Surgical health policy 2025–35: strengthening essential services for tomorrow's needs

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Progress towards *The* Lancet *Commission on Global Surgery*'s 2030 targets has been too slow and too patchy, particularly in low-income and middle-income countries. The unmet need for surgery has continued to grow, reaching at least 160 million operations per year. Ensuring high-quality surgical care remains a crucial global challenge, with 3·5 million adults dying after surgery each year. The COVID-19 pandemic exposed the fragility of surgical services long undermined by chronic underfunding, workforce shortages, and under-resourced infrastructure. However, *The* Lancet *Commission on Global Surgery* inspired a new generation of surgeons to engage with policy, and several countries have developed national surgical plans, although most remain unfunded. Advancements in surgical data science have allowed health systems to identify priorities for improvement. Preserving this infrastructure is important, especially during periods of uncertain global health funding. The next decade requires urgent change to prevent economic instability and armed conflict from forcing surgery down the global health agenda. Reframing surgery as an essential service that saves lives, strengthens health systems, and fosters economic productivity could unlock much needed investment. Sustained progress requires integration of funding both within hospital infrastructure and across care pathways. Such holistic approaches would reinforce entire hospital systems, which are essential to national security and wellbeing.

Introduction

The 2015 Lancet *Commission on Global Surgery* estimated that although surgical services have a role in addressing a third of the global disease burden, 4·8 billion people do not have access to essential surgical care.[1] The Commission called for urgent efforts to expand surgical capacity, particularly in low-income and middle-income countries (LMICs). Over the past decade, *The* Lancet *Commission on Global Surgery* has fostered stronger collaboration between academic institutions, governments, and non-governmental organisations (NGOs), leading to improved evidence generation and a more policy-driven approach towards global surgery (figure 1). Despite achievements, such as the adoption of World Health Assembly (WHA) resolution 76.2 in 2023,[2] surgery remains largely absent from broader global health agendas and there is no global action plan to ensure that *The* Lancet *Commission on Global Surgery*'s targets are met.

The purpose of this Health Policy is to reflect on progress 10 years on from *The* Lancet *Commission on Global Surgery*, to identify the barriers that have impeded progress, and to propose solutions to support the development of global surgery in 2025–35. We have synthesised data from a range of sources to identify key evidence gaps and future priorities (panel 1), resulting in evidence-based policy priorities that aim to support the integration of surgical care as an essential building block of health and promote universal access to surgery. We have adopted a global lens to identify challenges across all income settings and summarised five key messages (panel 2).

Progress since 2015

Since the 2015 publication of *The* Lancet *Commission on Global Surgery*, global surgery has gained greater recognition, with surgeons increasingly engaging in national and global policy initiatives. National Surgical, Obstetric, and Anaesthesia Plans have been developed in several countries to drive improvements in surgical care. There have also been improvements in data collection, allowing progress to be tracked and gaps in surgical provision to be identified. However, the global surgery movement has struggled to meet patient needs, with inadequate access to surgery increasing and unacceptably high postoperative complication rates in many settings. This section explores progress made over the past decade and identifies key gaps that need to be addressed in the next decade. It is mapped against the WHO Health Systems attributes, first assessing access and coverage, and then quality and safety.[4]

Access and coverage

Global surgery indicators

Despite setting a global framework, the six Lancet *Commission on Global Surgery* indicators have failed to gain meaningful traction. These indicators cover access, workforce, surgical volume, perioperative mortality, and

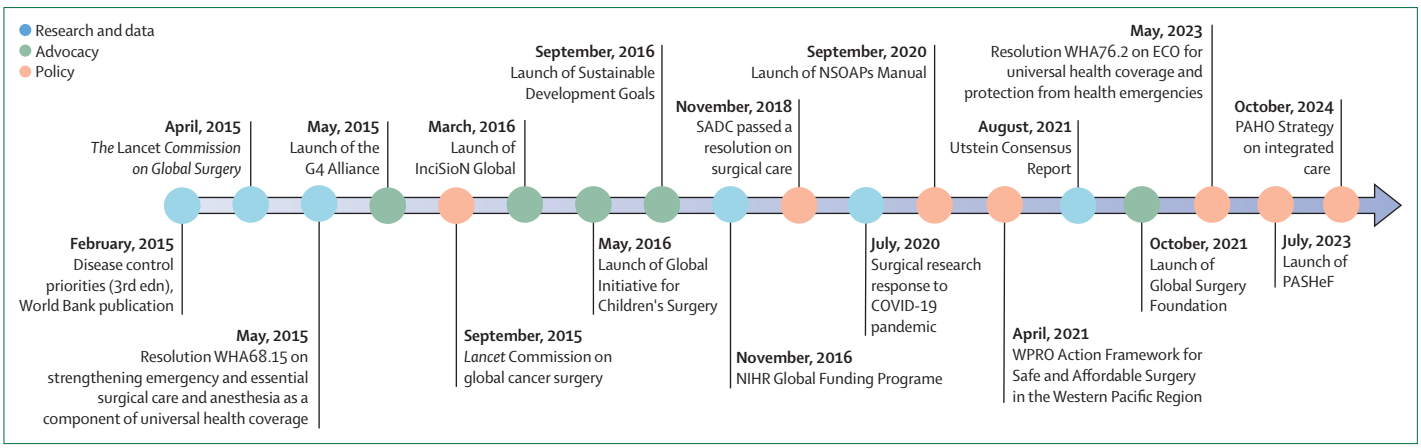

Figure 1: **Timeline of key events in global surgery**
ECO=Integrated emergency, critical, and operative Care. InciSiON=International Student Surgical Network. NIHR=National Institute for Health and Care Research. NSOAP=National Surgical, Obstetric, and Anaesthesia Plan. PAHO=Pan American Health Organization. PASHeF=Pan-African Surgical Healthcare Forum. SADC=Southern African Development Community. WHA=World Health Assembly. WPRO=World Health Organization Regional Office for the Western Pacific.

Panel 1: Review methodology

This Health Policy used a range of methodological approaches to assess global surgical progress over the past decade and identify future priorities. We completed literature reviews, for example, to evaluate the tracking of key surgical indicators. We incorporated modelling of existing data to estimate unmet surgical needs and economic benefits of surgical expansion. We consulted key stakeholders to identify key events and challenges over the past decade. We conducted a Delphi process to reach a consensus on future research priorities and development goals. Detailed methodology is presented in the appendix. By synthesising evidence from diverse sources, we have produced an evidence-based framework for improving access to safe, affordable, and high-quality surgical care globally.

Panel 2: Key messages

- Unmet surgical need is rising, not falling: the global unmet need for surgery has increased to 160 million procedures per year (appendix pp 8–10). Provision has not kept pace with population demands or ageing trends, particularly in low-income and middle-income countries.
- Postoperative deaths exceed major global disease burdens: an estimated 3·5 million adults die within 30 days of surgery each year (appendix pp 6–7), which is more than the total deaths attributed to HIV, malaria, and tuberculosis. Strengthening hospital infrastructure will prevent deaths by increasing the capacity to rescue patients from complications.
- Surgery strengthens health systems beyond the operating theatre: investment in surgery provides economy of scale by lifting broader hospital services, such as diagnostics, oxygen supply, energy security, and intensive care.
- Surgical expansion offers major economic returns: scaling up essential cancer surgery alone in low-income and middle-income countries could return more than international $80 billion annually in productivity gains, enabling more than 885 000 people to return to work each year. This surgical prosperity dividend is a powerful case for prioritised investment.
- Preparedness is essential, but lagging: the COVID-19 pandemic revealed how fragile surgical systems are; 28 million operations were cancelled in just 12 weeks.[3] Health systems should be better prepared for emerging risks, including global conflicts and climate events.

financial protection, and were designed to monitor progress towards safe, affordable surgery worldwide.[4] Yet nearly a decade on, most countries are still not tracking them in any reliable way. Our systematic review found just 28 studies that reported these indicators (panel 3): 12 with multinational data and 16 with national-level data. Primary data are particularly sparse for the indicators that matter most to patients: mortality and catastrophic expenditure. Only 26% of LMICs are on track to meet the 2030 target for access, 41% are on track for the workforce target, and 0% are on track for the surgical volume target (figure 2). Unless governments prioritise their measurement, these indicators risk becoming irrelevant.

Surgical case-mix

Although *The* Lancet *Commission on Global Surgery* indicators have been valuable for setting global targets, headline data are too broad and incomplete to inform actionable planning. Over the past 3 years, new data on surgical case-mix have helped identify locations with insufficient access to surgery where investment should be prioritised (appendix pp 6–7). Case-mix variation is striking, with elective procedures accounting for just 58% of surgical volume in the lowest Human Development Index (HDI) quintile countries compared with 79% in the

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Panel 3: Systematic review tracking reporting of the global surgery indicators

We conducted a systematic review to evaluate the tracking of *The* Lancet *Commission on Global Surgery* indicators[1] at national and international levels and country-level progress towards meeting the 2030 targets. The full methodology and references are reported in the appendix (pp 38–47).

Indicator 1: access to timely essential surgery

The target was set for all countries to provide at least 80% of the population with access to a facility providing the Bellwether procedures within 2 h travel by 2030.[5] Seven multinational studies and ten national studies reported this indicator across 96 countries (16 high-income, 19 upper-middle-income, 38 lower-middle-income, and 23 low-income countries). There is substantial variation in the methodology of measurements, making intercountry comparisons challenging, but substantial disparities in access between and within countries still exist. Over the past 10 years, there is evidence to suggest that 37 countries have met the target at least once. There is no evidence of ongoing monitoring of this indicator, and it is not included in the World Development Indicators (WDI).

Indicator 2: specialist surgical workforce density

The target was set for all countries to have at least 20 surgical, anaesthetic, and obstetric care providers per 100 000 population by 2030. There have been five multinational and seven national studies reporting surgical workforce density for 200 countries (54 high-income, 59 upper-middle-income, 41 lower-middle-income, and 46 low-income countries). These studies were mostly reported data from Ministries of Health, WHO, the Organisation for Economic Co-operation and Development, Eurostat databases, and academic publications. Workforce densities are inadequate: 75% of low-income countries and 61% of lower-middle-income countries have not achieved the target. Most high-income countries (93%) have met the target. Very few countries have updated data since 2019, and the indicator was last reported in the WDI in 2018.

