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Viewpoint

Recasting the role of the surgeon in Uganda: a proposal to maximize the impact of surgery on public health

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Summary A growing body of recent evidence supports the essential role of surgical services in improving population health in low-income countries. Nonetheless, access to surgical services in Uganda, as in many low income countries, is severely limited, largely due to constraints in human resources, infrastructure and supplies. To maximize the impact of surgical services on population health in the context of Uganda's limited surgical workforce, we propose a 'recasting' of the role of the surgeon. Traditionally, the surgeon has played primarily a clinical role in patient care. The demands and isolation of this role have limited the ability of the surgeon to tackle health systems issues related to surgery. Now, the clinical and educational role played by surgeons must be redefined, and the surgeon must also assume a greater role in leadership, management and public health advocacy by documenting the unmet need for surgery and the resources required to improve access to care. Policy and incentives for specialist surgeons to spend amounts of time apportioned to these roles should be developed and supported by health care institutions. Political leadership and commitment will be critical to realizing this ideal. Such a model may be applicable to other countries seeking to maximize the impact of surgical services on population health.

Rethinking the role of surgery in public health

In recent years, there has been great emphasis on infectious disease initiatives in sub-Saharan Africa: in particular, malaria, HIV/AIDS, and tuberculosis. Although they are less well analysed, surgical conditions also contribute to a significant portion of the burden of disease in this region. Recent work has suggested that 11% of the global burden of disease can be averted by surgery (Debas *et al.* 2006). In low-income sub-Saharan African countries, the greatest share of this burden is due to injuries, complications of childbirth, congenital anomalies, abdominal emergencies and surgical infections. In addition, more chronic conditions such as cancers, hernias, goitres and chronic wounds also exact a significant health toll.

Disparities in surgical care between high and low-income countries are profound. A recent review (Weiser *et al.* 2008) suggests that 73% of operations are performed on 30% of the world's population and that only 3% are performed on the poorest one third; whereas 90% of surgical need is in developing countries (King *et al.* 1990; Debas *et al.* 2005) Recent studies have shown that the cost-effectiveness of surgical care at the district hospital is comparable to other priority health interventions such as vaccination (McCord & Chowdhury 2003; Gosselin *et al.* 2006; Laxminarayan *et al.* 2006). Given the volume of surgical procedures, the substantial burden of surgical conditions, global disparities in surgical care, and the cost-effectiveness of surgery, the role of surgery within public health is gaining greater recognition. The common perception that treatment of surgical conditions is a lower priority and simply 'out of reach' for resource-constrained environments is being reconsidered. For example, the recent Copenhagen Consensus ranks 'strengthening surgical care at the district hospital' among the most important 30 interventions that will improve the well-being of the world's poor (Copenhagen Consensus 2008). There have also been calls by leaders in public health to acknowledge surgery as the 'neglected stepchild of global health' and to recognize its crucial role in meeting the Millennium Development Goals (PLoS Med 2008; Farmer & Kim 2008).

In Uganda, a variety of strategies such as surgical camps, outreaches and decentralization of surgical services have been used to improve access to surgical services (Ozgediz

et al. 2008a) Given the context of an extreme surgical workforce shortage and the substantial impact of surgical care on population health, we also feel that a 'recasting' of the traditional role of the surgeon is necessary to improve access to surgery in Uganda, and that this may be applicable to similar resource-constrained environments in sub-Saharan Africa (Ozgediz *et al.* 2008b). Already in some countries such as Tanzania, Malawi, Mozambique and the Democratic Republic of Congo, scarce specialists train non-physicians and nurses in surgical and perioperative skills (Longombe 1997; Kruk *et al.* 2007; Lavy *et al.* 2007). This commentary draws on the experiences of the authors in Uganda, including a full career of surgical practice and education (SL), as well as the published and 'grey' literature, to describe how and why this 'recasting' could occur.

Who is a surgeon?

A 'surgeon' is any health provider who treats surgical conditions. This may range from specialist surgeons (physicians with specialist surgical training), to general physicians, non-physician clinicians and also nurses and midwives. The surgeon does not provide care alone – the anaesthetist is another essential member of the surgical team (Hodges *et al.* 2007). In Africa most surgical and anaesthesia services are provided by general physicians or non-physician clinicians, in contrast to higher-income countries, which rely on specialists. Specifically in Uganda, most surgical procedures are performed by general doctors, not specialist surgeons and anaesthesia is administered by anaesthetic officers (non-physicians). For the purposes of this discussion, 'surgeon' refers primarily to specialist surgeons.

