Implementing WHA 68.15:
A global update
The feature section of this issue of the *Bulletin* focuses largely on global efforts to improve access to surgical, obstetric, and anesthesia care, and I am proud to say it will be distributed at the World Health Assembly (WHA) 71, May 21–26 in Geneva, Switzerland. The idea for this special issue originated with John G. Meara, MD, DMD, MBA, FACS, co-chair of *The Lancet* Commission on Global Surgery (LCoGS); director, Program in Global Surgery and Social Change, Harvard Medical School, Boston; and chair, department of plastic and oral surgery, Boston Children’s Hospital, MA, in collaboration with Girma Tefera, MD, FACS, Director, American College of Surgeons (ACS) Operation Giving Back program.

In this issue, you will find a collection of provocative and informative articles submitted by professional societies and colleges from around the world. These articles highlight not only the organizations’ important efforts, but also their recommendations for moving forward and a call to action for the surgery, obstetrics, and anesthesia communities to work together toward a common goal of universal access to safe, affordable essential care. Both Dr. Meara and Dr. Tefera worked tirelessly to solicit articles from the leaders of the organizations that have committed to this goal. My hat is off to them.

**Watershed moments**

Efforts to promote access to surgical care as essential to the well-being of all people began in 1980, when Halfdan Mahler, MD, then director-general of the World Health Organization (WHO), addressed the XXII Biennial World Congress of the International College of Surgeons with his lecture Surgery and Health for All. In a speech that was ahead of its time, Dr. Mahler alluded to the Alma-Ata International Conference, calling for health equity and social justice, and, most notably, for the inclusion of surgical care in the pursuit of health care for all. Including surgery in the realm of global health was somewhat of an anathema at that time. What ensued after his bold speech was relative silence—a 28-year lapse in the development of global surgery policy.
The standstill ended in 2008, when Paul E. Farmer, MD, PhD, Kolokotrones University Professor, Global Health and Social Medicine, Harvard Medical School, and Jim Yong Kim, MD, PhD, president of The World Bank, called surgery “the neglected stepchild of global health” in their article, “Surgery and global health: A view from beyond the OR.” This vivid metaphor brought to the forefront the reality that in low- and middle-income countries, access to surgical care eluded the poor, yet for decades the public health community had written off surgical care as expensive and unnecessary. Drs. Farmer and Kim countered these arguments with data and drove home the message that without a holistic approach to health system strengthening—a paradigm shift from the age-old vertical approach to siloed, disease-specific global programs—health care equity and social justice were unattainable.

The tipping point for global surgery, obstetrics, and anesthesia occurred in 2015. Three events aligned that focused the global health community on surgical care. The third edition of The World Bank’s Disease Control Priorities (DCP3) was published in early 2015, and the first of nine volumes was devoted to “Essential Surgery.” DCP3 made a strong case for the cost-effectiveness of basic surgical procedures in low-resource settings, identified district hospitals as key to providing acute and lifesaving surgical care, and proposed a list of 44 essential operations to prioritize in scaling up surgical systems.

Later that same year, the LCoGS released a report that defined the extent of global surgical need and quantified the human and financial implications of inaction. The report also outlined a surgical, obstetric, and anesthesia planning process that would allow Ministries of Health to map national needs and plan system-level interventions. Finally, the commission proposed a set of six key performance indicators to enable standardized global assessments of surgical systems and to track the progress of health system strengthening programs that included surgical, anesthesia, and obstetric care.

The final watershed moment occurred during the WHA in May 2015 with the adoption of Resolution 68.15, a formal WHO declaration and commitment to “emergency and essential surgical care and anesthesia as a component of universal health coverage.” This resolution was a call for all Member States to commit to the following actions:

- Develop adequate infrastructure and equipment in district hospitals
- Train appropriate surgical health care workforce
- Ensure surgical information management for data to drive informed health policy
- Provide essential medicines and medical devices
- Mobilize adequate financial resources to surgical service delivery
- Avoid catastrophic expenditures by citizens on surgical services
- Improve referral systems

The WHO made a permanent commitment to surgery in 2017 with WHA Decision Point 70.22, which required submission of biennial progress reports on the status of global surgery to the WHO director-general.

