



Fostering international undergraduate medical education

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Introduction

Health professional education represents an expanding frontier of medical missions. In November 2015, 67 medical missionaries and academicians met in conjunction with the Global Missions Health Conference (GMHC) in Louisville, Kentucky. Most of the participants involved in the discussion were of North American origin, some originated and resided on other continents, and most participants had spent years working professionally outside of North America. A subgroup of 10 educators reviewed the current status of Christian health care education and discussed potential challenges for groups starting new medical schools. Recommendations were made as to how educators from high-income countries (HICs) can support schools in low- and middle-income countries (LMICs). Further discussions have been held since that 2015 meeting. Arising from those discussions, this paper represents a consensus on the current status of undergraduate health care education in missions and includes future directions and recommendations.

Current Status of Health Care Education

The 2015 Louisville workshop started with four questions:

- What are some of the challenges in starting new medical schools in LMICs, especially in Africa?

- How can HIC educators help overcome the challenges faced in medical educational institutions in LMICs?
- Can general recommendations be made for Christian groups wanting to start new medical schools or wanting to help existing ones?
- What forum or specific organizations would best accomplish the above goals?

Responses to these questions provide the framework for this paper.

Overcoming Challenges in Starting Medical Schools in LMICs

One challenge facing international health care education is the acute need for more health care professionals in most countries. Even in HICs such as the US, there is a call for more medical schools as the Association of American Medical Colleges (AAMC) predicts a shortage of 45-90,000 doctors by 2025.¹ This shortage is minuscule compared to the need for physicians in LMICs, where multiple studies have documented an inadequate health care work force and associated poor outcomes.² The existing shortage is further aggravated and perpetuated by health care worker migration to help fill the shortage in HICs. It is very disconcerting when a large percentage of graduating classes in LMIC medical schools anticipate emigrating to HICs soon after graduation, with enormous human and financial capital losses.³ To meet the need for health care professionals, many governmental, non-governmental (Christian and secular), and for-profit



organizations and groups are starting new medical schools in LMICs.⁴ However, these groups face multiple potential obstacles to educating quality health care professionals. The Working Group identified several such challenges, detailed below.

- *Adequate facilities and resources for lectures and laboratories in the basic science years, and of clinical settings for the clinical years.* The latter of these is most critical in light of the many new medical schools being opened without advance consideration of clinical teaching, resulting in medical schools literally competing for patients in both public and private hospitals. Such, for instance, is the status quo in Addis Ababa, where multiple new public and private medical schools literally compete for patient exposures in their clinical years in the city's hospitals. Another aspect of the resources is the adequacy (or lack thereof) of internet connectivity. This is the case in some African countries like Ethiopia and Democratic Republic of Congo (DRC). Not only does the connectivity limit access to online resources, but it also impairs the possibility of telemedicine.

Among laboratories, the greatest challenge is anatomy. Human cadavers for dissection are very difficult to obtain in most resource-limited countries (such as Ethiopia), and totally unavailable in others (such as Somaliland and DRC). Replacing the cadavers with "digital dissection programs" is attractive, yet very expensive or must rely on fast internet connections.

- *Qualified faculty, for both the basic sciences and clinical years.* There are many reasons for this problem, including lack of local training facilities for basic science faculty in LMICs and low salaries. Clinical teachers typically carry heavy patient loads, resulting in limited time to teach. This is further exaggerated by the relatively few faculty and, in both public and some private settings, large numbers of students. Clinical teachers' income is often poorly compensated by the schools for the

extra time teaching requires, so there is little incentive to take on teaching responsibilities. Finally, clinical teachers often lack training in teaching and are reluctant to make onerous teaching commitments.

