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Key Aspects of Health Policy Development to Improve Surgical Services in Uganda

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Abstract Recently, surgical services have been gaining greater attention as an integral part of public health in low-income countries due to the significant volume and burden of surgical conditions, growing evidence of the cost-effectiveness of surgical intervention, and global disparities in surgical care. Nonetheless, there has been limited discussion of the key aspects of health policy related to surgical services in low-income countries. Uganda, like other low-income sub-Saharan African countries, bears a heavy burden of surgical conditions with low surgical output in health facilities and significant unmet need for surgical care. To address this lack of adequate surgical services in Uganda, a diverse group of local stakeholders met in Kampala, Uganda, in May 2008 to develop a roadmap of key policy actions that would improve surgical services at the national level. The group identified a list of health policy priorities to improve surgical services in Uganda. The priorities were classified into three areas: (1) human resources, (2) health systems, and (3) research and advocacy. This article is a critical discussion of these health policy priorities with references to recent literature. This was the first such multidisciplinary meeting in Uganda with a focus on surgical services and its output may have relevance to health policy development in other low-income countries planning to improve delivery of surgical services.

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Introduction

Recently, surgical services have been gaining greater attention as an integral part of public health in low-income countries. Up to 11% of the global burden of disease is estimated to be secondary to surgical conditions, led by injuries, complications of childbirth, congenital anomalies, and cancer. This estimate does not include acute abdominal emergencies and surgical infections that are likely to also contribute substantially to the burden [1]. Evidence suggests a tremendous unmet need for surgical services in low-income countries; only 3% of global surgical output occurs in poor or low health expenditure countries compared to 75% in richer countries [2]. The significant preventable morbidity and mortality from surgical conditions has prompted leading experts in public health to refer to surgery as the "neglected stepchild" of global health [3], and others to point to the essential role of surgical services in meeting the Millennium Development Goals [4]. The recent Copenhagen Consensus also ranked essential surgery as one of the highest priority investments to improve the health of the world's poor [5]. Despite these calls to action, there has been very limited discussion about the key aspects of health policy development to improve access to surgical services in low-income settings.

In Uganda, the most recent burden of disease estimates, from 1995, showed especially high mortality from complications of pregnancy and trauma [6]. More recent evidence from nine rural hospitals also suggests high unmet need for surgical services, with surgical output similar to

estimates from over a decade ago [7–9]. To address this lack of adequate surgical services in Uganda, a diverse group of local stakeholders, including providers of surgical and perioperative services in the public and not-for-profit sectors, policy-makers, public health experts, and academic leaders, met in Kampala, Uganda, on May 12, 2008 to share recent research, prepare for the second meeting of the Bellagio Essential Surgery Group [10], and develop a roadmap of key policy actions that would improve surgical services. More specifically, participants included surgeons (general surgery, orthopedics, urology, plastic), obstetrician-gynecologists, and anesthetists from the primary medical schools (Makerere and Mbarara Universities), including officers of the Association of Surgeons of Uganda, Ministry of Health officials (divisions of Clinical Services and Human Resources), World Health Organization officials, Makerere University School of Public Health faculty (Epidemiology), representatives of the Uganda Catholic and Protestant Medical Bureau, and the Nursing Department at Makerere Medical School (see the Appendix for list of participants). This was the first such multidisciplinary meeting in Uganda with a focus on surgical services.

A primary goal of this meeting was to generate a list of priority areas of health policy to improve surgical services in Uganda. This article summarizes the consensus recommendations of the group that were generated during this meeting, with references to recent supporting literature. The authors are surgeons who organized the meeting and have experience with surgical practice in Uganda, some with primary practice in Uganda (SL, MG, JM) and others as part of a international partnership to improve capacity for surgical services (DO, SJ). The stakeholders developed this list and agreed to share it with the international community in order to promote the importance of surgical services within health policy discussions. The priority areas of action are considered in three areas: (1) human resources, (2) health systems, and (3) research and advocacy. While discussed separately, these areas also have considerable overlap.

