010. 'Increasing Access to Health Workers in Remote and Rural areas Through Improved Retention', www.who.int/hrh/retention/guidelines/en/ accessed 26 November 2017.

World Health Organisation 2015. 'World Health Statistics 2015', www.who.int/gho/publications/world_health_statistics/2015/en/ accessed 26 November 2016

Secondary sources

Anshan, L 2011. 'Chinese Medical Cooperation in Africa' Discussion paper 52. Uppsala: Nordiska Afrika Institutet.

Arscott-Mills, T, Kebaabetswe, P, Tawana, G, Mbuka, DO, Makgabana-Dintwa, O, Sebina, K, and Nkomazana, O 2016. 'Rural Exposure During Medical Education and Student Preference for Future Practice Location -A Case of Botswana', African Journal of Primary Health Care and Family Medicine vol.8, 2, https://doi.org/10.4102/phcfm.v8i1.1039 accessed 27 November 2017.

Bonenberger, M, Aikins, M, Akweongo, P and Wyss, K 2014. 'The Effects of Health Worker Motivation and Job Satisfaction on Turnover Intention in Ghana: A Cross-sectional Study', Human Resources for Health, vol. 12, 43. https://doi.org/10.1186/1478-4491-12-43 accessed 29 November 2017.

Chen, C, Buch, E, Wassermann, T, Frehywot, S, Mullan, F, Omaswa, F, and Olapade-Olaopa, EO 2012. 'A Survey of Sub-Saharan African Medical Schools', Human Resources for Health, vol. 10, 4. https://doi.org/10.1186/1478-4491-10-4 accessed 26 November 2017.

Chen, L, Evans, T, Anand, S, Boufford, JI, Brown, H, Chowdhury, M and Alex de Waal, SW 2004. 'Human Resources for Health: Overcoming the Crisis', The Lancet, vol. 364, 9449, pp.1984-1990.

Cookson, J 2013. 'Twelve Tips on Setting Up a New Medical School', Medical Teacher, vol. 35, 9, pp.715-719.

Frenk, J, Chen, L, Bhutta, ZA, Cohen, J, Crisp, N, Evans, T and Zurayk, H 2010. 'Health Professionals for a New Century: Ttransforming Education to Strengthen Health Systems in an Interdependent World', The Lancet, vol. 376, 9756, pp.1923-1958.

McCoy, D, McPake, B, and Mwapasa, V 2008. 'The Double Burden of Human Resource and HIV Crises: A Case Study of Malawi' Human Resources for Health, vol. 6, 16 https://doi.org/10.1186/1478-4491-6-16 accessed 11 December 2017.

Mokone, GG, Kebaetse, M, Wright, J, Kebaetse, M B, Makgabana-Dintwa, O, Kebaabetswe, P, and Nkomazana, O 2014. 'Establishing a New Medical School: Botswana's Experience', Academic

Medicine, vol. 89, 8 (Supplement), pp. 83-87

Monekosso, GL 2014. 'A Brief History of Medical Education in Sub-Saharan Africa', Academic Medicine, vol. 89, 8 (Supplemnt), pp.11–15.

Moosa, S, Wojczewski, S, Hoffmann, K, Poppe, A, Nkomazana, O, Peersman, W, and Willcox, M 2014. 'The Inverse Primary Care Law in sub-Saharan Africa: A Qualitative Study of the Views of Migrant Workers', British Journal of Journal Practice, vol. 64, 623, pp.321-328.

Mullan, F, Frehywot, S, Omaswa, F, Buch, E, Chen, C, Greysen, SR and Neusy, AJ 2011. 'Medical Schools in sub-Saharan Africa', The Lancet, vol. 377, 9771, pp.1113-1121.

Nkomazana, O, Mash, R, Shaibu, S, and Phaladze, N 2015. 'Stakeholders' Perceptions on Shortage of Healthcare Workers in Primary Healthcare in Botswana: Focus Group Discussions', PLoS ONE, vol. 10, 8, https://doi.org/10.1371/journal.pone.0135846 accessed 26 November 2017.

Nkomazana, O, Peersman, W, Willcox, M, Mash, R, and Phaladze, N 2014. 'Human Resources for Health in Botswana: The Results of In-country Database and Reports Analysis', African Journal of Primary Health Care and Family Medicine, vol. 6, 1, https://doi.org/10.4102/phcfm.v6i1.716 accessed 26 November 2017.

Pumar, M, Opondo, P, Ayugi, J, and Reid, M 2014. 'Developing a Medical School Psychiatry Training Program in Botswana: Overcoming Obstacles With Innovation', Academic Medicine, vol. 89, 8 (Supplement), pp.111-112.

Willcox, M L, Peersman, W, Daou, P, Diakité, C, Bajunirwe, F, Mubangizi, V and Mant, D 2015. 'Human Resources for Primary Health Care in sub-Saharan Africa: Progress or Stagnation? Human Resources for Health', vol. 13, 76, https://doi.org/10.1186/s12960-015-0073-8 accessed 28 November 2017

Willis-Shattuck, M, Bidwell, P, Thomas, S, Wyness, L, Blaauw, D and Ditlopo, P 2008. 'Motivation and Retention of Health Workers in Developing Countries: A Systematic Review', BMC (Biomedical Central) Health Services Research, vol. 8, 247, https://doi.org/10.1186/1472-6963-8-247 accessed 26 November 2017.

Witt, RE, Kebaetse, MB, Holmes, JH, Ryan, LQ, Ketshogileng, D, Antwi, C and Nkomazana, O 2016. 'The Role of Tablets in Accessing Information Throughout Undergraduate Medical Education in Botswana', International Journal of Medical Informatics, vol. 88, pp.71-77.

Newspapers source

Mmegi 30 May 2006. 'Cuba Sends Doctors to Botswana'.