Academic Medicine in a Southern African Country of Malawi

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Academic medicine is usually considered to be a tripartite composition of teaching, research, and health care services delivery or patient care. The meaning of each component varies with interpretation. Developing countries such as Malawi face particular challenges in the field of academic medicine, including research resources, financing, and the brain drain of health human resources. Such constraints contribute to reduced numbers of faculty members, poor remuneration and diminished capabilities for career advancement. Addressing the issues currently plaguing academic medicine will enable this essential and multi-faceted discipline to flourish.

Key words: academic medical centers; Malawi; South Africa

It has been suggested that there is need to revitalize academic medicine (1). A thought that implies the profession is in need of resuscitation, as only that which has lost its original glory needs revitalization. The enthusiasm of old teachers, zeal of students, and seriousness the community ascribed to the profession is thought to be fast waning by some proponents. Some accuse the discipline of stagnation. They assert that the profession is not pragmatic enough to respond to evolving needs; academic medicine has failed to adapt with our global society. This group argues that traditional teaching methods and other ingrained practices of academic medicine are outdated and irrelevant to the modern era.

In this paper, we present our understanding of academic medicine from a “southern African” perspective. We understand that attempts to write on behalf of the African continent, a massive land with hundreds of millions of diverse inhabitants, suggests grandiosity and possibly delusions, cardinal clinical features of schizophrenia! We therefore wholeheartedly acknowledge that perspectives vary greatly, even within the same country. Therefore, we herein offer a Malawian perspective coupled with the South African experience to illustrate some of the circumstances that exist within a region of the larger continent.

Medical education in Malawi

There were six medical schools in Africa during World War II and the number had increased to 94 in 1999 (2). The College of Medicine at the University of Malawi is the only medical school in Malawi, and is among the “newer” African medical schools whose aim is to train physicians at the undergraduate level.

Postgraduate training development is also being established. Establishment of the institution in 1991 has been described elsewhere (3,4). Since 1992, the medical school has produced 215 medical doctors, the majority of whom are working in the country.

Despite constraints, the University of Malawi, College of Medicine has fared well since its creation. One reason for this success is that the school actively seeks collaboration with international institutions. It is supported by the World Health Organization (WHO) and has established partnerships with several universities, including Johns Hopkins, Liverpool, University of North Carolina and Michigan. These collaborations have facilitated quality clinical and research training, which can be integrated during medical education. The commitment of nationals who have forgone lucrative posts elsewhere is also of particular note.

The Malawi College of Medicine’s links with international institutions is not without its pains. Collaborative links ensure that some of the Malawian physicians are offered training posts in the West. Ensuring the timely return of these trainees upon completion of their studies is a mammoth task. In some cases, job posts and supplementation of salaries have had to be created specifically for these physicians in order to attract them home.

Unlike Malawi, South Africa has several medical schools (University of Cape Town, Medical University of South Africa (MEDUNSA), Stellenbosch, Witwatersrand, University of KwaZulu-Natal). As in Malawi, South African medical schools have also formed partnerships with international institutions to improve their capabilities. It would seem therefore that inter-
national links are inevitable for many medical schools. For example, the University of Leicester in Britain has worked with the Medical University of Southern Africa under the auspices of the British Council and the Department for International Development to develop a course addressing issues of social and cultural diversity (5). Furthermore, South Africa has also contributed to medical training in Malawi in diverse ways, including receiving and training Malawian students in basic medical sciences as Malawi was establishing its own medical school (6).

Defining Academic Medicine

Many people agree that academic medicine comprises teaching of the science and art to (mostly junior) colleagues, research (and publications), and health or patient care services. It is also the teaching of senior colleagues through self teaching (journals, seminars and conferences, companionships). The contribution of each element to this tripartite is a matter of debate. Thus the concept of academic medicine differs greatly amongst individuals and institutions. For instance, even within the same academic department, individuals engage in varied amounts of teaching, patient care, and research. Some focus on teaching; others devote most of their time to research and others to clinical patient care. All are supposedly within the domain of academic medicine.

