

Access to safe surgery

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Mercy Ships, the world's largest civilian hospital ship, has made a major contribution in coastal sub-Saharan Africa by providing state-of-the-art surgical care to some of the world's poorest and most vulnerable people who might otherwise have no access at all to any surgery. By investing in local health-care infrastructure and by training local personnel, Mercy Ships contributes to local capacity-building. By the very nature of the work it does, it has the additional potential to provide a unique setting for research. The three analyses and two research papers published in this themed supplement of *BMJ Global Health* have taken advantage of this fact and show how valuable research is possible in non-governmental organisations (NGOs), like Mercy Ships.^{1–5}

The Lancet Commission on Investing in Health pointed to 'the possibility of achieving dramatic gains in global health by 2035 through a grand convergence around infectious, child, and maternal mortality; major reductions in the incidence and consequences of non-communicable diseases and injuries; and the promise of universal coverage'.⁶ It is my personal opinion—an opinion supported by the conclusions of the *Disease Control Priorities, Third Edition: Essential Surgery volume*,⁷ and the Lancet Commission on Global Surgery⁸—that this lofty goal will not be achieved in low-income and middle-income countries (LMICs) without the provision of safe, accessible, affordable and universal essential surgical services. The five articles in this supplement address safety and accessibility of surgery in sub-Saharan Africa, exactly the kind of information that is fundamental to the development of essential surgery services and can only be done from observations made on the front line.

The article by White and colleagues¹ is particularly significant. The authors provide evidence that decentralised patient selection strategy that targets poor and remote areas can help to overcome barriers to care, and allows patients in greatest need, those in the lowest wealth quintile, to access surgical care. It makes clear that NGOs and other health-provider groups need to travel to rural

locations to find and actively recruit patients who, otherwise, have no means to present themselves at the Mercy Ships at port or at other NGO centres. Access to surgical care in LMICs can be increased through governmental investment, by increasing the surgical and anaesthesia workforce, and by the use of technology. But simple interventions, such as decentralised case-finding strategy, performed in situ in LMICs, provide a practical approach. The study also emphasises an important lesson on collaborating closely with the Ministries of Health and with the community and its religious leaders to overcome fear and mistrust.

Mortality from surgical operations in poor-resourced countries is unacceptably high. Deaths from caesarean section occur in 0.04 births per 1000 in Sweden; in sub-Saharan Africa, the death rate is 100 times higher.⁹ Deaths attributable to anaesthesia are estimated to occur at a rate of 141 deaths per million in low-income countries as compared with 25 per million in high-income countries.¹⁰ Most surgical deaths occur in the perioperative period, and many of these deaths are preventable by instituting the 19-item WHO surgical checklist and closer intraoperative monitoring. The use of the WHO checklist has been shown to decrease the morbidity and mortality of surgery by nearly 50%.¹¹ The routine use of pulse oximeters has played a particularly important role. The challenge with the use of the checklist lies with implementation. Close and colleagues² address the problem head on in the second of the analytic papers. They show that a 3-day checklist training programme overcomes implementation challenges and brings about changes in personal behaviour and organisational practice. Moreover, this positive outcome is sustained over 3–4 months.

In industrialised countries, the adequacy of surgical instruments is taken for granted. This is not the case in low-income countries. Too often, surgical instruments are not adequately cleaned and disinfected, rendering subsequent steam sterilisation ineffective. The last of the three analytic papers in this supplement, by Fast and colleagues,³ shines light



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on this inadequacy by describing the limited sterile processing capabilities in several sub-Saharan countries. Sterility of surgical instruments is a key requirement in the prevention of wound infection and other septic complications that are often life-threatening. Prevention of postoperative infection is an important strategy to reduce postoperative mortality and make surgery safer.

The emergence of bacterial resistance to antibiotics represents a major threat globally. The research paper by Lai and colleagues⁴ finds significant rates of bacterial resistance in wound infection to first-line antibiotics, including methicillin and third-generation cephalosporins in Benin, Congo, Liberia, Madagascar, Sierra Leone and Togo. methicillin-resistant *Staphylococcus aureus* (MRSA) was found in about a third of wound isolates in Benin and Congo, and third-generation cephalosporin-resistant Enterobacteriaceae in 35.8% of isolates in Benin. These rates are distressingly high and point to the need of concerted prospective studies to reduce/prevent this global threat.

Out-of-pocket expenses lead to catastrophic financial loss in LMICs, and transportation costs account for 30% of the total out-of-pocket expenditures. Transportation costs are one of the most important barriers to seeking surgical care. The second research paper in this supplement, by Shrimme and colleagues,⁵ shows that 'when transportation costs are paid for, the surgical no-show rate drops by approximately half'. This important study identifies the need to include transportation costs as part of medical costs and appropriately suggests that all types of surgical service providers should subsidise or eliminate transportation costs.

The contribution that front-line, practical studies make to increase safety and accessibility of surgery in LMICs cannot be overemphasised. NGOs are uniquely positioned to do these kinds of studies. Mercy Ships is leading the way.

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