Addressing quality in surgical services in sub-Saharan Africa: hospital context and data standardisation matter

Tihitena Negussie Mammo,[1,2] Thomas G Weiser[3,4]

[1]Department of Surgery, Addis Ababa University, Addis Ababa, Oromia, Ethiopia
[2]Lifebox Foundation, Addis Ababa, Ethiopia
[3]Department of Surgery, Stanford University, Stanford, California, USA
[4]Lifebox Foundation, London, UK

Correspondence to
Dr Thomas G Weiser, Department of Surgery, Stanford University, Stanford, California 94305, USA; tweiser@stanford.edu

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In low-and-middle-income countries (LMICs), there remain critical gaps in the quality of surgical care. Comparatively high rates of surgical adverse events occur and are likely highly preventable.[1–3] There has been substantial focus on improving access to health services, including surgical care in LMICs, yet quality oversight and improvement practices remain limited in these settings.[4] Over the past decade, surgical volume has doubled in the most resource-poor settings; between 2004 and 2012, the annual number of operations jumped from 234 million to 313 million, with the biggest growth occurring in countries with the lowest amount of healthcare spending.[5 6] This signals a profound shift: whereas prior efforts were focused on infections and maternal health, non-communicable diseases such as cancers and trauma are an increasing priority for LMIC health systems. With the rapid growth in surgical delivery, the quality and safety of care are critically important. Poor outcomes and high morbidity breed mistrust, scepticism and fear among local populations, and thus hinder the mission of health systems to provide timely and essential services, especially risky ones like surgery.

In this issue of the Journal, two articles shed some light on the challenges and opportunities for improving and maintaining high-quality surgical and anaesthetic services in LMICs. The first explores variation in the determinants of surgical quality across 10 hospitals in Tanzania that participated in the Safe Surgery 2020 (SS2020) programme.[7] The investigators identified significant differences between what they termed high-performing and low-performing institutions. These included the perception and application of the SS2020 surgical quality improvement interventions meant to boost adherence to safety practices, enhance teamwork and communication, and improve completeness of documentation in patient records. These practices were aimed at reducing postsurgical infections in hospitals implementing the intervention. The programme worked to change organisational culture, build capacity to deliver evidence-based practices in safe surgery and anaesthesia, and facilitate the sustainability of the first and second phases through in-person and virtual mentorship.

The authors noted that the high-performing sites had a strong prior culture of teamwork, with references to surgery as a team effort, collective problem-solving and support of co-workers, as well as a flattened hierarchy with open communication. These facilities used the Surgical Safety Checklist (SSC) as a tool to strengthen teamwork and communication. Lower performing sites gave more emphasis to individual learning than organisational learning, thought of the SSC as a means to improve outcomes rather than encourage teamwork, considered SS2020 as a programme for surgeons rather than for all members of the perioperative team and expressed higher levels of reluctance to engage in open communication because of hierarchy.

The second article describes surgical service monitoring and quality control systems at district hospitals Malawi, Tanzania and Zambia.[8] The authors investigated surgical surveillance at a facility level and the types of quality processes and controls in place to assess

service capacity, volume, outcomes and adherence to standards. After evaluating 75 district hospitals, the authors noted a number of major challenges, including that data registry and recording formats were not standardised; in fact, over half of hospitals surveyed had two or more systems in place. Hospitals also lacked accountability mechanisms; of the 75 hospitals, only 43 created mortality reports for review, 11 conducted surgical audits of any kind and 22 used the SSC routinely despite numerous studies confirming its benefit to patient safety in these environments.

Each study has its own limitations. In the article by Alidina *et al*, the grading used to classify high and low performers was subjectively set by the study team, the sample size of facilities was relatively small, and interviewee responses were potentially affected by recall and social desirability biases. Furthermore, high-performer hospitals were overwhelmingly from smaller-sized facilities, indicating a strong clustering effect. In the article by Clarke *et al*, self-reported information also introduces a potential for bias, there was limited interviewing of hospital administration and other stakeholders outside of perioperative providers, and the focus on district hospitals might miss more robust practices in urban and teaching hospitals.