What exactly are community health care services in academic medicine? Again, opinions differ. Some would say that the umbrella of academic medicine only includes community health care services provided within a teaching hospital. Others would argue that any health services available to the community, whether through public or private institutions, constitute community health services.

Who are the teachers in Medicine? And who are the students? In South Africa, the majority of students are of urban origin as shown in Table 1 (7). Although the study has not been conducted in Malawi as well, the authors believe the results would not differ much. In Malawi the most current medical students are male (Table 2).

It should come as no surprise that each member of the medical community is both a teacher and a student. We are constantly applying lessons learned from professional and personal experience. In the professional realm, we learn from our patients, colleagues, instructors, and the literature. In the personal realm, we develop ourselves in diverse arenas through reflection. It is these experiences that give us the knowledge we need to be teachers, whom we necessarily become in treating patients, interacting with colleagues, and disseminating our findings. Sometimes the teaching is formal, as in a university setting. At other times, it is a byproduct of our endeavors, and obtained rather subconsciously.

Methods of Teaching

In Malawi, teaching methods vary, but inevitably include lecture-based and clinical modules. The medical course takes a minimum of 5 years after 2 years of general sciences training, a one-year pre-medical course or a four year university science degree. Medical education typically begins with didactic lectures, during which students develop the knowledge foundation required for patient care. Classroom activities often include problem-based learning and use of clinical scenarios. In some cases, role-playing is used to familiarize students with the patient-doctor interaction. After this, clinical training is introduced. Over time, the medical student is given increased autonomy in patient management. The clinical years are complemented by didactic sessions. Students are also expected to undertake and lead research projects under the supervision of a faculty member in the 4th year of their studies. Throughout this process, internet resources provide up-to-date information for the students.

These diverse teaching methods are used to educate students and should be integrated vertically and horizontally. For example, a student might learn about congestive heart failure by studying the underlying mechanisms of disease in the classroom, finding updated treatment options on the internet, and applying these when caring for a patient with the condition. This would constitute vertical integration. An example of horizontal integration would be simultaneous lectures or classroom activities in physiology, pathology, and pharmacology as they relate to congestive heart failure. Both horizontal and vertical integration have not been easy. Vertical integration has been particularly problematic, especially when one expects that teachers in the clinical disciplines will contribute to pre-clinical teaching or vice versa. Instead, what has been experienced is that teachers in the pre-clinical training period integrate clinical lessons for themselves and vice versa. This becomes possible when the anatomy teacher for instance is also a physician. It happens however that an anatomy teacher may not be a physician and then the integration becomes problematic.

Given the dissonant needs of students, patients, and society, when should clinical training be introduced within the curriculum? From the student perspective, clinical training offers an opportunity for testing their abilities. However, patients might view themselves as guinea pigs in this scenario. Even though society as a whole wants their doctors to be

Table 1. The percentage of medical students of rural origin who attended South African medical schools between 1999 and 2002

<table>
<thead>
<tr>
<th>Study year</th>
<th>Total No. of students</th>
<th>No. (%) of rural students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>898</td>
<td>323 (35.9)</td>
</tr>
<tr>
<td>2000</td>
<td>980</td>
<td>388 (39.6)</td>
</tr>
<tr>
<td>2001</td>
<td>1,407</td>
<td>574 (36.5)</td>
</tr>
<tr>
<td>2002</td>
<td>1,621</td>
<td>574 (35.4)</td>
</tr>
</tbody>
</table>