Key policies related to surgical human resources

Improve the conditions of the existing surgical workforce

Medical officers (physicians) perform most surgery in rural areas because surgical specialists are not posted to general (district) hospitals, and a recent study of medical officers showed that many are planning to leave their jobs due to poor working conditions, living arrangements, limited opportunities for career advancement, and limited family opportunities (especially schools for children) [11]. Improving working conditions through hardship allowances, creating on-site housing, and generally improving the welfare of these health personnel and their families are critical priorities. Individual providers—both specialty-trained surgeons and medical officers—should have incentives for performance and surgical productivity. These recommendations are also in line with global guidelines for incentives for health professionals [12]. In addition, it is easier to recruit health workers from each rural area rather than try to post people to various parts of the country; local differences in culture and language make it difficult to retain personnel from other parts of the country.

Investing in occupational safety is another important aspect of working conditions. Availability of the hepatitis B vaccine, personal protective equipment, and well functioning instruments for surgery are critical. Surveys in Uganda and elsewhere have shown that students and trainees are deterred from surgical specialties due to the perceived risk of occupational exposure to HIV, and other studies have highlighted the burden of occupational injuries among surgeons as a broader global problem [13–15].

The role of medical officers has gained even greater importance as subdistrict health centers in Uganda have been equipped for surgery as a part of health system decentralization. Medical officers are intended to staff these sites but will not want to serve in these areas unless some of the above working conditions are improved.

Address the surgical workforce shortage temporarily through task extension

"Task shifting" has been promoted by the international public health community to improve access to antiretroviral treatment for HIV-AIDS [16]. Similarly, because of the shortage of specialists and a high unmet need for essential and emergency surgical care, especially in rural areas, a reorganization of roles and tasks should be considered for surgical services [9, 17]. In addition, since surgical interventions are quite complex and may not be amenable to direct "task-shifting," a new concept of "task extension" should be sought where longitudinal relationships are fostered between specialists, primarily in a training and supervisory role, and medical and clinical officers in rural general hospitals.

In other sub-Saharan African countries, midlevel (nonphysician) cadres have been successfully trained in surgery. Although concerns include the narrow scope of surgical procedures and difficulty in monitoring quality, reports of outcomes between physicians and nonphysicians have been comparable [18–21]. From these experiences it is clear that midlevel clinicians posted in rural areas require

training, effective supervision, and mentoring to maintain quality of service. If midlevel cadres are trained to perform selected surgical procedures, they will need to be appropriately approved and licensed by the national medical and surgical associations. These providers would also need to be adequately remunerated for the expansion in their responsibilities. The group suggests that responsible regulatory bodies further discuss the role of the midlevel providers and that the Ministry of Health re-emphasize the importance of support and supervision by specialists to rural hospitals.

Redesign the Undergraduate Medical Curriculum to Recruit More Surgeons and Produce More Doctors with Basic Surgical Skills

It is essential to be responsive to needs of medical students as they are the essence of the country's future health workforce. The Community-Based Education and Service (COBES) module at Makerere University Medical School provides students with early clinical exposure in rural settings [22]. A primary goal of this program is to recruit more young doctors to serve in rural settings. In addition, a surgical skills lab set up in Mbarara University Hospital has also improved the confidence of undergraduate medical students in surgery. Mechanisms of replicating this at Mulago National Referral Hospital and the country's sole postgraduate surgical training institution need to be developed. Such programs should be encouraged by surgeons because they may be useful in teaching students the basic surgical procedures required at the district and subdistrict levels. Surveys of medical students have also shown that model behavior from surgeons both inside and outside of the theater may also help draw students into the surgical field in the long term [13].

Redesign the internship curriculum so that graduates have more practical surgical skills

We must be purposeful about training intern doctors as they need to have greater proficiency in surgical skills before working independently as medical officers, often in rural areas. The surgical component of training now is only 3 months, which is not enough to learn the basic skills needed to practice in the rural setting. Intern doctors need greater exposure to the full breadth of essential surgery perform a greater number of supervised operations before they staff primarily peripheral hospitals where they will have less direct support. Discussions on lengthening internship should occur, although this may make it more difficult to recruit new doctors due to a greater importance of lifestyle in the current career choices of trainees [13]. However, we must innovate with the young people we have now, as they are the future. Skills acquisition is a process that involves demonstration, coaching, and mentoring in a complete package—it is not enough to focus solely on technical skills. Trainees must also be supervised in decision-making in challenging clinical situations, which can be even more difficult than the technical aspects of a procedure. In addition, the relationships of trainees with faculty trainers should ideally also evolve into more long-term relationships that can support trainees through the course of their careers. In the past, surgeons had more time to teach but now clinical work is more demanding, expectations of the public are greater, and current public sector salary structures put pressure on surgeons to generate income from multiple sources. This decreases time available for teaching.