Traditional roles of the surgeon and ground reality

The traditional role of the surgeon has been in clinical work (direct patient care). As a clinician, the surgeon has traditionally perceived him/herself as being responsible, nearly exclusively, for her/his individual patients (Soh 1998). Surgery is labour-intensive and can be quite exhausting. After operating on three or four patients in 1 day, the surgeon has little, if any, energy and inclination to address system-wide issues that impact the availability and practice of surgery.

The surgeon ordinarily works in 'seclusion' – in the operating theatre, (the most out of bounds room in the hospital) as head ('Captain of the ship') of a small team of health professionals, which includes an anaesthetist, theatre nurse(s), and other support staff. To be effective in this setting, surgeons do not only require technical expertise but must also become highly skilled at leadership, management and communication. In the past, the surgeon was perceived 'as God, almighty, uncontrolled, uncooperative and despotic' (Hockerstedt 2006). Today we need a listening and motivational team leader, known for exceptional knowledge, capabilities and professionalism.

In addition to human resources, physical resources such as infrastructure, supplies and equipment are required for safe surgery. These resources in most cases are allocated by technocrats and managers who are not surgeons. As surgery is misconstrued by policy makers to be highly technical and prohibitively expensive, this leads, in situations of limited resources and competing demands, to inadequate resources being allocated to surgical care. Even when the surgeon is occasionally represented in meetings to allocate resources, he/she rarely has the skills or the time and energy to negotiate for a fair share, often due to the rigorous demands of patient care.

As a result, in Uganda it is common for the surgeon to enter the operating theatre only to be greeted by a long list of stock-outs (oxygen, linen, anaesthetic agents, etc.), and theatre lists are frequently cancelled. Surgeons become frustrated and patients disappointed. Some patients become superstitious, thinking that 'The gods don't want me to be operated on and I may die if I wait and go through with it'. Often as the patient waits for surgery, the cancer becomes inoperable, the uterus, in case of obstructed labour, ruptures and injury that could have been corrected in a few hours becomes a permanent disability.

In addition to the clinical role, the surgeon has also had a role in education (training). As an educator, the surgeon has been responsible for teaching medical students, surgical post-graduates and other health personnel. This role has generally been secondary to the clinical role.

Proposed changes to the roles and responsibilities of the surgeon

To improve access to surgical care and to maximize the impact of surgical care on population health in Uganda, these traditional roles of the surgeon must be redefined and expanded. This new job description should distribute the surgeon's time and energy equally among multiple roles, simply because the surgeon is a rare resource (in Uganda) and must be judiciously allocated. The clinical and educational roles should be redefined, with clinical efficiency maximized and more time spent in education and training. A multi-purpose role as a leader-manager-and advocate should be added.

Clinical role

In Uganda specialist surgeons are deployed at the National Referral and Teaching Hospital and the Regional Referral

Hospitals, but they do not exist at lower level units such as district hospitals. Specialist surgeons are expected to perform difficult operations that Medical Officers (general physicians) cannot handle. Unfortunately, there is limited surgical output at these hospitals and lower complexity cases are referred to specialist surgeons because the medical officers and the non-doctor cadres either lack the skills and confidence to attempt emergency surgical procedures, have inadequate resources to do so, or have been told that surgery is not their responsibility. As a result, the expertise of the surgeon, a rare and valuable commodity, is under-utilized by the health care system. Our prior analysis has shown that the volume and complexity of operations at regional referral hospitals in Uganda do not always exceed those of district hospitals (Ozgediz *et al.* 2008a). To make matters worse, due to low salaries, surgeons consult in private hospitals to make ends meet, which limits the time they can spend in public and teaching hospitals (Galukande *et al.* 2006).

To ensure that surgeons perform procedures that require their specialized skills rather than routine activities that can be handled by other health providers, a system of careful selection and referral of cases is necessary. The frontline staff must be able to decide whether a patient requires surgery and whether the operation requires advanced skills that only a specialist surgeon can provide. For this to happen, surgeons must train medical and clinical officers to make those decisions (see below).

It is proposed that a specialist surgeon spends one-third of his/her working time undertaking clinical responsibilities, i.e. seeing patients in clinics, making diagnoses and performing operations on patients and for conditions that may exceed the expertise of other health workers. This will enable him/her to maintain skills that have taken many years to acquire and will provide opportunities to train others by example.

Educational role

It is further proposed that one third of the surgeon's time is set aside to be an educator. Through this role the surgeon can replicate and extend his/her capabilities by training non-specialist surgeons (i.e. medical and clinical officers, nurses, midwives) to perform 'essential surgery' – the fundamental surgical problems faced by practitioners in general hospitals and health centres. The World Health Organization as well as other international groups such as the Bellagio Essential Surgery Group have documented a list of high priority surgical conditions to be treated by providers at a first-level facility (World Health Organization 2003; Bellagio Essential Surgery Group 2007). This arrangement recognizes that most patients in rural settings with surgical conditions cannot be seen and treated by a specialist surgeon (at least for the time being).