Looking to the future

We are now in an era in which global health care is defined by sustainable development goals (SDGs), with a renewed focus on universal health coverage and an acknowledgment of health care as a human right. In the context of the SDGs and WHA 68.15, countries have a mandate to acknowledge access to safe, affordable surgical, obstetric, and anesthesia care as part of this right.
REFERENCES

1. Mahler H. Surgery and Health for All. Address from the director-general, World Health Organization, to the XXII Biennial World Congress of the International College of Surgeons, Mexico City, Mexico, June 1980.


The WHO also has a new director-general—Tedros Adhanom Ghebreyesus, PhD, MSc—a proven health care reformer from Ethiopia who enthusiastically welcomes surgery, anesthesia, and obstetrics to the global health care community. With the recognition of surgery and anesthesia as an integral component of universal health coverage, data collection systems and national surgical, obstetric, and anesthesia plans (NSOAPs) are critical next steps in surgical system strengthening. Managing complex health systems requires measurement, and national surgical data that is beginning to be collected must flow each year from Ministers of Health to WHO to The World Bank to promote transparent accountability. NSOAPs need to be created and integrated into national health care agendas.7

The concept of surgery as a vertical program is gone. Surgery, anesthesia, and obstetrics harmoniously woven into national health and wellness planning efforts must become the norm. The implementation of these plans will need solid financial support that likely will stem from new funding models, including a symbiotic partnership between the private and public sectors, as seen with The World Bank’s new Global Financing Facility.8

All of these changes bring about new opportunities. In recognition of the responsibility we as clinician-advocates have of supporting health equity and social justice, the ACS is pleased to offer this issue of the *Bulletin* for dissemination at the WHA 71. We wish you all a productive and fruitful meeting that will lead to improved health care for surgical patients around the world. ♦

If you have comments or suggestions about this or other issues, please send them to Dr. Hoyt at lookingforward@facs.org.
Implementing WHA 68.15: A global update
We are fragmented as a world. We are split among hundreds of nations, even more ethnicities, and seemingly innumerable political ideologies. Our health care, too, is fragmented, sliced into organ systems, disease categories, and regions of anatomy. Priorities for achieving health vary as well, often favoring those problems that readily engage our empathy, are visually striking, or carry the greatest funding.

It is no secret that surgery has often been left behind in this competitive arena. Often considered too complex and expensive, surgical care (surgery, obstetrics, and anesthesia) has been dismissed as a public health challenge only achievable after all other systems have been built. But financial support of surgery cannot be responsibly deferred and should be viewed by Ministries of Health as an investment, rather than a cost. Improved access to quality surgical, obstetrical, and anesthesia care should not be treated as merely a consequence, but rather as a driver of general health care needs.

**Background: Improving access to surgical care worldwide**

The World Health Organization (WHO) is the health care arm of the United Nations (UN). Since the WHO was first established in 1948, the organization has committed itself to the improvement of health around the globe, seeking to bridge the fragmentation created by geographic and political boundaries to promote wellness for all. But despite its best intentions, efforts may have suffered from a myopic focus on specific aspects of health care—a vertical approach to providing care—that have been deemed as most urgent and most achievable.
It is imperative that we no longer neglect surgical care when approaching overall public health programs. With robust economic, political, and needs data documented in the literature, researchers have amplified the evidence that an investment in surgery and anesthesia is both a health care and economic necessity. Providing timely access to safe and affordable surgical and anesthesia care to the 5 billion people without access worldwide not only curbs the detrimental consequences of surgical disease, it also boosts financially emerging economies and bolsters infrastructure.

In 2015, through the combination of four major events that occurred in quick succession, international demand for increasing surgical access gained significant momentum. In the span of months, the economic, political, and needs cases for prioritizing global surgery and anesthesia became clearly and publicly established.

The first crucial event was the UN transition from the millennium development goals to the era of sustainable development. The 17 sustainable development goals (SDGs) are notable for their specific inclusion of a number of surgical issues, specifically eight of the targets listed within SDG 3: “Ensure healthy lives and promote well-being for all at all ages.” Many of the itemized health targets directly involve surgically treatable disease, such as the reduction of maternal and neonatal mortality, death from road traffic accidents, and premature mortality from noncommunicable disease (NCD).