Anesthesia and nursing: special consideration in human resources for surgery

Surgery is a team effort. Patients with surgical conditions depend on not only an adequately trained surgical provider but also on safe anesthesia and perioperative care. There are approximately only ten Ugandan physician-anesthesiologists in the country and a similar number have left the country in recent years. Most of the anesthesia care provided in rural Uganda is by nonphysician anesthetic officers who often operate in facilities without the most basic equipment for safe anesthesia [23]. Studies in other similar settings have suggested that a significant proportion of perioperative mortality and morbidity is due to complications of anesthesia and postoperative care [24, 25]. Effective surgical capacity building also includes training for nurses, particularly in basic first aid and simple surgical skills since they are often the first providers accessed by patients. A recent study has shown that a large number of Ugandan nursing students are planning to migrate, which emphasizes the need to address their needs as well [26].

Key policies related to surgical services and health systems

Integrate surgical services with existing policies

Despite the large burden of injury in Uganda, emergency services and trauma care are not included in the minimum health-care package of services which is the backbone of the National Health Policy [6]. The minimum health-care package is based partly on the health-related Millennium Development Goals. While surgical services most directly impact on the goal to reduce maternal mortality (Goal 5), they also contribute to child health and the care of patients with HIV-AIDS (Goals 4 and 6). Policies to provide circumcision at the population level as a preventative measure

for HIV and access to care for patients with surgical complications or manifestations of HIV-AIDS are examples of why integration is needed [27, 28]. In addition, surgical care impacts on poverty reduction (Goal 1) as many patients with surgical conditions are forced into catastrophic levels of health spending or lost income due to missed work from disability or caring for family members. Surgical care also reduces the burden of noncommunicable diseases and injuries, which are substantial and increasing but are not prioritized at the level of being a Millennium Development Goal.

Surgical services need to be more intentionally considered by policy-makers. This can be facilitated by increasing the interaction between policy-makers and surgeons. Political officials such as speakers of Parliament could be invited to meetings of the Association of Surgeons of Uganda. Political will is important to improve policy, and one strategy that could be employed is to draw civil servants who have undergone surgical care to participate in the discussion on surgical access.

Ensure that infrastructure, equipment, and supplies for safe surgery are available and functional all the time

Recent surveys have suggested that the infrastructure for safe surgical care is not ensured in the majority of health facilities, and this should be addressed urgently [23, 29]. Despite this challenge, many dedicated health providers do their best with the available equipment. A key problem is lack of biomedical support to perform routine maintenance and surveillance of equipment. Many facilities have key equipment that is in need of repair, and by necessity they are maintained by generous but unsustainable overseas donations. Training of local personnel in biomedical engineering is essential and under-recognized as a cost-effective investment of human resources at the facility level. To this end, plans are underway to expand the number and availability of training programs for biomedical engineers. In addition, equipment donations should conform to World Health Organization (WHO) recommendations in this area to avoid common pitfalls [30]. While success in more "vertical" disease-focused programs such as those to improve the care of patients with HIV or those focused specifically on childhood illness may provide useful examples for surgical services (or opportunities for integration), greater attention must be paid to developing systems of care as a whole.

Institute effective planning, implementation, and monitoring and evaluation of surgical services

Currently there is no coordinated policy initiative to develop surgical services within the country. There are tools and guidelines available that must be adapted to the local Ugandan context. The WHO situation analysis template can rapidly assess gaps in manpower and infrastructure at the general hospital level and has been used in a number of countries in the region [31, 32]. Preliminary assessments of surgical output and functionality of facilities have already been performed and the WHO tool has been evaluated and adapted to the Ugandan context by the Ministry of Health which plans to implement it regionally. The WHO Safe Surgery checklist should also be piloted in selected hospitals because this simple intervention is associated with a reduction in perioperative mortality [33].

Evaluation of existing service capacity is particularly important. Since surgical cases tend to be high-profile and high-risk, the public often has a perception that many facilities are simply unable to provide appropriate care based on negative media reports. This adversely impacts the public's decision to seek care for surgical conditions. Close monitoring of facilities to ensure that procedures are being done at the right level facility can improve the image of surgery. Monitoring and evaluation should also include quality assessment as has been promoted recently in the aviation industry. This could be piloted in selected districts or regions. The international community has recently focused more on indicators to monitor the ability of health systems to deliver essential services, even casting this as a fundamental human rights issue. It is unclear, beyond emergency obstetric care, what indicators can be used to measure access to surgical care, and these must be developed [34].

