

# Surgical Systems' Capacity in Africa—Where Do We Go from Here?

Mumba Chalwe<sup>1</sup>  and James Kigera<sup>2</sup> 

<sup>1</sup>Department of Surgery, Ndola Teaching Hospital, Ndola, Zambia

<sup>2</sup>Faculty of Health Science, University of Nairobi, Nairobi, Kenya

**Correspondence to:** Mumba Chalwe; email: mumbakaja@gmail.com

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Global health ecosystems have increasingly begun to acknowledge the central role that surgical/perioperative care plays in the healthcare system strengthening (1). The WHA resolution 68.15 in 2015 shone a spotlight on the need to strengthen surgical and anesthesia care as an essential part of universal health coverage (2). More recently, WHA 73 of 2020 affirmed and reiterated the value that surgical systems add to healthcare systems (1). The World Health Organization six pillars of healthcare systems are as follows: (i) service delivery, (ii) health workforce, (iii) health information systems, (iv) access to essential medicines, (v) financing, and (vi) leadership/governance would be incomplete without factoring in surgical systems at the epicenter. Indeed none of the health-related United Nations Sustainable Development Goals would even be possible to achieve without surgical system strengthening (3).

Surgery is starting to take a more prominent role in shaping health systems. The focus, especially in Sub-Saharan Africa (SSA), has traditionally been on workforce development through capacity building and increasing the surgical workforce numbers. While the impact of increasing the number of trained surgical providers is clear, this approach alone is both insufficient and unsustainable. Despite other aspects of

surgical systems strengthening such as building surgical capacity, implying significantly more investment in infrastructure than other global health interventions, surgical systems scale-up has been shown to be cost-effective (4, 5). More focus, therefore, needs to be directed at the entire spectrum of surgical systems strengthening including prevention of surgical disease, surgical workforce development, all the way through to infrastructure development and building self-sufficient surgical systems. The operating theater environment and eco-system need to be demystified through trackable metrics with increased accountability and efficiency particularly in the SSA context.

Addressing the needs of surgical systems in SSA needs both acknowledgment and harnessing of the peculiarities of surgical practice on the continent. From sociocultural and economic factors to existing infrastructure and healthcare frameworks, the consumption and delivery of healthcare and in particular surgical services in SSA is quite different from other contexts. As alluded to by Chaker et al., the status of surgery in Africa must first be understood in order to make meaningful adjustments (6). The prevalent practice wherein the assumption that HIC solutions are transferable and relevant to SSA may not hold true (7).

While policy exists that directs and guides interactions between the “higher” resourced countries and resource “different” areas such as the SSA subcontinent, challenges remain. As highlighted so aptly by Yohannan et al. regarding the concept of relative suitability of equipment for use in the African low-income country setting, considerations of existing infrastructure, stability of power supply (voltage, frequency, etc.), suitability for district settings (7) further compound the compatibility of even the best high-end equipment with the typical African operating room.

Another example is the “surgical camps” model that was previously considered as a solution to the lack of access to specialized surgical care and is now going through a process of evolution, with high-income surgical teams no longer being considered an ultimate solution but rather an aspect of capacity building for local teams. Local and regional training institutions are starting to adopt innovative methods of learning, skill, and knowledge transfer through models such as collegiate learning (8), regional research consortia, and local in-country accreditation as training sites for various programs (8). Other potential solutions such as the donated equipment, as previously highlighted by Yohannan et al. (7), are also fraught with challenges regarding compatibility, set up, and maintenance. Furthermore, the equipment requirements necessary to address the surgical need are a common theme in SSA and span across the spectrum from surgical to nonsurgical, information technology, and other related equipment and appliances. The spectrum of needs is as vast as the diversity of the populations and their conditions (9).

As with most complex problems, there are no silver bullet solutions. The most plausible approach would involve regional collaborations, coupled with advocacy, and implementation of context-specific solutions in a nonfragmented manner. The African surgeon is required to do more than provide quality and safe surgical care but to champion surgical systems strengthening outside of the traditional operating room setting. As a starting point, the ideal approach would include:

(A) Intra-system interventions: at local level, individual African surgical systems need to direct more effort toward:

1. local learning in country to truly understand the true status of individual surgical systems (6, 8),
2. strict implementation of existing standards, guidelines, and policies at local levels such as the NSOAPs or equivalent policies, and
3. continuous and documented learning cycles, e.g., documentation of NSOAP implementation, assessment, and revision phases.

(B) Inter-system collaborative approaches: beyond country level, local teams need to foster networks with neighboring and regional players from sister surgical systems on the continent as well as industry players.

1. Regional learning between systems: an excellent example is the proposal for an African Surgical Appliance Suitability Index (Afri-SAS Index) (8) that envisions a standardized metric that is applicable in the African surgical context. The multifaceted approach can be adopted regionally and used for assessment of surgical equipment and additionally for collective bargaining with industry.
2. Regional accountability partnerships: pivoting off existing platforms such as African surgical centers (e.g., Centre for Global Surgical Equity under the University of Global Health Equity), communities of practice (e.g., local surgical societies), regional ecosystems (e.g., PAsHEF) and policy groups (e.g., The ECSA community), partnerships promoting adherence to the locally accepted practices at regional level.

The role of surgical systems as the bedrock of resilient healthcare systems, especially in the relatively fragile systems prevalent in SSA, cannot be overemphasized. The current status of the sector on the continent reflects the long history of the under involvement of surgical care in the pursuit of UHC. The tide, however, is changing, with the world’s youngest population on the African continent, against the background of globally declining fertility rates and prevalent geo-political changes. Perioperative/surgical care is becoming a key determinant of not only the health but also the economic

future of the African continent. As the Lancet Commission for Global Surgery outlined, over 5 billion people lack access to essential surgical care, with diseases amenable to surgical treatment making up 11–15% of world disability (10). Globally, trauma and surgical disease including cancer have overtaken infectious diseases as the biggest contributor to catastrophic expenditure for healthcare (11). Against this background, it is apparent that the need for robust surgical services on the continent will only continue to grow with the need for sustainable systems more urgent today than any time in the recent past. The African surgeon is called upon to participate not only in service provision but also in research, advocacy, and policy formulation to ensure that surgical systems remain resilient to serve the needs of the African surgical patient.

#### Author contributions

Both authors equally contributed to conceptualization, writing & reviewing of the original draft.

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