A second critical occurrence in 2015 was the publication of Essential Surgery, the first volume of the third edition of Disease Control Priorities (DCP3). Published by The World Bank, Essential Surgery establishes an economic and financial case for investment in surgical care. In addition, it specifically highlights 44 individual basic and essential surgical procedures that are cost-effective, deliverable, and address significant global need. The authors assert that providing essential surgery would prevent an estimated 1.5 million deaths annually, while providing a financial benefit-to-cost ratio of investment exceeding 10:1. With detailed financial data, the publication makes a clear assertion that “the large burden of surgical conditions, the cost effectiveness of essential surgery, and strong public demand for surgical services suggest that universal coverage of essential surgery should be financed early on the path to universal health coverage.”

The third event occurring that year was the publication of the “Global Surgery 2030: Evidence and solutions for achieving health, welfare, and economic development” report (GS 2030) by The Lancet Commission on Global Surgery (LCoGS). A collaborative effort by representatives from more than 110 countries, GS 2030 presents a robust economic case for global investment in surgical care, as well as an overwhelming needs case for surgical and anesthesia care delivery. The LCoGS estimates that surgical conditions are responsible for roughly 30 percent of the global burden of disease and that 5 billion people do not have timely access to safe and affordable surgical and anesthesia care. The report calls for an increase in surgical care to meet a goal of 80 percent coverage of essential surgical services by 2030, including 5,000 procedures per 100,000 population and 10 percent of countries exceeding 20 surgical, anesthesia, and obstetric licensed providers per 100,000 population. In addition, a data target was set for tracking perioperative mortality rate of 80 percent of countries by 2020 and 100 percent by 2030.

The LCoGS also investigated the monetary consequences for patients accessing surgical care, and as a result of that study seeks 100 percent protection globally against impoverishing and catastrophic out-of-pocket expenditures for surgical and anesthesia care by 2030. The LCoGS asserts that a critical investment of $350 billion (U.S.) until 2030 will prevent estimated losses of $12.3 trillion (U.S.) during this time in lost productivity and health care expenses.

The fourth turning point that occurred in 2015 was the unanimous passage of the World Health Assembly (WHA) Resolution 68.15, which calls for strengthening of emergency and essential surgical care and anesthesia as a component of universal...
Establishment of an adequate surgical and anesthesia workforce in LMICs requires not only an increase in workforce volume, but also an enhancement of training programs, increased efforts by credentialing bodies, and possibly support by mid-level providers.

health coverage. This landmark resolution for surgical prioritization emphasizes that a significant portion of the global burden of disease can be successfully treated with surgical intervention and specifically notes the beneficial effect of surgery on morbidity and mortality rates due to obstructed labor, cancer, road traffic accidents, and violence, all of which disproportionately affect low- and middle-income countries (LMICs).

WHA 68.15
WHA 68.15 identifies five key surgical areas of focus: surgical and anesthesia workforce, information management, service delivery, essential medicines, and advocacy and resource development. Establishment of an adequate surgical and anesthesia workforce in LMICs requires not only an increase in workforce volume, but also an enhancement of training programs, increased efforts by credentialing bodies, and possibly support by mid-level providers. Meeting these workforce needs worldwide relies heavily on strong partnerships between regional surgical organizations and professional societies, as well as the development of mutually beneficial twinning partnerships. The leadership of associations—such as the College of Surgeons of East, Central and Southern Africa (COSECSA); the West African College of Surgeons; the Royal Colleges in the U.K., Ireland, and Australasia; and the American College of Surgeons, among others—is foundational for building and maintaining a skilled surgical global workforce. In addition, Ministries of Health, Finance, and Education are key partners, uniting involved governmental and nongovernmental organizations (NGOs) toward common goals. In collaboration with regional societies and governments, NGOs also provide training for medical professionals. One example is the Pan-African Academy of Christian Surgeons, which, through an affiliation with COSECSA and Loma Linda University, CA, has provided residency training to more than 100 surgeons across Africa. Teamwork and communication between these organizations is critical to meet the overwhelming need for surgeons, anesthesiologists, and obstetrician/gynecologists.