Indicator 3: surgical volume

Two targets were set: 80% of countries should be tracking this indicator by 2020, and 100% by 2030, and a minimum of 5000 surgical procedures should be done per 100 000 population per year by 2030. There have been five multinational and 11 national studies reporting surgical volume for 122 countries (42 high-income, 30 upper-middle-income, 31 lower-middle-income, and 19 low-income countries). Most high-income (79%) and some upper-middle-income (17%) countries have met the surgical volume benchmark. No lower-middle-income or low-income countries have met this benchmark. This indicator has been reported in the WDI and was last updated in 2023, from data compiled from Ministries of Health, regional databases, and academic publications.

Indicator 4: perioperative mortality

The target was set for 80% of all countries to be tracking perioperative mortality rates by 2020, and 100% by 2030. Although mortality is reported in many surgical studies, little postoperative mortality data are available at a country level. Four multinational studies[6] and seven national studies reported this indicator for 62 countries (15 high-income, 16 upper-middle-income, 18 lower-middle-income, and 13 low-income countries). There is substantial variation in outcome definitions and study methodology and little information on patient and operative case-mix, making meaningful interpretation and benchmarking between countries challenging. There is no evidence of ongoing global monitoring of this indicator and it is not included in the WDI dataset.

Indicators 5 and 6: protection against impoverishing expenditure and protection against catastrophic expenditure

The targets were set for 100% protection against impoverishment and catastrophic expenditure from out-of-pocket payments for surgical and anaesthesia care by 2030. Four national studies have reported these indicators for two upper-middle-income and two low-income countries. None of them have met the target. WDI included modelled data for these indicators, last updated in 2022.

highest (figure 3). This disparity reflects inadequate access to elective care in LMICs where delays or inaccessibility of elective care results in patients deteriorating until they require emergency intervention, with higher risks and costs. For example, the rate of emergency inguinal hernia repairs is 14·2% (95% CI 7·9–20·5) in LMICs compared with 6·8% (4·9–8·7) in high-income countries.[7]

Obstetric procedures dominate surgical volume in the lowest HDI quintile (35% *vs* 7% in the highest), whereas more complex procedures, such as head and neck surgery, are less frequently done (12% *vs* 26%). These disparities reflect deep inequities in access to specialised care. The overall surgical volume Lancet *Commission on Global Surgery* metric masks these deficits, indicating the need for dedicated infrastructure to produce granular surgical data.

Unmet need for surgery

The Lancet *Commission on Global Surgery* estimated that 143 million people require surgery each year, but go without it.[8] Despite a modest increase in global surgical volume from 234 million procedures in 2008, to 266 million in 2019, it has not kept pace with rising need.[9,10] Based on *The* Lancet *Commission on Global Surgery* benchmark of 5000 procedures per 100 000 population per year, unmet need has now risen to at least 160 million operations annually (appendix pp 8–10). The continued disruption of

elective services following the COVID-19 pandemic likely means that even these figures are underestimates.[3,11]

Among adults, women account for most of the unmet surgical need (80 million *vs* 54 million for men), yet their access to surgery remains poorly captured in many data systems (appendix pp 8–10). In high-income countries, surgical demand is concentrated in older populations (unpublished). Because LMICs have demographic shifts with population growth, ageing, and urbanisation, their need for surgery will rise sharply. Although caesarean section rates have increased globally, 38 million additional procedures will still be required by 2030, with countries in sub-Saharan Africa facing the greatest gap between demand and capacity.[12,13] Modelling of global surgical coverage has not been updated in the past 10 years and the available data suggest there is unlikely to have been any improvement to the previous 2015 estimate of 4·8 billion people without access to safe surgery.[5]

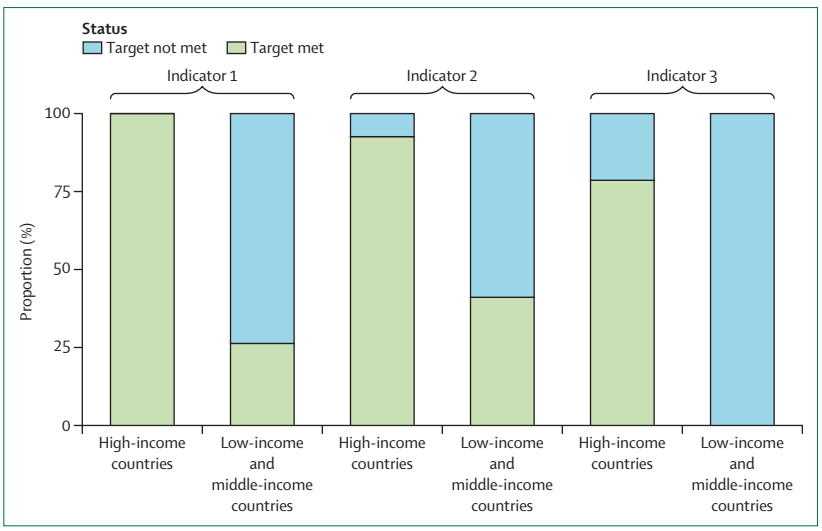

Figure 2: **Progress towards achieving *The* Lancet *Commission on Global Surgery* 2030 targets**
Our systematic review found 28 studies that reported *The* Lancet *Commission on Global Surgery* 2030 indicators: 12 with multinational data and 16 with national-level data. Country-level data were available for indicators 1–3 only. Indicator 1: access to timely essential surgery (data available for 96 countries). Indicator 2: specialist surgical workforce density (200 countries). Indicator 3: surgical volume (92 countries).

Bellwether procedures

The Lancet *Commission on Global Surgery* selected three Bellwether procedures (emergency laparotomy, caesarean section, and open fracture management) as indicators of access to essential surgical care. Each procedure addresses a life-threatening condition and serves as a proxy for basic surgical capacity, making them a valuable starting point, particularly where little data are available. However, as global surgery research has matured, the limitations of the Bellwethers have become increasingly apparent, as they have insufficient granularity to explore the full scope and equity of surgical provision. A more comprehensive surgical basket of 32 procedures has been proposed to address this limitation.[14] However, many LMICs do not have the capacity to routinely collect data at this scale, so the Bellwether procedures continue to serve as a practical global benchmark. Better global data collection is needed while avoiding the burden of continuous data capture and the unlikely aspiration of fully integrated electronic health records. Short, international, prospective cohort studies that capture all operations could provide the breadth and depth needed while remaining cost-effective for funders and feasible for clinical teams.

Emergency, critical, and operative care

Two of the Bellwether procedures (emergency laparotomy and open fracture surgery) are surrogates for how well a health system manages trauma and emergency care. Globally, trauma causes around 6 million deaths and 40 million permanent injuries each year, with more than 80% of that burden occurring in LMICs.[15] Road traffic injury is the leading cause of death in people ages 5–29 years.[16] Trauma reflects broader system failures than surgical challenges alone. Emergency, critical, and operative care represents a broader context; without effective prehospital triage, reliable emergency referral, and critical care support, even basic surgical interventions can fail to deliver safe outcomes. The importance of integrated emergency, critical, and operative care systems has been recognised at a policy level, including WHA resolution 76.2, which calls on governments to strengthen both hospital infrastructure and primary care referral pathways.[2] However, routes to its implementation remain unclear, particularly amid tightening global health funding and declining support for WHO. Moreover, surgical advocacy has long been hindered by perceptions of disunity and internal competition. Greater alignment of external messaging could help convey a more cohesive narrative to policy makers; for example, integrating surgery within emergency care would strengthen both.

Cancer surgery

Surgery remains the key curative treatment for solid cancers,[17] with up to 80% of patients needing surgery.[18] However, globally, there is wide variation in access to cancer care, with restricted access to diagnostics (eg, CT scanners) and treatments in LMICs.[19–21] Although late diagnosis is a global problem, emergency and advanced stage presentations are most common in LMICs (figure 4). The recommendations of The *Lancet* Commission on Global Cancer Surgery should be followed to improve access to and quality of cancer surgery.[21]

National surgical, obstetric, and anaesthesia plans

National surgical, obstetric, and anaesthesia plans are structured plans developed by governments to identify and prioritise the steps needed to expand access to surgical

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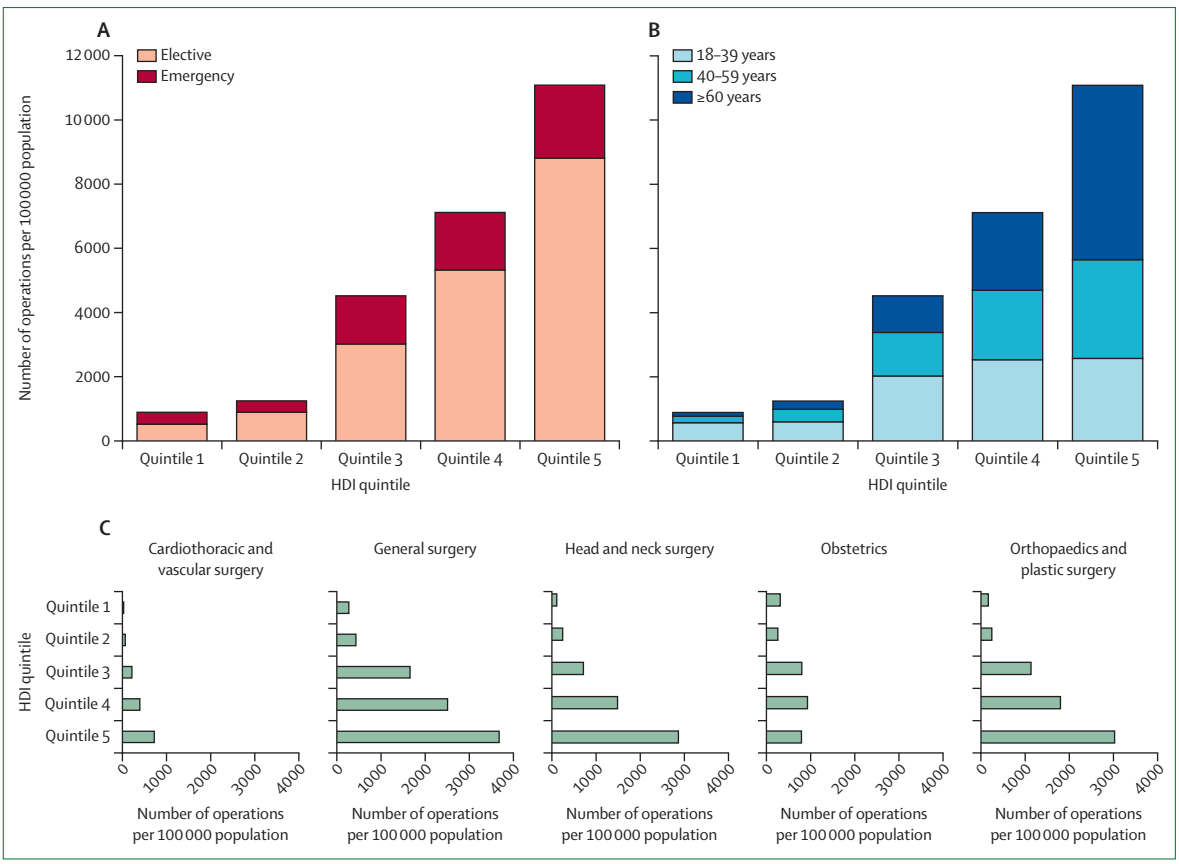