Table 2. Enrolment levels at the University of Malawi, College of Medicine, 2004

<table>
<thead>
<tr>
<th>Year of study</th>
<th>No. (%) of students of gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>female</td>
<td>male</td>
</tr>
<tr>
<td>1</td>
<td>23 (37.7)</td>
<td>38 (62.3)</td>
</tr>
<tr>
<td>2</td>
<td>19 (40.1)</td>
<td>28 (59.9)</td>
</tr>
<tr>
<td>3</td>
<td>12 (44.4)</td>
<td>15 (55.6)</td>
</tr>
<tr>
<td>4</td>
<td>1 (7.1)</td>
<td>13 (92.9)</td>
</tr>
<tr>
<td>5</td>
<td>6 (33.3)</td>
<td>12 (66.7)</td>
</tr>
</tbody>
</table>
well trained, most individuals loathe being training subjects. Thus, it has been suggested that clinical training should be introduced at a point when students have a reasonably strong foundation of knowledge. This is rather difficult to expect since the lack of skills and competence is in itself a justification for training. Students are attached to clinical areas not as experts but as trainees that should start appreciating first before mastering the trade.

Clinical training should start with a brief period of observation, such that students become familiar with actual patient care. Supervised care should then follow. Over time, students should gain independence. The last stage of training, which may be internship, residency, or fellowship, should allow independence with guidance from senior doctors. This method will be advantageous to all interested parties: trainees, trainers, and patients.

If medical students are to proceed rapidly from the classroom to the bedside, they must be well prepared via undergraduate training. Undergraduate training provides not only a knowledge base on which the medical student will build, but also a chance to self-assess learning styles and hone social skills. These are crucial to good doctoring. So, how long should undergraduate education last? It should last long enough to achieve these objectives, but not too long to allow any stagnation. Exact duration depends on the individual. According to the US models, 4 years seems adequate. According to the Malawian educational system, 5 years is adequate. What should determine the duration of training? In general, we believe it is the mode of instruction (lecture-based, seminars and problem-based approach) and the entry levels (with prior university training, pre-requisite science background) that should be considered.

**Exploring Nuances of Academic Medicine**

Given the diversity of ideas regarding academic medicine, its fundamental nature must be re-evaluated. The appropriate balance between teaching, research, and healthcare services delivery is unclear.

Let’s consider research more closely. Within research itself, is there an ideal balance between bench or basic and applied research? Both are fundamental to medicine. It seems that the necessary balance depends on the stage of the research, the characteristics of the disease and social forces. For example, Malawi might benefit most by focusing on applied research, but this can be contested as well. South Africa, a middle-income country may spend significant resources on both. Research must support healthcare services and contribute mostly to local problems before being of value globally. This is a problem though because many of the local and national problems in Africa may not concern the international academic world and such research is unlikely to be publishable in international (many times considered prestigious) journals. Bench concepts are more general, and are being evaluated in other settings, mostly the western world. Applied research is necessary to evaluate how bench findings can be used in the unique setting of Malawi. This is not to say that all bench research should be curtailed. It is only to say that we must advance the application of current knowledge to the pressing health care needs of the nation.

The perceived dichotomy between bench and applied research has been unconsciously ascribed to definitions of medicine. Many people think of academic medicine as research only and therefore completely separate from clinical medicine. However, clinicians should be concerned about the application of the research to improving patient care. Thus, the two are in no way separate, but part of a continuum. The phrase “academic health care” might better convey this idea. Perhaps we should cease to use the term “academic medicine” in favor of “academic health care.”

Once we have realized the multifaceted nature of academic health care, we must consider where training of our doctors should take place to reflect its diverse characteristics. At present, we focus on training our doctors in hospitals. In Malawi, most training occurs in Queen Elizabeth Central Hospital, which is affiliated with the University of Malawi, College of Medicine. However, much of health care takes place outside the hospital. This is true not only for Malawi, but in every country. Thus, doctors should be prepared to treat patients in various settings. Furthermore, the concept of a hospital varies depending on the setting (rural vs urban). Thus, traditional hospital based training may not prepare students for their ultimate practice requirements. Hospital training must be complemented by training in other areas such as outpatient clinics, laboratories and public health centers.