A second essential focus of WHA 68.15 is information management. The WHO list of 100 Core Health Indicators provides a starting place for data collection in the areas of health status, risk factors, service coverage, and health systems. This list includes the LCoGS six surgical indicators, as follows:

- Perioperative mortality rate
- Total surgical volume
- Geographic access of surgical facility
- Licensed surgical, obstetric, and anesthesia health workforce density
- Catastrophic surgical and anesthesia care-related expenditures
- Impoverishing expenditures

All of these indicators, taken together, allow for more accurate needs assessment by location and ability to track improvements or changes in surgical capacity.

Improved data collection facilitates quality service delivery. In highlighting service delivery, WHA 68.15 acknowledges that surgical access must not be confined to urban centers. Often limited by geographic boundaries, transportation infrastructure, and insufficient health care providers and facilities, the accessibility of care is a significant barrier to treatment of surgical disease. To reduce delay in surgical access, improvement in systems integration is a necessity.

A fourth major aim of WHA 68.15 is to emphasize the need for access to essential medicines. Though often restricted by governmental agencies due to a potential for abuse, narcotic medications and anesthetics such as ketamine are crucial for the daily,
sustained function of surgical systems, particularly in resource-limited settings. Appropriate anesthesia during surgical interventions and quality pain control both for the acute postoperative setting and for long-term palliative care for adults and children are integral to the total spectrum of surgical disease management and treatment. With necessary safeguards in place to limit illegal use, these essential medicines must be made available for appropriate access to surgical patients.

Finally, the resolution highlights advocacy and resource development. With a staggering global burden of disease and disproportionately poor availability of financial and human resources, surgical, obstetric, and anesthesia care is in great need of international champions. To adequately improve access to care requires a global effort by physicians, patients, government agents, economists, epidemiologists, and those in the public eye. Advocacy efforts by these key stakeholders is essential for building the capacity of essential surgical and anesthesia service delivery to all.

**WHO today**

As we further develop strategies for global surgical development, continuation of accurate and thorough data collection and progress reporting has become increasingly vital. In 2017, WHA Decision 70.22 was passed, calling for the continued biennial reporting of emergency and essential surgery and anesthesia progress by Member States coinciding with NCD reporting until the expiration of the SDGs in 2030. More robust data collection will allow for a more detailed understanding of the status of surgical care around the world, which, in turn, will allow more targeted goal setting.

Member States’ desire to track improvements and set national goals for surgical and anesthesia care has led to the creation and popularization of the National Surgical, Obstetric, and Anesthesia Plan (NSOAP). In 2017, the Republic of Zambia became one of the first countries to develop an NSOAP that is fully embedded in the National Health Strategic Plan 2017–2021. Subsequently, numerous Member States have begun preparing and designing their own national plans. High demand for strategic NSOAPs soon exceeded capacity for individual country-specific development. In partnership with the Harvard Program in Global Surgery and Social Change (PGSSC), Boston, MA, the WHO Emergency and Essential Surgical Care (EESC) program has begun to plan multiple regional workshops to assist Member States and encourage groups to share their successes and challenges so that each may learn from the experiences of others.

WHO continues to bring together countries of varying resource levels and contexts in collaboration toward quality health care for all people. Strategies for achieving this goal are ever-evolving in response to changing needs and data, but always rely on healthy partnerships and international communication. The diplomatic involvement of the UN permanent mission health attachés in advocating for surgical access to political, business, educational, and trade organizations remains vital.

In addition, WHO has approved five official collaborating centers (CCs), each dedicated to particular niches of research and expertise in surgical care and anesthesia, and is in the process of developing three additional centers. These WHO CCs are beginning to transition from bilateral relationships with WHO toward multilateral networks of integration and support. The Mongolia WHO CC is located in a country with one of the lowest population densities. It is housed within the department of surgery, Mongolian National University of Medical Sciences, Ulaanbaatar, and specializes in distance surgical education. At Lund University, Sweden, the CC focuses on global density of surgeons, anesthesiologists, and obstetricians, including migration patterns, whereas the CC located at the University of Western Ontario, London, is dedicated to perioperative issues and anesthesia in low-resource settings. The Mumbai, India,
WHO CC specializes in innovative methods for building rural surgery capacity, and the PGSSC focuses on development of national surgical plans.