Most foreign NGOs and Christian schools compensate for the limited availability of local faculty with expatriate faculty. This is not a durable solution as few faculty from HICs are willing to commit to full-time ministry or even consider multiple short-term visits, leading to unpredictable availability and consistency. Expatriate faculty may also face language issues, especially in non-English-speaking countries. The reverse problem occurs in countries where medical schools recruit foreign students to raise tuition income, then teach the students in English using faculty whose command of English is suboptimal, thus leading to a poor atmosphere and outcome.

Moreover, it is often difficult to attract expatriates to work in harsh living conditions or where there are limited educational opportunities for their dependent children. Hiring national faculty ultimately remains the best option, as this option builds local capacity and therefore sustainability. Unfortunately, local faculty, especially in some academic areas, are conspicuously absent (e.g., embryology, genetics, molecular biology, histology/pathology among the basic sciences). Even if they are present it may be too expensive to pay local faculty, thus leading to higher tuition costs. Some new medical schools have started within existing universities, thus using general science faculty to teach basic health sciences – yet with little or no medical expertise or application. Thus, one of the priorities for new medical schools should be to recruit *and train* nationals to become faculty. Another viable option is the use of online courses and other resources.

- *Qualified students.* In most LMICs, medical school is a 5- or 6-year undergraduate degree, so students matriculate directly from secondary (high) school. Many have marginal educational



backgrounds and find adapting to the rigors of medical school difficult, resulting in a relatively high dropout rate. A drop-out rate of 25-50% is commonplace, for instance, in some private medical schools in Somaliland.

Some new medical schools are started quickly to help fill the need for health care training. The plans may be to start first with minimal resources, then add more faculty, physical facilities and clinical training sites as time moves on. In Ethiopia, for instance, public directives for rapidly increasing the number of trained physicians have resulted in 25 new public and private medical schools, unfortunately many have very limited resources. This style of “planning” can have negative consequences such as:

1. Initial student intake may be very high with a planned attrition rate as high as 50%.
2. A minimal number of faculty engaged before taking in students, with little planning to match the number of students with the number of faculty.
3. Minimal (or absent) curriculum plan, and/or a faculty with no experience in curriculum design and implementation.
4. Unclear or absent long-term plans for facilities and faculty for clinical training after the basic science years.
5. No clear plans on how to retain national or expatriate faculty. Sometimes there is a lack of finances to pay the national faculty on a regular basis.
6. For-profit schools tend to charge high tuition fees to satisfy their investors. Unfortunately some Christian schools supported by national churches may end up doing the same to support the church.
7. Well-meaning mission organizations may not understand the long-term costs associated with running a full-service medical school. While the focus is often on the initial set-up costs, it's the year-after-year operating budget which is often most challenging to maintain.

- *Secularized curricula:* Christians working in secular schools will need to contend with the consequences and implications of a secularized curriculum. This may happen even in the context of previously faith-based schools in which the mission and vision have changed over time. In other settings, the commitment to a Christian curriculum may be at odds with governmental directives towards a fully secular higher education. Moreover, Christian medical school curricula are rare and difficult to implement. Examples to date include, among others, Loma Linda University School of Medicine⁵ in the US, MyungSung Medical College in Addis Ababa (Ethiopia), Université Shalom de Bunia (DRC)⁶ and Hope Africa University in Bujumbura (Burundi).

- *Availability of paid employment and/or postgraduate training for graduates.* This is quite variable in different countries. Some of the experiences reported by the workshop participants are described below.

1. In India this is not a major problem. While there are not enough government positions, there are opportunities in the private sector hospitals, independent charities and private practice. Immigration to Europe and North America has decreased to about 10% of graduates. A significant problem, common to many settings, is having doctors willing to move to rural areas where many jobs go unfilled.
2. China has a large number of medical schools, but the healthcare policy limits employment options. Private practice is not allowed, so many graduates cannot find employment, which may affect as many as 60-80% of medical students (JDS, personal communication).
3. A few years ago in Cameroon, the government approved starting about 15 new medical schools in a very short time, but within 2 years closed all but 3 for lack of qualified students and faculty.⁷