Figure 3: **Global variation in surgical case-mix**
(A) Number of operations per 100 000 population stratified by urgency of surgery. (B) Number of operations per 100 000 population stratified by age group. (C) Number of operations per 100 000 population stratified by specialty group. HDI quintile 1 is the lowest and quintile 5 is the highest. HDI=Human Development Index. Methodology is presented in the appendix (pp 6–7).

care. As of July, 2024, almost half of all countries had either an active plan (23 countries), an expired plan (26 countries), or surgical provisions within broader national health plans (40 countries).[23] Exemplars of successful national surgical, obstetric, and anaesthesia plans are presented in the appendix (pp 11–12). Supranational collaborations have also been developed, including the 2021 Action Framework for Safe and Affordable Surgery in the Western Pacific Region, which covered 24 countries, and the 2023 Pan-African Surgical Health-care Forum, which brought together 32 Ministries of Health.[24,25] Despite this progress, many low-income countries do not have dedicated surgical planning in place, even though they are in the greatest need of expansion of surgical care.[23] Crucially, although some countries reported improvements in surgical infrastructure and workforce following national surgical, obstetric, and anaesthesia plan implementation,[26] further research is required to evaluate their effects on patient outcomes and population health.[27]

NGOs

NGOs are important in providing surgical care to vulnerable populations, including those living in poverty, affected by conflict, or belonging to marginalised communities.[28] Of the more than 700 health-related NGOs globally, 403 provide surgical care as either their sole focus (39%) or alongside a wider range of health-care services (61%).[29] NGOs are active in 139 LMICs and provide 3 million surgical procedures per year across a range of surgical specialties.[30] Many focus on individual operations or diseases, such as hernia repair, obstetric fistula repair, or congenital disease correction. Although most surgical NGOs remain dependent on charitable donations, some have developed self-sustaining financial models.[31] Examples of successful NGO models are provided in the appendix (pp 13–14).

Several steps could be taken to further boost the effects of surgical NGOs. First, integration into government-led surgical planning, including national surgical, obstetric, and anaesthesia plans, would ensure they focus their resources on the greatest needs in harmony with public health services. Second, as well as providing direct clinical care, all NGOs must ensure that they invest in infrastructure and local capacity building, including training and mentoring local health-care providers and enhancing hospital facilities. Third, when building on

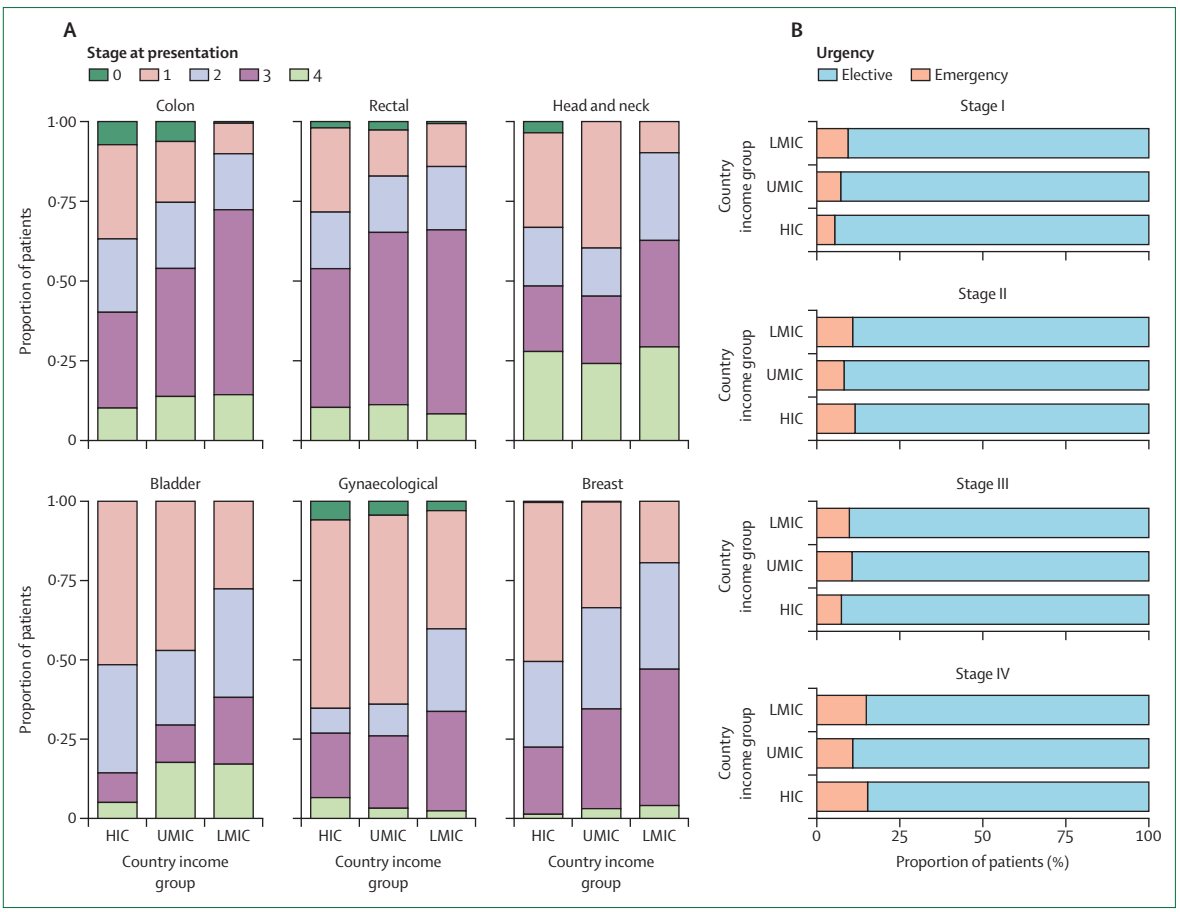

Figure 4: **Global variation in stage of presentation of solid organ cancers**
Data are from the COVIDSurg Collaborative.[22] (A) Variation in cancer stage at presentation for six common solid organ tumour types requiring surgery. (B) Global variation in urgency of colon cancer presentation by stage. LMIC=low-income and lower-middle-income country. UMIC=upper-middle-income country.

existing partnerships with research institutions,[32] governments should require routine evaluations of NGO activities to ensure they are delivering safe and effective care; this would also show real-world effects to donors and provide a two-way mechanism to put research findings into practice.

Quality and safety

Each year, an estimated 50 million adults have at least one postoperative complication, of whom 3·5 million die within 30 days of surgery (unpublished). Therefore, to fully realise the potential of surgery to restore health and quality of life alongside an expansion of surgical volume, it is crucial that each patient receives the best possible outcome following their surgery.[33,34]

Postoperative mortality

Routine capture of postoperative mortality is not feasible in many health systems, making it one of the least reliably measured global health metrics; millions of patients die postoperatively without being counted.[35] Each death is not only a profound personal loss, but can also leave a lasting economic impact on young families, particularly in communities already burdened by poverty. Studies over the past decade have offered insights into the scale and nature of the problem, pointing to where action is most needed.

First, postoperative mortality is a key public health priority, having been described in 2019 as the third leading cause of death globally.[34] Updated modelling data from 2025 indicate that each year, 3·5 million adults die within 30 days of surgery (unpublished). Mortality rates are consistently higher in emergency surgery than elective surgery (figure 5). Overall mortality rate trends by HDI quintile are inconsistent, reflecting differences in patient and operative case-mix. This finding underscores the need for detailed, procedure-specific mortality data, as broad, country-level mortality statistics might be misleading and fail to capture important nuances.

Second, the burden of postoperative mortality disproportionately falls on patients in LMICs, with substantially higher mortality rates than in high-income countries.[6,36,37] Third, although postoperative mortality is multifactorial,[35] the most frequent causes of death in