The WHO EESC is in official discussions with a number of NGOs, such as the International College of Surgeons, the World Federation of Societies of Anesthesiologists, the World Federation of Neurosurgical Societies, the International Society of Orthopaedic Surgery and Traumatology, and the International Federation of Surgical Colleges. These relationships bring important global leadership, contribute vision and personnel, and assist with quality improvement through educational programming.

**Conclusion**

The WHO strives to bridge the fragmented relationship between medicine and politics to achieve quality health care for all. By responding to medical needs, convening international partners, and leading worldwide initiatives, WHO works to meet health care challenges on both a global and local scale. It is time for global recognition of surgery and anesthesia as necessary components of universal health care and to help the world meet the challenge of providing surgical access to its people.

For years, anecdotal needs cases for surgery have existed; we have known that access to safe surgical care has not been a reality for much of the world’s population. But with the impact of the LCoGS and DCP3 now showing the depth of the economic case and the WHA resolution and transition to SDGs demonstrating the political case, we are able to see the full extent of the need for access to quality surgery, and obstetric and anesthesia care. We now know that it is critical to integrate and promote all aspects of surgery—including pediatric surgery, orthopaedics, urology, obstetrics, gynecology, neurosurgery, and many others—to improve global health infrastructure and well-being. In collaboration with governments and NGOs around the world, the WHO EESC program will continue working for safe, timely, and affordable surgical and anesthesia care until it is available to all people, everywhere.

**REFERENCES**


HIGHLIGHTS

- Summarizes collaborative programs that enhance access to surgical care in the Asia-Pacific
- Describes how the Asia-Pacific is responding to WHA Resolution 68.15, which calls for the provision of universal access to emergency and essential surgical care by 2030
- Describes the role of medical societies in generating partnerships to improve specialist medical education in this region
- Outlines the work of the LCoGS specifically related to data collection and health care planning in the Pacific and Southeast Asia

Countries and colleges collaborate to improve access in Oceania and Southeast Asia

by David A. Watters, OBE, ChM, FRCSEd, FRACS;
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The independent island nations of the South Pacific (population 10,000–1 million each), Papua New Guinea (PNG) (7.5 million), and Timor-Leste (1.3 million) are low- and middle-income countries (LMICs) with limited access to safe, affordable surgery and anesthesia (see Table 1, page 23). Although all of these nations offer free national health care coverage, a high proportion of their populations still lack access to surgical care because of a shortage of appropriately trained health care workers, infrastructure, facilities, and geographic boundaries. The training of specialists in surgery, anesthesia, and obstetrics began through the University of PNG, Port Moresby, in 1975, but only since 1999 has this training been available at the Fiji School of Medicine, Suva, which is now part of Fiji National University for other Pacific Nations. The Australia Timor-Leste Program of Assistance for Specialist Services (ATLASS) developed by the Royal Australasian College of Surgeons (RACS) has employed a range of training programs in PNG, Fiji, Indonesia, and Malaysia to support a small cohort of physicians who have met specialist qualifications in the following areas: surgery, anesthesia, ophthalmology, obstetrics and gynecology (OB/GYN), and pediatrics.

The Australia and New Zealand specialist medical colleges’ fellows have a long history of collaborating to provide support to the Asia-Pacific region, often through their specialty societies and in conjunction with specialty-specific nongovernment organizations. Since 1995, RACS, through its international development program RACS Global Health, has managed Australian aid-funded programs to provide specialist services, strengthen health care systems, build capacity, and provide continuing medical education and professional development for trained health care professionals. The Australian and New Zealand College of Anaesthetists (ANZCA) has provided similar support, together with the Australian Society of Anaesthetists (ASA). The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) supports maternal health and the professional development of obstetricians in the Pacific, whereas the Australian College of Emergency Medicine has pioneered specialist training in PNG, Myanmar, and the Pacific.