Although there have been proposals for standardised surgical and anaesthesia metrics to track service delivery and quality, there is not a firm consensus on minimum standards or an organising body to incentivise monitoring.[9–12] Yet proper data collection using standardised and comparable metrics is essential for service planning, as the routine and appropriate monitoring of such information is critical for implementation of quality surgical services. As these two articles make clear, such processes are still rudimentary in many LMIC environments. The challenges to improving them include a lack of properly developed registries, inappropriate formatting, technological barriers for centralised data recording and storage, absence of data interpretation and feedback, and gaps in planning mechanisms.[13] These challenges are overwhelmingly due to lack of dedicated leadership in the oversight of surgical service provision and fundamental gaps in basic service management, without any proper linkage of data capture to future planning or improvement interventions. Without adequate and complete data, assessments of patient outcomes and safety process gap identification at the institutional level is impossible. Furthermore, strong management is critical for ensuring adherence to standards and clear standard operating procedures. While leadership training is the focus of much discussion, as it was in the article by Alidina, little has been done to elevate and promote management skills that are essential for efficient service provision. Work in Ghana, for example, has demonstrated that good management practices can avoid depletion of critical supplies[14]; yet even when service delivery increases, facility readiness and the practices that must accompany increased volume do not necessarily follow.[15 16]

There are a number of solutions to these challenges. Hospital leaders need to emphasise quality as central to the hospital mission. Lessons from high-performing hospitals have demonstrated that a focus on quality by hospital leadership can raise the standards of care delivery, although under specific conditions that promote quality through accountability and transparency and with evidence from relatively small numbers of hospitals.[13] Such efforts require a standardised approach to data collection and robust assessments of processes, such as compliance with critical standards of care (eg, infection prevention standards such as hand hygiene and antimicrobial stewardship). When implemented in a rigorous way in surgery, high-quality data and strong process adherence have tremendous beneficial effects.[17 18]

Improvements in quality and safety also require infrastructure and a management team that sets targets for performance, benchmarks quality standards, allocates resources and assigns people with skill sets matched to clinical service needs to drive improvements.[19 20] Good management practices have been correlated with improved outcomes and better compliance with known standards of care.[21]

Unfortunately, studies from LMICs show substantial variability in the way in which quality of care is measured.[22] Furthermore, there is a fundamental lack of appropriate guidelines and management protocols, and those that do exist are not easily implemented. Our experience indicates that integrating a proper monitoring and evaluation programme into institutional efforts to improve perioperative processes have powerful positive effects on outcomes.[18] We have done this in our work through the use of process mapping, an exercise that takes a quality improvement team through the pathway of a care routine or a standard operating procedure in order to gain a complete understanding of the barriers to appropriate compliance.[23] This type of process was developed for industry but has been applied in healthcare as a means of improving compliance by aligning tasks with specific process goals. The work requires data-driven, quality-controlled surgical services structured in a manner that allow changes to be made to the care routine and associated processes. Assessing baseline data, understanding barriers to quality services and care, seeking local solutions, addressing knowledge gaps, standardising monitoring and rewarding improvements must all be integrated to achieve such change. Appropriate surgical monitoring and evaluation tools can help measure quantitative and qualitative improvements to surgical care in LMICs.[24]

Like politics, all quality improvement is local, so a deep understanding of local context and circumstances is essential. As surgical and anaesthetic services continue to expand, hospital-based surgical programmes will need to engage more concertedly

in research and quality improvement initiatives in order to decrease adverse outcomes and raise the quality and safety of surgical services in LMICs. As the authors of both articles note, however, these improvement mechanisms are not without substantial challenges, many will not be effective, and all require a more coordinated approach and a strengthening of management practices to ensure the quality and safety of care.

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