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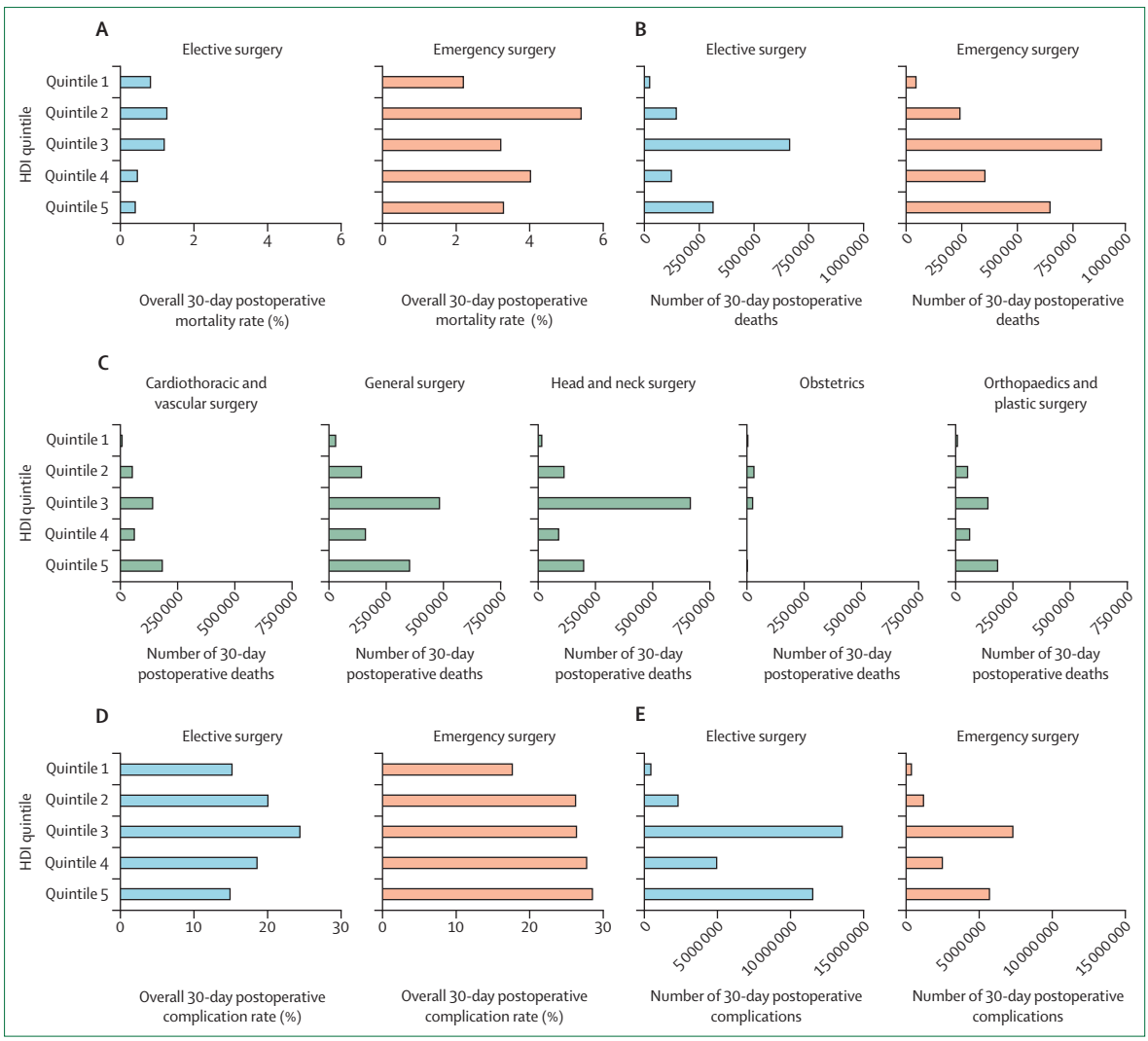

Figure 5: **Annual burden of postoperative deaths and complications**
(A) Overall 30-day postoperative mortality rates in adults by HDI quintile and urgency. (B) 30-day postoperative deaths in adults by HDI quintile and urgency. (C) 30-day postoperative deaths in adults by specialty group and HDI quintile. (D) Overall 30-day postoperative complication rates in adults by HDI quintile and urgency. (E) Total 30-day postoperative complications in adults by HDI quintile and urgency. HDI quintile 1 is the lowest and quintile 5 is the highest. HDI=Human Development Index. Methodology is presented in the appendix (pp 6–7).

postoperative patients in LMICs are related to sepsis and bleeding, indicating priority targets for interventions.[38] However, there have only been nine randomised controlled trials testing interventions to reduce postoperative mortality in LMICs and none have shown a significant reduction in mortality (panel 4), so large-scale, pragmatic randomised trials are needed to evaluate potential interventions.

There are reasons for hope. Although there are always inherent risks associated with invasive procedures, a continuous focus on quality will drive improvements in postoperative mortality. For example, in the USA, the American College of Surgeons' National Surgical Quality Improvement Programme reported a reduced mortality in 69% of participating hospitals that participated for at least 3 years during 2006–13.[39] In England, quality improvement initiatives, such as the National Emergency Laparotomy Audit, have contributed to overall postoperative mortality rates, which reduced from 1·16% in 1998, to 0·79% in 2014.[40] Embedding a safety culture, as exemplified by the WHO Surgical Safety Checklist, reduces postoperative mortality.[41]

Postoperative morbidity

Although most patients make a full recovery after surgery, 49·8 million adults each year have postoperative complications (unpublished; figure 5) that prolong hospital admissions, increase health costs, and have substantial effects on patient quality of life. Complication

rates are consistently higher in emergency surgeries than elective surgeries. Trends in overall complication rates by HDI quintile are inconsistent, reflecting differences in underlying surgical case-mix.

Surgical site infections are the most frequent postoperative complication, occurring in up to a quarter of patients undergoing major abdominal surgery and half of patients receiving an open lower-limb fracture repair.[42,43] Surgical site infection rates are disproportionately high in LMICs,[43] where inadequate capacity for wound care and re-operation means that infections can be prolonged and catastrophically expensive for patients, delaying return to work and resumption of normal activities.[43] Fracture-related infections can require amputation and lead to permanent disability, chronic pain, and greatly reduced quality of life.[44]

Reducing postoperative complications is a priority for both health systems and patients. Interventions that reduce postoperative complications can help reduce bed stays, reoperation rates, and overall costs, which can boost surgical volume at low cost by making better use of existing capacity. To maximise the effects of evidence-based interventions on reducing postoperative complications, two factors are crucial. First, clinical effectiveness evidence must be paired with cost-effectiveness data to develop strong business cases to justify health system investment. Second, since the adoption of evidence into practice is often slow and incomplete, a greater focus on effective implementation and strategies is essential.[45,46]

***Panel 4:* Scoping review of randomised controlled trials of interventions targeting postoperative mortality**

We conducted a scoping review of randomised controlled trials of interventions to reduce short-term postoperative mortality after non-cardiac surgery in low-income and middle-income countries (LMICs). The full methodology and references are reported in the appendix (pp 48–55). We identified nine randomised controlled trials. Two were conducted across multiple countries (CORONIS in seven LMICs, and ASOS-2 in 33 countries in Africa), one in South Africa, and six in China. Two trials reported a primary outcome of mortality as a composite outcome with another outcome. Two trials evaluated preoperative interventions, three evaluated in-theatre interventions (comparisons of operative technique), three evaluated postoperative interventions, and one evaluated an intervention delivered in theatre and postoperatively.

A trial of red-cell transfusion strategies showed a reduction in 60-day mortality in the individualised strategy (transfusion based on the West–China–Liu Score; 1·2%) and restrictive strategy (transfusion if haemoglobin <7·0/dL; 0·8%) groups compared with a liberal strategy (transfusion if haemoglobin <9·5g/dL; 4·1%, p=0·003), although no difference in 30-day, 180-day, or 1-year mortality was shown. Their primary outcome was a composite of mortality and in-hospital complications that showed no difference across the three trial groups. The interventions evaluated in the other eight trials did not have statistically significant results. ASOS-2 introduced a package of five interventions to enhance postoperative surveillance; it was recognised that implementing this intervention could put extra demand on a clinical environment and that clear implementation strategies are needed in resource-constrained environments. Another trial in South Africa evaluated a modified WHO Surgical Safety Checklist for maternity operating theatres. Although, overall, the trial found no reduction in mortality between intervention groups, there was a greater reduction in maternal mortality in hospitals that were good implementers of the intervention (incidence rate ratio 0·09, 95% CI 0·01–0·72). In summary, despite surgery being a leading cause of global mortality, the world has barely begun to test how to make it safer.

Antimicrobial resistance

WHO has identified antimicrobial resistance as a leading global public health threat.[47] In 2019, there were 4·95 million deaths associated with bacterial antimicrobial resistance.[48] Antimicrobial resistance-associated mortality rates are highest in sub-Saharan Africa,[48] reflecting global disparities in the availability of microbiology testing, prescribing guidance, and antimicrobial drugs. Because surgical services are among the largest consumers of antimicrobials in hospitals,[49] including watch-and-reserve antibiotics,[50] they are well positioned to lead the development of microbiology capacity and drive broader improvements across health-care systems.

In the surgical setting, antimicrobials are used to prevent and treat surgical site infections; in low HDI countries, 96% of patients receive antimicrobial prophylaxis and 86% receive postoperative antimicrobials.[43] Prolonged and repeated antimicrobial courses are common and up to two thirds of surgical patients receive antimicrobials that do not cover pathogens commonly found in wounds.[51] Poor antimicrobial stewardship results in high rates of antimicrobial resistance; a study across seven LMICs found evidence of antimicrobial resistance in 96% of positive wound swabs (appendix pp 15–16).[51] Consequently, quality improvement initiatives are required to prevent surgical site infection and strengthen antimicrobial stewardship. Although it is possible that perioperative antimicrobial use could be rationalised, randomised evidence is needed to inform optimal regimens.

Challenges

Longstanding challenges that hinder progress in expanding surgery include the absence of sustainable financing, inadequate infrastructure, and workforce shortages, all of which were exacerbated by the COVID-19 pandemic. Fragile health systems face additional pressures of addressing health inequalities and mitigating their environmental impacts. Taken with reductions to international aid and research funding in recent months, the scale of the challenge has only increased. This section examines the key barriers that must be addressed to achieve meaningful change by 2035.