**Publish or Perish Calling**

In 1998, there were more than 20,000 journals published in medicine and health in general globally (8). Many academic medical institutions either explicitly or implicitly promote the notion of “publish or perish.” Most of the tacitly required publishing must derive from research; opinions and perspectives are less encouraged. Although not specified, original research publications are preferred over case studies, editorials, letters, obituaries, and news items. Nonetheless, all have a place in academic medicine/medical journalism. The perish component (of publish or perish) is also vague (9). How one perishes varies depending on the institution. Many academic institutions use publications, in conjunction with other factors, as criteria for promotion. So, no publication translates to – no promotion. Therefore, one perishes by stagnation.

In some countries, like South Africa, academic institutions receive government subvention (financial support) based on the number of publications arising from that institution. In some institutions, the academic staff is essentially on contract, with the renewal of the contract depending on the number of publications they produced. No publication may therefore mean no renewal of the employment contract. Though academic medical institutions perpetuate a “publish or perish” atmosphere, it is important to recognize that this paradigm can exert a positive influence. The drive to publish ensures that research is car-
Medical publishing on the African continent is fraught with a diversity of challenges including; irregular publication, invisibility of medical journals, and non-indexing of journals (10).

It is also important to recognize that despite the “publish or perish” admonition, the training that may be given on the research process, the manuscript writing and the editorial process may not be forthcoming. Many academics in fact, would have to learn the trade of publishing after their own groping in the dark for many years. Recently, sub-Saharan Africa has formed the Forum for African Medical Editors (FAME), which aims to train researchers and authors, in medical journal writing (10). How far this initiative will succeed is another matter altogether. Another organization for North Africa has also been formed and it encompasses the Middle East, based on the WHO’s Eastern Mediterranean region demarcation (11).

### Resources for Academic Health Care

In this environment of publish or perish, it is important to appreciate the amount of support for research. Amongst researchers, funding tends to be of primary concern. Obtaining funding is a highly competitive process. Therefore, projects are often tailored to the needs of the funding organization. Projects may also be aborted if funding is not available. Even a project that initially has funding may later lose its support. In addition, notorious difficulties with obtaining funding often deter doctors from embarking upon a career in academic medicine. For example, it is suggested some specialties are more difficult to publish and obtain funding in. These specialties also typically have more limited information resources and fewer devoted journals.

Even if funding is available, where do scientists find information? A common place to look is on the internet, which provides access to many medical journals. Researchers may also consult with colleagues who have similar interests. However, access to such resources is limited in developing countries. Only the most common titles of medical journals are available, usually at large institutions. Internet access is often limited. When available, it may be slow and unreliable. Furthermore, colleagues trained in the area of interest are often inaccessible.

### Publications

Where is most of the research done in Africa frequently published? The exact answer to this question is unknown. There are just a few African journals indexed in international indices such as *Healthstar* or *Medline*. However, many researchers seem to prefer publishing in Western journals. Yet authors from developing countries are less readily accepted in Northern journals. Furthermore, African journals are less visible to the international community. Support of research in Africa will enhance the content of African journals, increasing their visibility, and thus encouraging further support of research efforts. This will lead to greater acceptance of African research in the international community.

Emphasizing research as an integral component of the integrated discipline of academic health care will facilitate this process. Writing workshops for academics should be considered. Improved writing skills will improve the visibility of published research. Institution-approved writing leave, or protected time, will also allow academics to focus on effectively disseminating findings.

Order of authorship is also an issue in academic health care. In clinical journals, the senior investigator is typically listed first. This is usually the person who conceptualizes the project. In journals focusing on bench research, the principal investigator is listed last. It is the junior investigator who is the first author. Rather than perpetuating this confusing dichotomy, a standard format should be chosen.

What is the point of publishing findings? It is our duty to share valuable findings with the community so that others can use the information. Application of the information will hopefully translate to improved health care. Do journal publications really help improve health care? They do provide guidelines and help with patient management. They also provide substance for rumination regarding further research efforts. These are important, and do serve to improve care in the long run. However, journal articles may cause confusion when they report conflicting results. As the number of journals increases, doctors are also overwhelmed by the volume and may have difficulty discerning salient information. That is why it is important to conduct systematic reviews. Still, many of these reviews are not being done, possibly due to lack of skills.