4. In Kenya, there are 6-8 new medical schools which have recently started or are planned to start in the near future. Yet when a Kenyan physician was asked, the concern was that even at present not all graduates from the two older major medical schools have been able to find paid employment or postgraduate training.
4. This phenomenon is not unique to Africa, but has been observed in countries from the Middle East to Central Asia to East Asia. When asked, doctors admit they are depending on those not finding paid employment to immigrate to other countries for employment in the medical field.
5. By 2017-2020, it is predicted that there will be no residency positions for foreign medical graduates in the US unless the numbers of residency positions are increased. The question will be whether superior foreign medical graduates will be able to take positions desired by American graduates.⁸

Recommendations to Meet the Challenges: Opportunities for Contribution

Workshop participants provided both general and specific recommendations.

General Recommendations

1. It is incumbent for those of us wanting to help to ask the nationals what they see as their needs. A new medical school may not be demographically recommended in an area, yet the desire to create a Christian center of excellence in a setting with lower-level secular institutions may be commendable.
2. Our key means of assistance may be in “walking with” our spiritual and professional sisters and brothers in LMICs through the complex process of “counting the costs” of undergraduate medical education (in terms of workforce, facilities, resources, time commitment) and then establishing a detailed work plan for accomplishing the task. A sample listing of tasks is found in Figure 1.

Figure 1. Medical Degree Program Start-up: Key steps & tasks

Domain	Task	Key documents needed	Notes
Administration	college mission & vision	mission & vision	best derived through a faculty retreat
	college organogram	organogram	based on university organogram, if available
	college committee structure	College constitution; committee ToRs	based on university constitution
Staffing	staffing plan	staffing projections	set up minimum and scale-up to ideal
	staffing policies	Staffing manual	recruitment, dismissal, professional code
Admissions	incremental class sizes		typically start with 15-20/year; best start small; limiting factor is clinical exposure
	admission requirements	Admissions manual	minimum GPA/ high school position, internal exam grade, etc.
	admissions process	Admissions Committee ToR	include essay? interview format; norm- or criterion-referenced

Curriculum	curricular philosophy curriculum type curriculum structure courses Instructional format	College mission & vision syllabus preamble Syllabus Course syllabi	goal: competence; holistic? spiritual? traditional sequential, modular, PBL, hybrid # years pre-med/pre-clinical/clinical/internship; semester or term-based each include objectives/contents/format/assessment non-lecture based formats: group / indiv. projects, debates, SLMs
Student Assessment	assessment principles assessment methods clinical assessments	Student Manual Student manual	objective-based; multimodality; formative/summative/external OSCEs; ITERs; SPs
Educational Resources	infrastructure lab equipment library instructional tech	survey inventory	# classrooms; labs; offices microscopes; dissection equipment; microbiology traditional vs. digital?; study space; eplatforms models; IT for education
Student affairs	counseling student health student council, clubs ceremonies, prizes		professional external/contract counselor nurse or physician contact White Coat ceremony; cadaver ceremony; best student/teacher awards

Abbreviations: ToR = terms of reference; OSCE = objective structured clinical examination; ITER = in-training evaluation report; SPs = standardized patients; MMC = MyungSung Medical College; HERQA = Higher Education Relevance and Quality Agency (Ethiopia)

3. We then need to determine if their expectations of how we can help are realistic in view of our resources and ability to meet them. This is especially true if a new medical school plans to be totally dependent on staffing a school with expatriates in the long-term.
 4. This may mean that groups that want to help may need to make hard decisions on which programs are the most viable and concentrate their efforts and resources on those sites that will produce the best doctors. This may also include deciding which sites have the most potential to have a spiritual impact. These decisions will need to be balanced with individuals feeling led by the Lord to work in a specific area or with a specific people group.
2. Find ways to recruit basic science and clinical faculty who are willing to serve either long- or short-term. The most effective faculty will be those willing to serve long-term.
 3. Identify a core group of individuals who would be willing to serve as consultants for Christian mission groups or NGOs seeking help to:
 - a. Start a new medical school.
 - b. Develop locally-appropriate curricula for new schools or for established schools interested in reforming their existent curriculum.
 - c. Provide faculty development in adult learning principles, teaching skills, and modern teaching methods (faculty development).
 - d. Provide training for prospective missionaries planning to serve in any of these areas.