Financing

Globally, there are a variety of models for financing surgical care, ranging from publicly funded systems that are free at the point of use, to systems in which patients bear the full cost of treatment through out-of-pocket

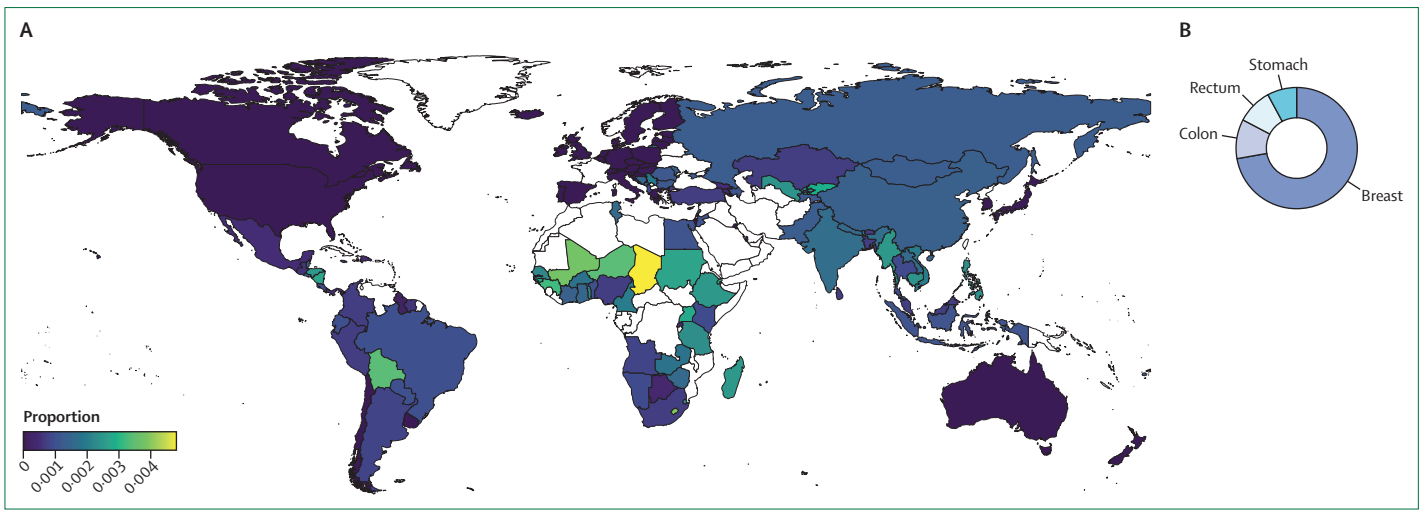

Figure 6: **Potential annual productivity gains associated with expansion of cancer surgery**
(A) The estimated increase in annual national gross domestic product, expressed as a decimal proportion, that could be gained by expanding access to surgical cancer care for breast, stomach, colon, and rectal cancer. Countries without colour were not evaluated due to missing data. Detailed methodology is in the appendix (pp 18–21). (B) Contribution of each of the four cancers to the overall annual productivity gains of US$80 billion.

payments. There is little patient-level data on the financial burden of surgical care; although there have been 20 studies published since 2015 on catastrophic expenditure in surgery, interpretation is restricted by inconsistent methodologies and definitions and low generalisability, as all studies were in a single country and focused on specific procedures.[52,53] For example, as many as 90% of patients with colorectal cancer in India have catastrophic expenditure.[54] A study of patients undergoing cancer surgery found that 48·3% of patients in LMICs paid out of pocket for their operation, compared with only 0·5% in high-income countries (appendix p 17).[55] Overall, an estimated 32·8 million people each year are pushed into financial hardship or poverty as a result of paying for surgery.[56] These costs can have devastating effects on patients, their families, and communities and lead to reduced spending on items and services, such as food and education.[57] Although this issue is concentrated in LMICs,[54,58] catastrophic expenditure also affects low-income and marginalised populations in high-income countries.[59,60]

The future development of global surgery will require substantial government investment; a 2015 study estimated the cost of scaling up surgical services globally at US$300–420 billion.[61] Several countries have developed costed national surgical, obstetric, and anaesthesia plans,[62] but financing these plans has proven challenging. The total cost of Nigeria's surgical plan was estimated at $16·8 billion over 5 years[62] compared with a total annual Government health budget of around $3 billion.[63] Although innovative partnerships between the public, private, and philanthropic sectors could meet at least part of these costs,[64] cuts to overseas development budgets by several high-income countries in recent months underscore the need to focus on sustainable in-country solutions.[65]

There is a compelling case for investment in surgery, but fresh arguments are needed beyond the cost-effectiveness of individual procedures.[66] First, there must be a shift from competing for funding for standalone, disease-specific surgical interventions, to emphasising the potential for surgery to act as a driver for developing effective hospitals. Examples of integration of essential surgical care into broader funding programmes for health include national health insurance in Ghana, community-based health insurance schemes in Rwanda, and the Free Health Care Initiative in Sierra Leone.[67–69]

Second, the costs of implementing national surgical plans must be considered alongside their potential economic benefits. Governments across all income settings are increasingly prioritising the need to reduce long-term sickness as a way of boosting economic productivity.[70] Surgical procedures can reverse disabling disease, returning patients to their study, work, or care roles. Investment in surgery could unlock a huge surgical prosperity dividend. For example, expanding essential cancer surgery in LMICs could support 884 246 people to return to work each year, unlocking annual productivity gains of $80 billion (figure 6; appendix pp 18–21).

Third, resource-constrained health systems should prioritise procedures with proven patient benefits and cost-effectiveness. Low-value procedures, such as arthroscopic subacromial decompression for shoulder pain,[71] at best deliver no benefit and at worst expose patients to unnecessary harms.[72] Overtreatment was estimated to cost the US health system up to $226 million in 2012, with waste accounting for up to 47% of total health spending.[73]

Finally, although there is strong evidence for the cost-effectiveness of many procedures,[66,74,75] surgical leaders must learn to effectively communicate complex messages

to both policy makers and the public around the costs and benefits of investment in surgery (appendix pp 22–23).[76]

Hospital infrastructure

First-referral and secondary hospitals are at the centre of surgical pathways, with most procedures being done there rather than in tertiary hospitals.[77] However, first-referral and secondary hospitals are under-resourced and insufficient facilities can be associated with higher mortality rates.[20] For example, compared with tertiary hospitals, first-referral hospitals have fewer surgeons (median 1 *vs* 20), lower medical anaesthetist cover (28·6% *vs* 87·1%), and less access to ventilated beds (37·1% *vs* 83·9%).[78] Despite these challenges, first-referral hospitals can achieve similar outcomes to secondary and tertiary hospitals for high-volume, low-complexity procedures, such as inguinal hernia repair.[7]

First-referral hospitals can help expand access to safe surgery by reducing travel-related barriers and costs. Their potential could be further unlocked by ensuring their patients benefit from essential, evidence-based technologies, such as hernia mesh.[7] By developing holistic pathways across the community, primary care, first-referral hospitals, secondary hospitals, and tertiary hospitals would ensure that patients are effectively navigated to a facility that can provide the level of care they need.[79] Strong primary care is essential to achieving this goal as it can support timely identification and referral of patients needing elective surgery, reducing the morbidity and costs associated with delayed, high-risk, emergency treatment.[80,81,82]

The surgical workforce

Surgical care requires a multidisciplinary clinical team of surgeons, anaesthetists, nurses, and allied health professionals. Globally, there is a shortage of more than 1 million surgeons and anaesthetists.[83,84] The speed at which the surgical workforce can be expanded is limited by several factors. Surgical training programmes last at least 4 years and it often takes longer for surgeons to become independent practitioners. The number of surgeons who can be trained at a given time is limited by the number of surgical trainers and funding available. Surgical workforce expansion must also be matched by expansion of the wider multidisciplinary team and other support staff.[85] Efforts to expand LMIC surgical capacity contend with a brain drain as skilled health-care workers migrate to higher-income countries; the departure of a single surgeon can disrupt an entire surgical pathway.[86] Workforce challenges were further compounded by the COVID-19 pandemic, which had a detrimental effect on surgical training worldwide.[87]

In the short term, NGOs can upskill existing practitioners by providing targeted training in key procedures, such as hernia repair, cleft palate surgery, and caesarean delivery.[28] In the medium term, there is a role for task shifting and task sharing—redistribution and delegation of responsibilities from surgeons to other health-care staff—across all income groups.[88] Task shifting appears to be safe for selected patients undergoing caesarean section, inguinal hernia, and anaesthesia provision, but more evidence is needed to establish the limits of what can be safely task shifted.[89–91] Task shifting can be contentious and evidence is needed for how to effectively supervise and regulate non-surgeon practitioners.

Meaningfully addressing the global workforce challenge requires larger-scale programmes that are backed by sustainable funding. An example is the collaboration since 2007 between the Royal College of Surgeons in Ireland and the College of Surgeons of East, Central, and Southern Africa. Working across 14 countries, this partnership has so far graduated 910 surgeons.[92] Embedding regional training programmes also reduces the brain drain.[93] High-income countries should develop codes for ethical international staff recruitment[94] and put in place adequate workforce planning to avoid a systematic reliance on LMIC staff.[95]

COVID-19 pandemic

The COVID-19 pandemic led to prolonged disruptions to elective activity, exacerbating already fragile surgical systems and resulting in extensive delays to patient care. An estimated 28 million operations were cancelled in the first 12 weeks of the pandemic.[3] During the first COVID-19 wave, one in seven patients booked to receive curative cancer surgery never received their operation; in LMICs, this figure was as high as one in four.[22] Many health systems have been slow to recover since the pandemic, impeding efforts to increase surgical coverage.[11]

However, the pandemic also showed the strength of the global surgery community when united behind a common goal. The CovidSurg Collaboration coalesced in March, 2020, to rapidly collect data on the safety of surgery in patients with perioperative SARS-CoV-2 infection and the effectiveness of measures to modify these risks. Overall, around 20 000 clinicians from 120 countries contributed data to a series of prospective cohort studies. CovidSurg data from the first COVID-19 wave showed that perioperative SARS-CoV-2 infection was associated with a 51·2% risk of pulmonary complications and 23·8% risk of death.[96] Sequential CovidSurg studies then identified strategies to safely restart surgery, including preoperative testing,[97] delaying surgery for at least 7 weeks in patients who tested positive for SARS-CoV-2 infection,[98] establishing COVID-19-free surgical pathways (segregated elective surgery facilities maintained free from COVID-19 exposure)[99] and introducing preoperative SARS-CoV-2 vaccination.[100] These measures were associated with a decrease in postoperative mortality risk from 24% in 2020, to less than 10% by 2022, and is estimated to have saved 192 900 lives in the first 12 months of the pandemic (unpublished).