Although publishing may be a tremendous albatross for the timid, it is valuable to the medical community. To the author, publication may be viewed as a reward for perseverance and scholarship. Thus publishing has both personal and communal value.

### Career Advancement

What should determine career advancement? How much importance should be given to each component of academic medicine – teaching, publication and research, and health services delivery? Should the number of years one has served at a particular job matter when considering giving a promotion?

Career advancement is a difficult issue because there are no specific criteria for its determination. Many factors are taken into account, including clinical, research, and teaching accomplishments. Additionally, advancement also depends on the availability of a higher post. In some cases, new positions are created.
One of the most important factors in career advancement is personal connection. Although we tend to deny the role of social factors, we’ve all heard the phrase, “It’s not what you’ve done, but whom you know.” To get to a higher position, you need to know someone who can facilitate your promotion. Thus we list accomplished references and associate with leaders in our fields when possible. This is especially true of academic disciplines where posts and resources are limited.

Instead of the factors currently used when evaluating an individual for advancement, what should we really use? Perhaps we should define more objective criteria for the process. But some would argue that this is too impersonal. Somehow we need to find a balance between fairness and recognition of individual qualities. While difficult, this is an excellent goal to strive toward.

In South Africa, publications in peer-reviewed and indexed journals are not enough. One must publish in a journal approved by the Department of Education following its own criteria.

New Generation of Academic Health Care Providers

In pursuit of the ideals of academic health care, we must take a step back and re-evaluate training and certification of doctors. Traditional medical education entails several years of lecture based education, then clinical training. In many cases, research experience is not formally incorporated. The impetus is toward producing clinicians. People who chose other paths must forge their way with much less guidance. Thus one might wonder if the bulk of medical education should be lecture based, after which individuals would decide for themselves what course to take.

However, this would likely be a disservice to patients, doctors, and society. It would be unethical to allow graduates to practice without learning how to apply their skills in the clinical setting. It would also be unwise to deprive clinicians of basic research knowledge. Although medical education should include lectures, it must also include supervised patient care and exposure to research concepts. This is especially true in Malawi, where doctors provide diverse services. In many cases, the doctor cannot obtain rapid consultation from colleagues. Thus, broad exposure during training facilitates management of diverse conditions.

Traditional educational factors have built the foundation for conceptualizing several components of academic health care as separate entities. Academic medicine, often equated with research, is typically considered separate from patient service. In academic medicine, patients are subjects. Their health care is a by-product of furthering scientific knowledge. In clinical practice, the treatment of patients depends on the knowledge clinicians gained during their medical education, which may not be up to date or accompanied by experience. Though the components of academic health care are intimately intertwined, training tends to focus on one component and doctors’ activities reflect the scope of this training.

Training doctors for the practice of academic health care is a tremendous responsibility for the medical community, particularly in poor countries. Even if education is modified, will more comprehensive training translate to better health care on a global scale? We will only know the true answer to this question after changes are enacted. Even then, indicators are difficult to assess in developing countries. For example, a comprehensive system of tracking medical outcomes is not available in Malawi.

The question that follows is who, if anyone should be held accountable for inequities at the global level? Again, there is no clear answer to this. All components, including clinical medicine, academic medicine, and society, have contributed to the current state of health care. In that sense, we all shoulder part of the responsibility.

Future of Academic Health Care

Academic health care will undergo many reformations as the balance within the tripartite changes. What it will eventually look like in the 21st century remains uncertain. Nonetheless, its character will be dynamic. Academic health care will need to be responsive to the needs and interests of the medical community as well as society (12). As such, it will likely be more integrated than now. Researchers and clinicians will engage in more extensive collaboration. Medical education will entail lectures to provide the foundation for medical pursuits, training in multiple settings and exposure to research concepts and applications.

In addition to more integration within the medical community, society will be more supportive of diverse areas of academic health care. For example, government will hopefully support varied activities, alleviating dependence on industry. This will be important because private industry generally sponsors research in its own interests. Public funding may encourage free-thinking, independence, and creativity.