Specific Recommendations

1. Provide support through a medical education office in North America to give curricular support,

4. Create a centralized structure to identify and recruit faculty as well as identify global gaps and needs. It is also necessary to identify and collaborate with organizations or groups already working in these areas to try to minimize duplication of efforts.
5. Identify ways to speak into the culture with a Christian worldview and ethics, i.e., how to

treat patients with love and acknowledge their worth in the eyes of God. This may include small interactive group settings more than lectures, where our faculty can both listen and share their views. An example of such an integrated, longitudinal, whole-person medicine program from MyungSung Medical College is shown in Figure 2.

Figure 2. MMC Whole-Person Medicine Curriculum

Component	Year 1	Year 2	Year 3	Year 4
Bioethics lectures	Bi-weekly lectures M1-3 Tuesday PM	Bi-weekly lectures M4-6 Wed. PM		
Servant Leadership	Bi-weekly lectures M1-3 Tuesday PM			
Bioethics seminars			Bi-weekly seminars Thursday PM	
Community Service	Bi-weekly community service assignments Thursday PM			
Worldview course	Weekly lectures M0 Tuesday PM			
Mentorship	Bi-weekly meetings with mentors in cross-year groups Saturday 12:30 – 1:30 PM			
MMC Connect	Weekly MMC body time (includes community reports, worship, chapel message, and student body activities) Saturday AM 11-12:30			

6. Mentor faculty teaching in overseas medical schools, both Christian and secular.
 7. Provide teaching resources such as textbooks, online courses, prepared lectures, videos, webinars, and be ready to do distance education teach via telemedicine and other platforms. Generate and share online repositories of copyright-free academic resources.
 8. Explore innovative LMIC-centric training partnerships with HIC institutions, similar to the model of the Pan-African Academy of Christian Surgeons' training program in graduate education in LMICs.
2. The World Federation for Medical Education has established guidelines, approved by the WHO.⁹
 3. It is important for Christian medical schools to include a Christian worldview in their curricula as much as possible. It is recommended that Christian values and ideas in any curriculum be clearly identified and shared.
 4. We would recommend that any short-term teaching efforts in a secular setting be done in conjunction with either a full-time expatriate working in the area or with an established medical school. This has the following benefits:
 - a. Raises the credibility of the expatriates working in that area;
 - b. Provides someone to help make arrangements and logistics for the visit;
 - c. Provides someone to help with the language in a non-English speaking setting;

Organizing for the Way Forward

1. Most LMICs currently have established government standards and requirements for starting new medical schools with which any group wishing to start a new medical school will need to comply.



- d. Provide someone to follow-up on contacts or relationships developed.
5. Identify sites where large international institutions or universities are not already providing personnel and finances for medical schools. There is recently significant interest in global health within the secular community at all levels, so it is essential to be aware of existing efforts and thus avoid or at least minimize costly duplication of efforts. Also since smaller, more remote medical schools or hospitals do not have the visibility to attract larger educational institutions from HICs, they are usually more appreciative of any efforts to help them and the closer relationships that can be developed. Also, newer medical schools usually have younger faculty who are more open to newer teaching methods than faculty from older, established universities.

Conclusion

International undergraduate medical education represents a unique opportunity for cross-cultural mission and holistic development. There are many challenges but also many opportunities in the field. Collaboration and networking among Christians involved in the field would allow effective development of resources and solutions for fostering Kingdom growth through training for equitable health care globally. Hopefully, the ideas and recommendations included in this paper will stimulate favorable forward progress.

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