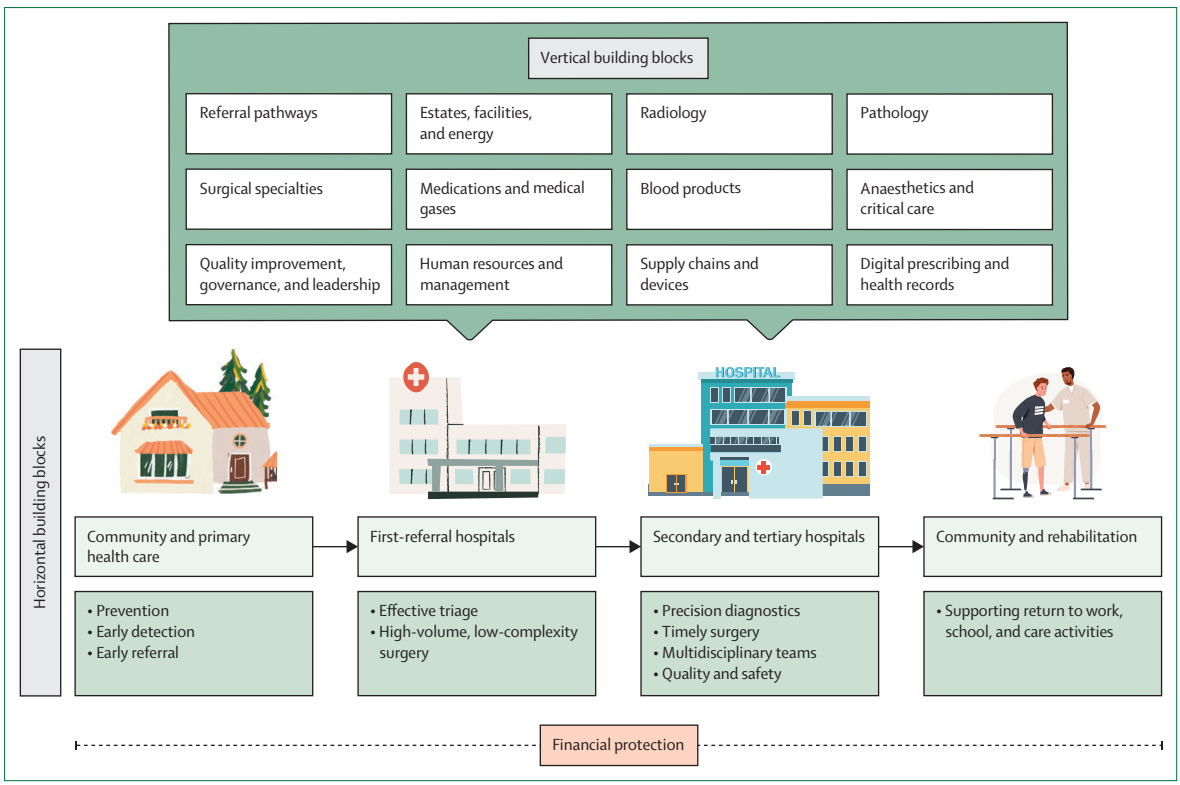

Figure 7: **Integration of surgical services into health systems**
Conceptualised integration of surgical services into whole patient pathways (horizontal integration) and whole hospital services (vertical integration).

Health inequalities

Inequalities in surgical care access and outcomes within countries have come under increasing scrutiny. As surgical care is scaled up, it is important to ensure that it addresses rather than exacerbates inequalities. Understanding inequalities in surgical care will help to better prioritise and target surgical interventions for the patients most likely to benefit.

Differences in risk factor exposure can result in a higher incidence of surgical disease in specific groups. For example, in the UK and USA, people with the lowest socioeconomic status and educational levels are most likely to smoke, resulting in inequalities in overall cancer incidence.[101] Racial disparities in cancer incidence (eg, prostate and thyroid) have also been identified in the UK and USA,[102,103] as well as inequalities in access to early diagnosis and treatment. Screening uptake is lower in minoritised ethnic groups in the UK and USA.[104,105] Social exclusion, mistrust, and low rates of health insurance coverage are among the many barriers to early diagnosis in the USA.[106] Even once Black patients are diagnosed in the USA, they are less likely to receive curative treatment than White patients.[107] These factors combine to result in substantially higher cancer mortality rates in deprived communities.[108] Intersectionality—the overlap of multiple characteristics associated with social disadvantage—further exacerbates unequal health outcomes. For example, Black women receive particularly poor standards of care in maternity settings in the UK.[109]

In LMICs, there is evidence of disparities by sex; for example, twice as many males as females undergo cleft lip surgery in Sudan, even though prevalence of cleft lip is similar.[110] Other findings are more subtle; although out-of-pocket costs for colorectal cancer care in India are higher for men than women, this appears to reflect that women have less access to definitive surgical care than men.[54] More data are needed to understand other disparities in LMICs; vulnerable populations include children, migrants, and people living in very rural settings.

Addressing inequalities requires a holistic approach. Consideration should be given to potential systemic biases in how health data is collected and used.[111] Better data are needed to understand local inequalities and their drivers. Surgical teams should adopt a health equity lens to the design and delivery of their services and should take opportunities to reach out to the community to promote better health, such as health awareness campaigns around cancer symptoms. Sexism, racism, and other prejudices must be actively tackled by surgical leaders at all levels.[112]

Environmental impact of surgery

Global temperatures have surpassed 1·5°C above pre-industrial temperatures,[113] with the health-care sector contributing at least 4% of the global carbon footprint.[114]

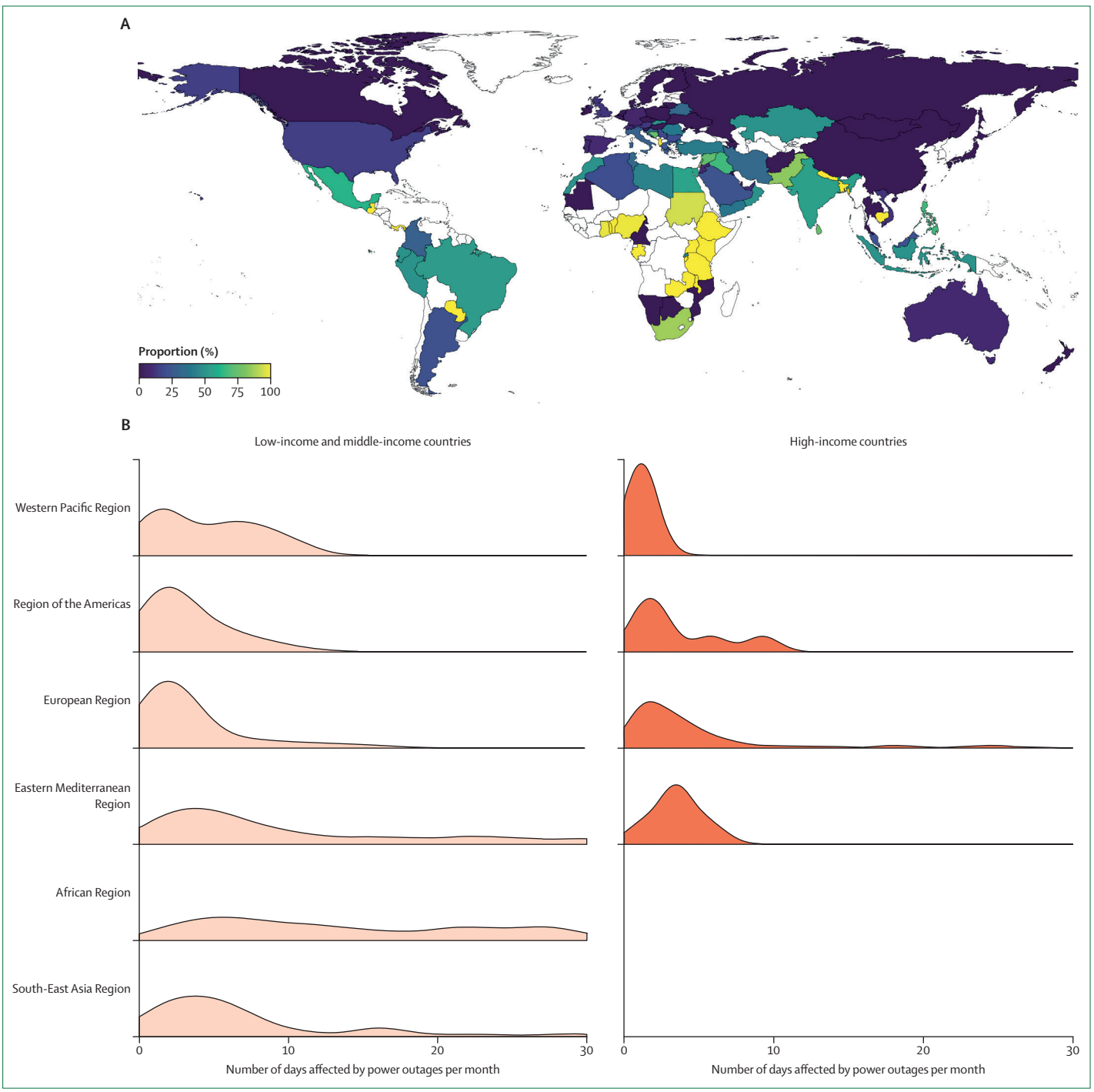

Figure 8: **Energy security in hospitals**
No data are available for high-income countries in the South-East region and African region (based on 2024 designations of high-income countries). (A) Proportion of hospitals reporting at least one power outage by country in 2024. (B) Average number of days with power outages per month in 2024 in hospitals that have outages.

Among health-care facilities, operating theatres are particularly carbon-intensive and account for approximately 25% of a hospital's total emissions due to their energy demands and resource-heavy supply chains.[115] This finding raises a key challenge for global surgery of how to accelerate the expansion of surgical capacity without disproportionately increasing carbon emissions that exacerbate climate change.