Key aspects of research and advocacy to raise the profile of surgery within public health

Promote evidence-based medicine by promoting and facilitating research in surgery and perioperative care

The research agenda related to the role of surgery in health systems in resource-constrained settings is very broad. The burden and epidemiology of surgical conditions, economic evaluation of surgical services, and best practices for human resources to improve surgical and perioperative care need to be studied carefully. This evidence must be shared in the public arena and with policy-makers. Context-specific gaps in knowledge related to surgical services must be identified. This could be facilitated by the creation of a databank of questions and needed research at the academic centers. For example, the role that illness has on inducing poverty has been shown by others [35]. This link must be studied further for surgical conditions that can

have severe financial consequences for patients and families; the corollary is that improved surgical care can directly impact poverty reduction.

Raise public awareness about surgical services

We must raise public awareness and educate the community about the management of surgical conditions. Successes in surgery can be shared with the community and can help build the image of the health care system as a whole. By publishing "before and after" photos or testimonials to show the miracles of modern surgery, surgeons can demonstrate treatments that are available to the public. Unfortunately, the common public perception is that having an operation in theater means life or death and that the operating theater is a dangerous place. This needs to be addressed. Surgeons do not interact with the media enough to dispel such myths. For example, traditional healers have more airtime on radio than surgeons. Indeed, studies have shown that patients with fractures are more likely to go to a bone-setter than a physician [36]. By being our own advocates, we can help improve the image of surgery in the community. The public perception of the high costs of surgery must also be addressed with help from the Ministry of Health.

Advocate for donor support and collaborations for surgical services

Donors often set the health agenda and active recommendations by the surgical community will facilitate more allocation of resources to improve access to surgical care. We need to make clear that surgical services are not luxury items and to define a set of requirements for donors to meet to provide the essential package of medical and surgical services. Approximately $75/capita/year is spent on health in Uganda; however, only a minority of donor projects has been allocated for surgical services in recent years [37]. A key part of this effort is overcoming the perception that resources for surgical care are too expensive by sharing recent research that supports the cost-effectiveness of investments in surgical care [38–40]. Some of this work has highlighted that a hospital surgical ward has comparable cost-effectiveness in terms of burden of disease averted with other essential health interventions focused more on primary health care. In addition, specific interventions for surgical conditions have suggested that care be improved at a modest cost. The FIGO project, which focused on emergency obstetric care in the Kiboga district, is an excellent example of how international collaboration between professional organizations with donor support can improve delivery of services (US$0.86/capita/year for a district with a population of 171,000) [41]. A basic trauma care program for lay first responders has been estimated to cost US$0.12/capita to cover the capital city of Kampala [42]. Some of these basic estimates can be used to determine costs of scaling up care, and further prospective studies at the district level can provide greater evidence. Collaborations with international organizations and academic centers will be critical to moving forward.

Recast the role of "The Surgeon"

Delivering on the recommendations above requires that the job description of a specialty-trained surgeon and members of the surgical team be modified from the narrow perspective of a clinical provider of surgical care. In particular, given the shortage of surgical specialists, the job description must include more training and supervision rather than solely clinical care [43]. In other words, in addition to direct clinical care, qualified surgeons must spend more time teaching and training medical students, nonphysician providers, and other members of the health-care team to identify and treat surgical conditions. In a possible model, specialist surgeons have an ongoing relationship with medical officers (often junior doctors) and clinical officers in rural district hospitals that would allow for regular visits and supervision (e.g., doing operations together) to maintain skills and provide continuing medical education. Furthermore, the conduct and professionalism of specialist surgeons immediately impacts recruiting of more surgical providers. In addition, the perception of surgeons as individual providers should be shifted more to the perception of being part of a surgical team that includes anesthesia and nursing. Overall, surgeons must get more actively involved in advocating for their patients and for the role of surgery within health systems.

Limitations

While this meeting was important to gather various constituencies and to develop a consensus of key areas of action in the policy realm in order to improve surgical services, it is a first effort and we must highlight a number of limitations that are areas for further inquiry as the group moves the agenda forward. First, while this group included a diversity of actors, there is a need for greater representation of clinicians from district hospitals and lower-level health centers. Furthermore, the group did not formally rank these recommendations, although there was an overall emphasis on the policies related to human resources. In follow-up meetings, the group may need to focus on a ranking exercise to assign some relative priority to the wide-ranging recommendations. In addition, cost estimates of the various recommendations would be necessary to guide policy-makers. No such estimates exist for the recommendations highlighted by the group (even from other countries), although the per capita cost of several specific

projects has been discussed previously. A prospective study with a cost-effectiveness evaluation on interventions to "scale up" surgical services at a district level could be a logical next step.