Overall, the essential role of mid-level providers as a solution to the crisis in human resources for health has been recognized, and 'task-shifting' has been promoted as a strategy to tackle HIV-AIDS in high-prevalence, low-income countries (Mullan & Frehywot 2007; World Health Organization 2008).This concept also applies to essential surgical care—as mentioned previously, it has been effectively utilized by Malawi, Tanzania, Mozambique and other countries where non-physicians have been trained to treat specific surgical conditions. Evaluations in these countries show that 85% of operations can be adequately performed by general doctors and/or para-medical staff with appropriate surgical training and supervision (Watters & Bayley 1987; Solanke 1997). In Malawi up to 90% of operations in rural areas are performed by assistant medical officers (Lavy *et al.* 2007).

The specialist surgeon is well-suited to decide which procedures can be delegated, what it takes to train non-surgeons, and how much supervision is necessary for high quality care. 'Task Extension' more completely describes this strategy as a surgeon extends and delegates some of his/her responsibilities to non-surgeons. This model involves a greater degree of ongoing support and supervision, ideally as part of a longitudinal arrangement, than has been traditionally implied by 'task shifting' in other areas of health services. An ideal model might be that the surgeon is given a number of health units, and their staff, to supervise on a long term basis. The performance of the surgeon, the health units and the non-surgeons under his/her supervision, is then assessed regularly by independent monitors. The three will then be rewarded for improvements in performance realized over time. The longitudinal model of supervision allows surgeons and non-surgeons under their supervision to bond and learn from each other.

Leadership, management and advocacy role

Given the significant impact of surgical care on population health, it is also proposed that the job description of the surgeon includes being an advocate and confronting the system-wide issues that determine access to surgical services.

Hard training, long hours, little private life and flexibility, relatively poor income and considerable physical demand have detracted from the appeal of surgery as a career path (Debas *et al.* 2005; Galukande *et al.* 2006). Given the surgical workforce shortage in Uganda, today's surgeons must attract medical and post-graduate students to join the profession. To do this, surgeons must 'create

enthusiasm for surgery' by being a good role model and mentor. They must also create a sense that young surgeons can achieve a recognized position within the community of surgeons and that there are prospects for career development. Recognition from other medical students, friends, family, nurses and colleagues, surgeons and finally also from patients, generates a 'basic feeling of success and satisfaction' (Neuhaus 2007).

As the surgeon becomes more senior, he/she should take on a more supervisory/managerial role with the goal of making the practice of surgery easier for his/her team. In this new capacity, he/she will still need to be on call to help perform and teach the more complicated operations, but will also need to manage surgical services, i.e. plan, organize, implement, monitor and evaluate surgical services on a longitudinal basis. In effect, the surgeon will need to lead, that is to 'enable others to face challenges and achieve results in complex circumstances'.

A final part of this role includes a mandate for surgeons to advocate for their patients and their colleagues who provide health services in very adverse circumstances. Resource shortages are a major limiting factor in the provision of surgical services, and unless they are documented by surgeons, it will be difficult to implement evidence-based policies to improve surgical care. Due to the privileged position a surgeon has in listening to every patient's story and their challenges to access care, the community depends on surgeons to take on this role. It is part of the surgeon's greater social responsibility.

Remuneration and support

The re-definition of the roles of the surgeon should not mean greater work overload, but it will require greater organizational efficiency. The surgeon will need protected time and logistical support to fulfil these multifaceted responsibilities. In addition, the expanded roles of the surgeon may also require added aspects of training in education, leadership, and in policy. Because the surgeon will be more effective, he/she should be remunerated appropriately and adequately in order to avoid the need to moonlight in several places to make ends meet.

Conclusion

As the impact of surgery on population health is gaining greater recognition, the traditional roles of the surgeon in Uganda must be redefined. The surgeon can no longer be disproportionately focused on clinical care alone as his/her role in training and in advocacy should also be promoted. Policy changes, creation of incentives, and support systems should allow specialist surgeons to spend equal time between clinical care, supervision/education and leadership-advocacy. This will make most efficient use of the surgeon as a scarce resource. However, to realize this ideal, commitment from political leadership, academic and other health care institutions, and support from development partners is essential. We call upon surgeons and policy-makers in other resource-constrained countries to consider whether such a redefinition of the surgeon's role may improve population health in the context of their health systems.

Note

This proposal was presented at the second meeting of the Bellagio Essential Surgery Group in Kampala, Uganda, on 22–24 July 2008, by Professor Samuel Luboga. For conference details, please see: http://globalhealthsciences.ucsf.edu/bellagio/2008.html.

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