Decarbonisation of surgery requires front-line clinicians to act as agents for change by modifying their

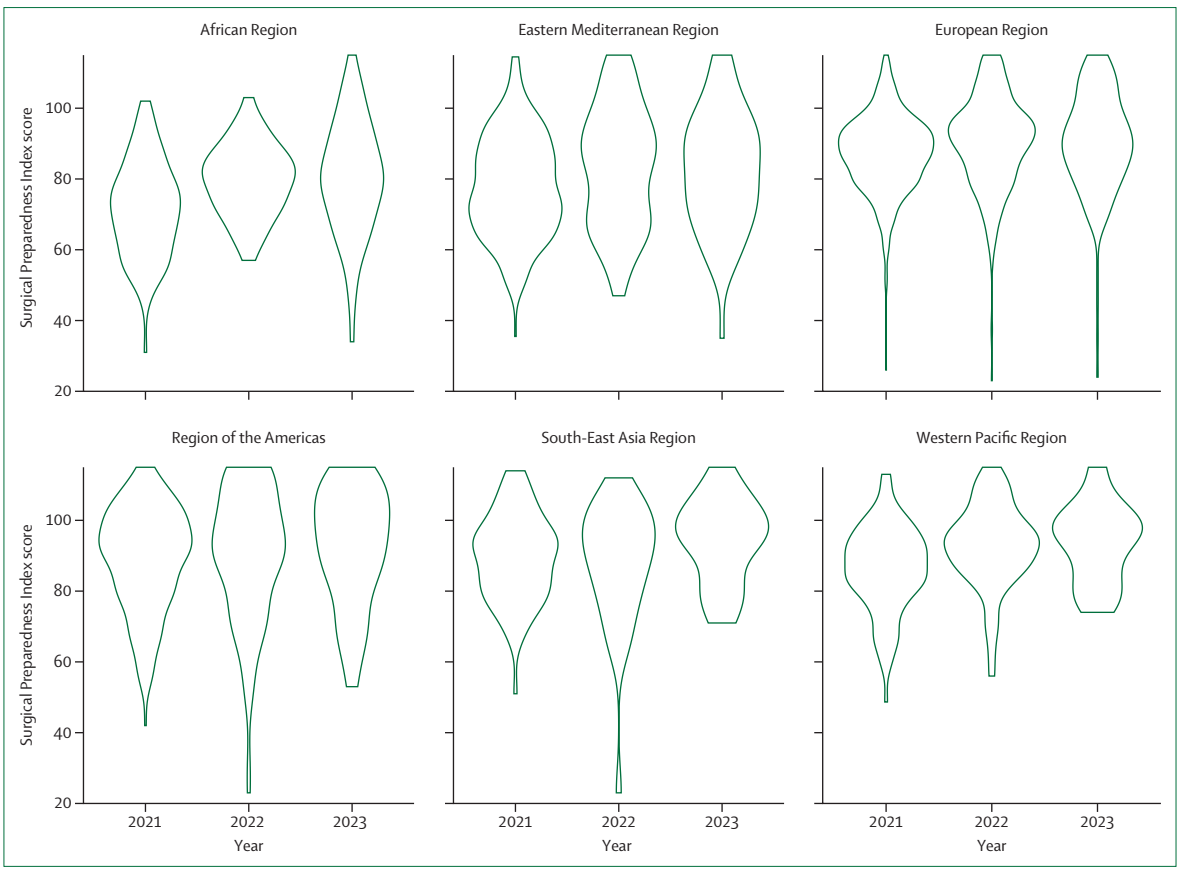

Figure 9: **Preparedness of global elective surgical systems in 2021–23**
Distribution of Surgical Preparedness Index scores (maximum 115 points) measured on an annual basis in 2021–23. Data are matched with the same hospitals contributing data each year.

clinical practice, championing cultural change, and leading bottom-up innovation.[116] Operating theatres are a good initial focus for decarbonisation because of their high baseline carbon footprints and because they are controlled settings that treat a single patient at a time, making it possible to rapidly introduce and monitor change.[117] Lessons on how to efficiently introduce sustained change in the operating theatre can then be scaled horizontally across the surgical pathway and vertically within the hospital. Operating theatre resource use and waste generation is already lower in LMICs than high-income countries; for example, reusable theatre gowns are used in 65% of operations in LMICs compared with 23% in high-income countries (appendix pp 24–25). However, the use of harmful anaesthetic gases is more common in LMICs than in high-income countries.[118] Research will have a key role in evaluating the effectiveness and safety of potential solutions for addressing these challenges.[119]

National policy should support front-line staff sustainability initiatives. For example, as surgical capacity grows and demand for surgical equipment increases, local production should be embedded within a circular economy when feasible; this would reduce carbon footprints while driving local economic growth. Greater global collaboration is also needed to develop regulatory standards that facilitate faster change in supply chains, single-use materials, and packaging. Finally, to support clinicians to make informed decisions, research funders should encourage researchers to capture carbon outcome measures when evaluating surgical innovations.[120]

Solutions

Progress in global surgery has stalled due to three persistent barriers: an absence of sustainable financing, fragile infrastructure, and essential workforce gaps. This section sets out the shifts needed to regain momentum and drive progress towards universal access to essential surgical care over the next decade. Central to this goal is repositioning surgery not as a siloed intervention, but as a foundational component of well integrated health systems.

Vertical integration

The ability of surgery to return patients to their healthy wellbeing and economic productivity levels provides a strong case for government investment in surgical

pathways. Establishing and strengthening surgical pathways requires investment not just in operating theatres and wards, but also in emergency departments, intensive care units, and diagnostics. Such investments offer economies of scope, meaning that once such infrastructure is in place, it can support and add value to the care of non-surgical patients. For example, a CT scanner installed in a cancer surgery service can benefit a wide range of patients, with costs reducing as scanning volume increases. Vertical integration shifts surgery from a siloed state to a vanguard that boosts other care pathways that might not otherwise secure independent investment (figure 7).

Although surgical pathways start in the community, they are centred around hospitals. Operating theatres are particularly resource intensive, requiring clean water, medical gases, and supply chains for critical medications and other consumables. This requirement gives surgery an important role in strengthening hospital infrastructure, since investment in operating theatres introduces assets that benefit a wide range of hospital services. An example is energy security;[121] 40% of hospitals overall and 90% in low-income countries are affected by electricity outages (unpublished; figure 8). These outages result in delays and direct patient harm, with some operations and births happening by torchlight (appendix p 26). A potential solution to prevent outages during surgery is the installation of on-site solar panels,[122] which would not only boost surgical capacity, but also benefit other hospital services and improve air quality by reducing reliance on diesel generators.[123] There could be even broader community benefits if this solution accelerates the local development of solar energy for schools, telecommunications, and other key infrastructure.

***Panel 5*: Research priorities for 2025–35**

Research strategy

- Investment is needed to maintain the unique global surgical data infrastructure that has delivered high-quality, multi-country evidence to support better surgical care worldwide. This infrastructure will be essential for responding to new needs, including global conflicts.
- There should be a shift from channelling funding into disease-based silos to growing whole-hospital research. This shift includes identifying and disseminating learning from hospital networks that have accelerated provision of high-quality surgical care.

Research priorities

- Which interventions can reduce perioperative mortality rates?
- Which interventions can enhance postoperative recovery and reduce complications?
- Which interventions can reduce surgical site infections and antimicrobial resistance?
- How can surgery be made more cost-effective?
- What are sustainable financing strategies for achieving universal health coverage in surgical care?
- How can surgical training and workforce scaling be accelerated to meet demand?
- How can access to timely surgical care be improved?
- How can care pathways between first-referral, secondary, and tertiary hospitals be improved?
- What strategies can prevent surgical diseases and trauma?
- How can research capacity be increased in low-income and middle-income countries?

Exemplar study designs addressing these research priorities are presented in the appendix (p 33).

Surgical system resilience

Hospitals are essential national infrastructure and any emergency response to natural disasters, terrorism, and conflict is underpinned by surgery.[124–126] Surgical capacity played an important role in underpinning the hospital response to the COVID-19 pandemic by diverting oxygen, ventilators, and staff to support the pandemic response and enabling personal protective equipment at scale via surgical supply chains. Although the pandemic highlighted the role of surgery in responding to external pressures, the prolonged shutdown of surgical services following the first COVID-19 wave also revealed inadequate preparedness for sustained disruptions. An estimated 28 million operations[3] were cancelled in the first 3 months of the pandemic and this figure continued to rise throughout 2020–23, compounding existing global surgical backlogs.[11,127] Hospital preparedness must be strengthened so that operation cancellations, care delays, and patient harms are minimised during future emergencies. However, evaluation using the Surgical Preparedness Index[128] suggests that there was little improvement in preparedness globally in 2021–23 (figure 9).

As the frequency and severity of health system disruptions increase due to geopolitical instability and climate change, governments and health systems must redouble efforts to increase surgical preparedness by taking practical steps.[129,130] These steps include investing in resilient supply chains, stockpiling personal protective equipment and other essential supplies, and promoting incident planning and training. A priority is the establishment of ring-fenced elective hubs, which are dedicated centres for planned procedures that are isolated from acute care pathways to reduce the risk of cross-infection from emergency patients.[99] Outside of emergencies, elective hubs can help boost surgical volume by streamlining pathways for low-complexity procedures.[131]

Surgical technology

Technological advancements have the potential to increase access to high-quality care across the world. By reducing

the need for patients to travel to hospitals, telemedicine can increase access to specialist care, reduce patient and hospital costs, and reduce carbon emissions.[132,133] Wearable technologies could allow for early detection of postoperative complications and prevent health deterioration.[134,135] Artificial intelligence could also automate the reporting of some diagnostic tests, reducing costs and addressing specialist workforce shortages; models have already been developed to interpret chest radiographs, retinal imaging, and histopathology.[136,137] However, many technologies remain at early developmental stages and robust evaluation is required.[138]

Electronic health records and prescribing can reduce workloads for hospital staff, improve continuity of care, and prevent medication errors.[139] Although electronic health records have principally been deployed in high-income countries, several low-cost, open access electronic health records have been developed; OpenMRS was implemented across dozens of HIV treatment facilities in Rwanda.[140,141] Harmonised electronic health record systems could enable efficient, continuous data collection at scale to support tracking of *The Lancet Commission on Global Surgery* indicators. However, in practice, few national health systems are likely to be able to implement harmonised electronic health records in the next decade.

Future implementation of technologies must be prioritised by clinical leaders—with involvement from patients—on the basis of local patient needs and evidence of cost-effectiveness, rather than industry lobbying.[142] Consideration should also be given to how technologies can strengthen wider hospital systems vertically—for example, although ultrasound is essential for surgery and obstetric care, it also has broad applications in emergency medicine and critical care.