Conclusions

Increasing access to surgical and perioperative services in Uganda requires multidisciplinary action by care providers, policy-makers, and academic leaders. Priority action areas are related to human resources for health, health systems, and research and advocacy and are summarized in Table 1. These recommendations were created by consensus during the first meeting of local stakeholders in Kampala, Uganda, and members of the group, in collaboration with local and global colleagues, continue to work toward the actions listed here. We hope that sharing this discourse with the global community can provide a road map of forward progress and can raise the profile of surgery within public health. Surgeons have a critical role to play in health policy discussions and their advocacy will be critical to improving service delivery. Finally, improvements in access and delivery of surgical services have the potential to avert a significant portion of the burden of disease and to help Uganda in meeting the Millennium Development Goals.

Table 1 Summary of key policies to improve surgical services in Uganda: results of a stakeholders meeting

Surgical human resources
Improve the conditions of the surgical workforce (e.g., hardship allowances, housing, education for children, career advancement opportunities, occupational safety)
Facilitate "task extension" for specialist surgeons (clarify role of midlevel providers, provide greater support and supervision to rural medical officers providing surgical services)
Redesign undergraduate medical curriculum to recruit more surgeons
Redesign internship curriculum to improve surgical skills of intern doctors
Expand and improve training for anesthesia and nursing as allied disciplines
Surgical services and health systems
Integrate surgical services with existing programs (e.g., HIV-AIDS, childhood illness, safe motherhood, "basic package" of health services)
Ensure that infrastructure, equipment, supplies for safe surgery are always available and functional (expand and improve biomedical engineer training, adhere to donation guidelines)
Institute effective planning, monitoring, and evaluation of surgical services (use of WHO Safe Surgery Checklist and Situation Analysis Tool)
Research and advocacy
Facilitate research (i.e., burden and epidemiology of surgical conditions, economic evaluation including impact on poverty)
Raise public awareness about surgical services (engage media)
Advocate for donor support for surgical services
"Recast" the role of the surgeon

Appendix

See Table 2.

Table 2 List of participants in stakeholders meeting to improve surgical services

	Name	Affiliation
1	Dr. Jacinto Amandua	Commissioner, Clinical Services, Ministry of Health
2	Dr. Olive Sentumbwe-Mugisa	World Health Organization
3	Prof. Sam Luboga	Faculty of Medicine, Makerere University, Emeritus Professor of Surgery
4	Dr. Rosemary Nassanga	Consultant Surgeon, Makerere University Department of Surgery and President, Association of Surgeons of Uganda
5	Dr. Patrick Sekimpi	Makerere University Department of Orthopedics
6	Dr. Sam Kaggwa	Head of Department of Surgery, Makerere University
7	Dr. Moses Galukande	Department of Surgery, Makerere University
8	Dr. Stephen Watya	Department of Surgery, Makerere University
9	Dr. Lorna Muhirwe	Uganda Protestant Medical Bureau
10	Mrs. Elizabeth Ayebare	Department of Nursing, Makerere University
11	Dr. Cephas Mijumbi	Anaesthesia Department, Makerere University
12	Dr. Patrick Kyamanywa	Department of Surgery, Mbarara University
13	Dr. Tito Beyeza	Head, Department of Orthopedics, Makerere University
14	Dr. D Bitariho	Department of Surgery, Mbarara University
15	Dr. David Kitya	Mbarara University Department of Surgery
16	Dr. Jackie Mabweijano	Surgery Department, Mulago Hospital
17	Dr. Doruk Ozgediz	Surgery Department, Mulago Hospital
18	Dr. Charles Isabirye	Human Resource Department, Ministry of Health
19	Dr. Denise Meya	Medicine Department, Makerere University

Table 2 continued

	Name	Affiliation
20	Dr. Peter Okui	Ministry of Health, Division of Clinical Services
21	Dr. Ian Munabi	Anatomy Department, Makerere University
22	Ms. Evelyn Bakengesa	Faculty of Medicine, Makerere University

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