Through collaboration, Malawi will more efficiently apply the benefits of bench research to medical care. Collaboration will also improve training of researchers in Malawi and provide alternative clinical experiences. The new and improved academic health care will be broad, integrated, and facilitate advances in medical care.

Traditional Academic Medicine is Part of Academic Health Care

How can we increase the impact of academic medicine on the rest of medicine? This is a complex question with few concrete answers. However, we do have some suggestions.

First, we might have a research requirement for all clinicians or medical students. A requirement to conduct novel research would be impractical for many, and thus engender tremendous resistance. However, a module devoted to understanding fundamental research concepts during medical education
would help future clinicians apply research when seeing patients. Still, this might detract students from other important components of education and the exposure to the topics would end after medical school.

To combat the decline in research acumen after training, research results could be disseminated through continuing medical education (CME). This would be most practical, as clinicians would not need to devote significant amounts of time to conducting research. Also, those conducting research would be able to communicate their findings to clinicians. This would help alleviate the current problem of practicing clinicians being out of date with current knowledge. It would also provide a forum for dissemination of research based clinical guidelines.

CME should be implemented as soon as possible in Malawi. South Africa and many other countries offer models of CME. Each year, clinicians are required to complete a specific number of CME to maintain their licenses. CME can take the form of lectures, self-study materials, and certification tests as in the US. Malawi already offers medical center based seminars for physicians. This current system could be modified in a way that specific research topics are covered, clinical guidelines or approaches to medical literature reviewed. At the end of each session, a quiz could be administered. Short quizzes pertaining to articles in medical journals could be administered by mail or any other appropriate way. In addition to overseeing CME, the Medical Council of Malawi could also require re-certification at 5 or 10 year intervals.

It is well-recognized within the international intellectual arena that academic medicine is an integral component of medicine in general. Nonetheless, the wider intellectual and medical community does not realize how much traditional academic medicine contributes to clinical practice. To overcome this problem, an integrated system of academic health care should be supported on a country-by-country basis. Individual countries often ignore the issue of within medicine segregation because they are not held accountable. Even though everyone knows academia is an important component, not much effort is put into advancing it. We often wait for others to report findings so that we can apply them. However, every country must recognize their responsibility to contribute to the body of knowledge underlying clinical practice. Developing countries such as Malawi must take initiatives to improve academic health care from within. Recruitment and job satisfaction within academic health care might be increased by increasing the funding of research and its applications, the visibility within the larger medical community, and by creating a wider recognition that academic medicine makes important contributions to clinical practice.

It is clear than many of Malawi’s clinicians are interested in research. However, the pursuit of research endeavors is not tenable in the economic climate. Furthermore, respect often derives from financial status.

Recommendations for Developing Academic Health Care

To facilitate development of an integrated academic health care establishment, we must clearly understand its roles. The primary goal of academic health care should be to improve the knowledge foundation on which clinical medicine bases its practices, thus improving patient care. To accomplish this, we must identify ways to integrate findings to clinical practice. It should be acknowledged that clinicians are much more interested in findings that affect patient management than findings that have ambiguous relevance to their practice. Thus, integration will require both clinicians and researchers to communicate on a common level. Training future clinicians according to the new, broader academic health care will be critical. To accomplish this, traditional academicians will need to collaborate with other components of medicine, not work independently. Involvement of clinicians in the development of research goals will increase their interest in outcomes.

The reasons for the failure of academic health care to completely fulfill its role have their roots in medical tradition. Historically, academic accomplishments have lurked in the shadow of clinical medicine. Society has also placed higher value on clinical services. Research was not as highly valued. Thus, research funding has often been inadequate. Perhaps this is because it does not directly generate income. Taking these historical barriers into account, it will be difficult to integrate academic and clinical components of medicine.

By implementing CME, supporting research, providing less recognized components of medicine with higher visibility, and facilitating interdisciplinary collaboration, the goals of the new academic health care will be advanced.

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