Prevention

Although surgery is often described as being neglected by public health, they have many areas of common interest.[143] First, the incidence of surgical diseases, such as peripheral vascular disease, osteoarthritis, and cancers, could be reduced by public health measures targeting risk factors, including tobacco consumption, poor diet, and sedentary lifestyles. Human papillomavirus vaccination can prevent several cancers, including cervical cancer.[144] In addition, road safety, violence prevention, and fire safety initiatives can reduce the burden of trauma and burns. Second, public health initiatives can increase early diagnosis, which is associated with better prognosis and cost savings. For example, health education campaigns can promote earlier presentation with cancer symptoms. Formal screening programmes, such as mammography for breast cancer or smear testing for cervical cancer, can support earlier cancer diagnosis.[145]

Female leadership

Women have been instrumental in the development and advancement of global surgery,[146] but they continue to be under-represented in leadership, research, and policy roles. Only 16% of consultant surgeons in the UK and only 33% of the College of Surgeons of East,

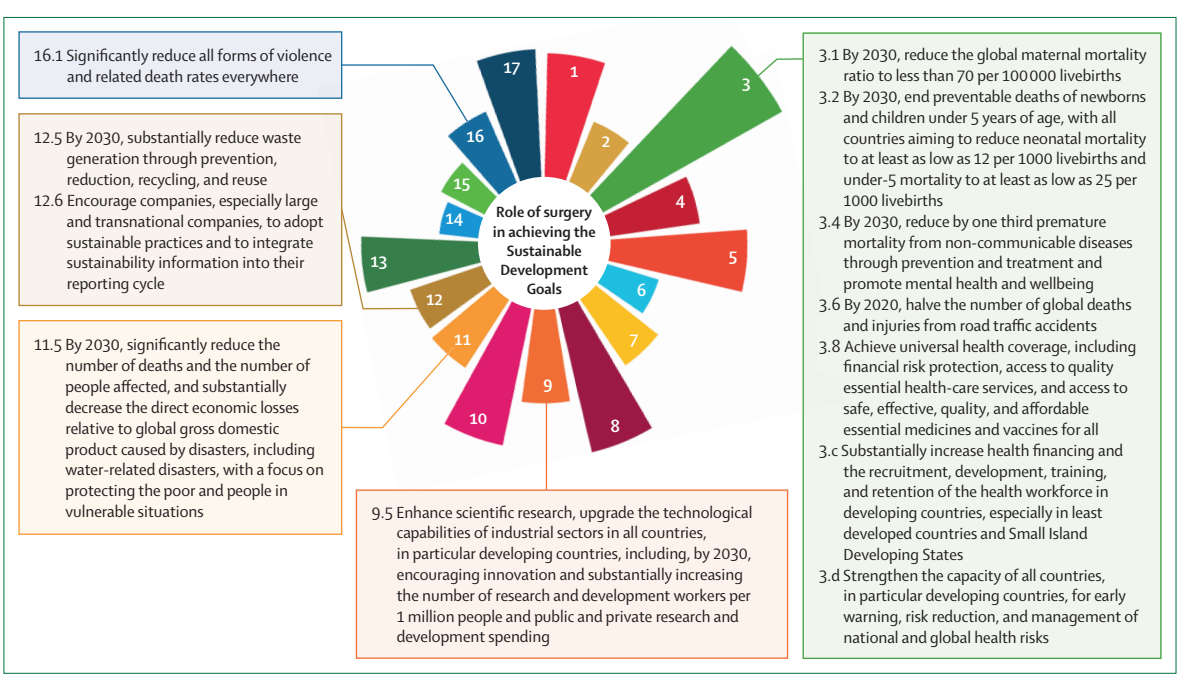

Figure 10: **Role of surgery in achieving the Sustainable Development Goals**
The height of each Sustainable Development Goal bar from the wheel is proportionate to the degree that surgery affects achieving that goal. The Sustainable Development Goal targets rated as most relevant to surgery are displayed.[161]

Central, and Southern Africa's graduating surgeons are women as of 2024.[147,148] Additionally, only 28% of first authors and 20% of editorial board members of surgical journals are women, as of 2019.[149,150] Global surgery is at the intersection of the challenges women face when developing parallel clinical and academic careers in surgery. Similar themes have been identified across high-income countries and LMICs, including discrimination, harassment, poor work–life balance, and inadequate access to mentorship.[151,152] However, initiatives over the past 5 years have been established to empower women to take on leadership roles in surgery.[153]

The Women in Research for Leadership Development initiative was founded by women representing 22 countries (appendix p 27). By identifying barriers to female leadership, they have developed the following recommendations aimed at supporting women to advance to senior leadership positions, where they can shape practice and decision making. First, formal support structures are needed to support women's clinical and academic career progression. Second, mentorship should be offered to provide encouragement, active listening, advice, and opportunities to assume leadership roles. Third, global surgery research should include women-led research on topics prioritised by women.

Community engagement

The patient voice is crucial to supporting the prioritisation and design of surgical care pathways that are acceptable to and address the needs of diverse communities. Patients can also be powerful advocates for expanding surgical care. Context-appropriate, culturally sensitive approaches to community engagement should be developed.[154,155] Effective strategies often build on deepening existing trusted structures and relationships. In environments with little access to primary care, community health workers can be powerful agents for community engagement, potentially supporting the early detection and referral of surgical disease[156] or postoperative complications (appendix pp 28–29).[157,158]

Future research priorities

The past decade has seen substantial improvements in the quality of global surgery research, with many global cohort studies and randomised trials that have informed better patient care and saved lives.[159] We undertook a research prioritisation exercise to identify the key research priorities for the next decade. These priorities remain around improving access to safe surgery and reducing disparities (panel 5; appendix pp 30–33). Innovative study designs, such as platform and adaptive trials, could help to accelerate research[160] to meet the pressing need for evidence to increase surgical safety. Major global funders must step out of disease-based silos to reinforce and grow research capacity to address the major, cross-cutting role of surgery and its potential for whole-system strengthening. The establishment of a sustainable, world-class infrastructure for worldwide surgical data collection will support prioritisation, responsiveness, rapid safety improvements, and progress tracking for surgery, similar to the impact of The Global Burden of Disease, Injuries, and Risk Factors Study and Our World in Data programmes.

Development goals

The Sustainable Development Goals set ambitious targets to be met by 2030. Although the world is on track to achieve fewer than one in five of the targets, the Sustainable Development Goals Framework has been a powerful tool to coordinate global development projects and engage high-level policy makers.[161] Surgery can contribute to multiple Sustainable Development Goals,

***Panel 6:* Global surgery benchmarks for 2025–35**

- Horizontal integration*: increase capacity across the surgical pathway, assessed by updating national surgical volume and improving global estimations around unmet need.
- Vertical integration: use surgery as a vanguard to strengthen basic hospital infrastructure. The global surgery community should take responsibility for bringing secure, clean, onsite energy plans to 1000 hospitals in low-income and middle-income countries.
- Essential national infrastructure: strengthen the preparedness of surgical services, measured by the Surgical Preparedness Index.
- Prevention: urge Ministries of Health to develop comprehensive cancer control plans focusing on locally prioritised cancers, assessed by tracking the incidence of relevant cancers.
- Workforce*: increase surgical capacity by increasing the surgical workforce, assessed by tracking the number of providers for surgical, obstetric, and anaesthesia care.
- Financing*: reduce the financial impact of surgery on communities, assessed by tracking national-level coverage for protection against catastrophic expenditure.
- Safety*: Increase the safety of surgery, assessed by tracking postoperative mortality rates and specific outcomes for defined tracer conditions. Aim to reduce postoperative mortality globally by 30% and surgical site infection by 50%.
- Inequalities: develop action and monitoring plans to tackle locally prioritised health inequalities.
- Female leadership: increase the number of female leaders in global surgery, assessed by tracking the number of academic chairs and major grants held by female leaders.
- Environmental sustainability: implement circular economy principles in surgical systems, assessed by tracking reliance on single-use products.
- Technology: ensure universal access to essential diagnostics, assessed by tracking the proportion of hospitals with access to CT imaging. As a target, all hospitals that do emergency laparotomies should have access to CT imaging.
- Research: develop national surgical research plans, including capacity building and surgical career development, assessed by measuring the numbers of randomised trials, patients recruited, and principal investigators.

These benchmarks will allow context-specific national targets to be set to monitor progress through harmonised data collection. Policy makers and the surgical research community should collaboratively develop national action plans to work towards achieving these benchmarks, including data capture through a global cohort study infrastructure. *Benchmarks related to *The* Lancet *Commission on Global Surgery* indicators.

showing the wide-ranging role they can play in supporting development (figure 10). The full range of potential positive effects of surgery should be considered when the next round of global development targets are planned (appendix pp 34–37).

Benchmarks for 2025–35

Although there are insufficient data to fully measure progress, with just 4 years remaining, it is likely that many countries will not achieve the targets set by *The* Lancet *Commission on Global Surgery*. Nonetheless, these targets are important to enable governments and surgical leaders to be held to account and to galvanise grassroots advocacy and action. Looking forward, we have proposed a series of broader benchmarks for 2025–35 that would enable progress to be tracked against the key themes identified in this review (panel 6). These benchmarks build on *The* Lancet *Commission on Global Surgery* indicators while allowing health systems to set context-specific targets.

Conclusion

Progress towards *The* Lancet *Commission on Global Surgery* 2030 targets has been incomplete, inconsistent, and fragile. Crucial gaps remain in workforce density, surgical volume, and financial protection and, with just a few years remaining to meet targets, most countries are off track. The COVID-19 pandemic exposed the vulnerability of surgical systems, deepened existing inequities, and slowed momentum. NGOs have helped to deliver care, but without sustainable development of national surgical systems, their efforts remain a stopgap. Surgery must be embedded within wider health systems, strengthening surgical capacity through vertical investment in hospital infrastructure. It must no longer be seen as optional or too expensive; it is an essential, cost-effective service that underpins national resilience, public health, and economic productivity. The next decade must be different. Governments, funders, and global health institutions must commit to sustaining and expanding the progress in surgical data collection achieved over the past decade by establishing robust, enduring data ecosystems. These systems are essential to inform strategic investment and enhance accountability. Without such commitment, surgery risks falling even further down the global health agenda.

Contributors

AB, JCG, SKK, VL, DN, and MP contributed to data curation and formal analysis. TTKA, JCG, SKK, EL, VL, DN, and MP contributed to data visualisation. AEA, JCAI, RA, TTKA, AB, AC, CL, AG, JCG, SKK, EMH, IL, VL, EM, DN, CSP, LNP, MP, NRa, RR, SMat, and SS contributed to writing the original draft. All authors contributed to conceptualisation, writing, reviewing, and editing. AB was responsible for supervision.

Declaration of interests

The authors declare no competing interests.

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