Today, surgical, anesthesia, and obstetric (SAO) specialists are in every country in this region with a population of more than 100,000, although the SAO density per 100,000 population is well below the desirable levels in most countries (see Table 1). The local health and clinical leadership has been established progressively in each of these island nations and is a direct result of localized training involving a university master of medicine qualification that represents at least four years of general specialist training, and two to four years of further subspecialist training (for example, in orthopaedics, urology, neurosurgery, or pediatric surgery). The workforce that provides safe anesthesia includes nonphysician anesthesia providers (NPAP), such as anesthesia scientific officers in PNG and nurse anesthetists in Timor-Leste, who typically work in the major health care centers under the supervision of a specialist anaesthetist.

Principles of partnership and engagement
RACS Global Health and its partner colleges support the Paris Declaration on Aid Effectiveness and its five main principles: ownership, harmonization, alignment, results, and mutual accountability. The declaration was adopted in 2005 and expanded by the Pacific Islands Forum in 2007 to emphasize the need for development partners to make multi-year commitments and for a greater employment of local systems. This collaboration has resulted in RACS-managed programs being increasingly and strategically directed in-country, incorporating needs assessment and evaluation of results led by local clinicians and their Ministries of Health.
The governance of Australian Aid programs demands that policies be put in place to ensure economical, efficient, and effective program outcomes; risk management; and procedures to manage adverse events and patient complaints. The RACS Global Health policies, available at [www.surgeons.org/policies-publications/policies/racs-global-health/](http://www.surgeons.org/policies-publications/policies/racs-global-health/), embrace inclusiveness, diversity, anti-discrimination, and child protection and govern team selection and standards—as well as requirements for transparency, sound financial management, evaluation and monitoring with timely reporting of outcomes, and assessment of impact (see Tables 2 and 3, pages 26 and 27).

### Progress on global surgical metrics

In 2016, the RACS Annual Scientific Congress in Brisbane and the Pacific Islands Surgical Association (PISA) Symposium in Samoa provided an opportunity for member nations to present their first four *The Lancet* Commission on Global Surgery (LCoGS) metrics (see Table 1). Participants in these meetings agreed to advocate for using these metrics to inform national health planning in order to collect data to generate metrics 5 and 6, which are measures of catastrophic and impoverishing expenditure.

In September 2017, the PNG Medical Society’s 53rd medical symposium in Port Moresby centered on access to safe, affordable surgery and anesthesia and resulted in a demonstration of regional and cross-specialty consensus by the presidents of PISA, RACS, ANZCA, and RANZCOG.

### Perspectives from the colleges and associations

**PISA**

PISA was inspired by global health forums organized at the RACS, which took place in Melbourne, Australia, in conjunction with the annual meeting of the Alliance for Surgery and Anesthesia Presence in October 2012, and a follow-up regional meeting in March 2013, which was attended by the president of the PISA, other surgeons from the Pacific, and representatives of RACS, ANZCA, and RANZCOG.

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**TABLE 1.**

LCoGS METRICS IN OCEANIA

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
<th>Indicator 1</th>
<th>Indicator 2</th>
<th>Indicator 3</th>
<th>Indicator 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Access &lt; 2hrs (%)</td>
<td>SAO density SAO/100,000</td>
<td>Surgical volume case/100,000</td>
<td>POMR (%)</td>
<td></td>
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<tr>
<td>Nauru</td>
<td>10,084</td>
<td>100</td>
<td>30</td>
<td>7,130</td>
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<td>Tuvalu</td>
<td>10,837</td>
<td>56</td>
<td>18.5</td>
<td>3,417</td>
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<td>Cook Islands</td>
<td>13,229</td>
<td>88</td>
<td>22</td>
<td>6,758</td>
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<tr>
<td>Micronesia</td>
<td>102,109</td>
<td>Not available</td>
<td>7</td>
<td>Not available</td>
<td>Not available</td>
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<tr>
<td>Tonga</td>
<td>103,000</td>
<td>85</td>
<td>14</td>
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<td>0.24</td>
</tr>
<tr>
<td>Kiribati</td>
<td>110,000</td>
<td>65</td>
<td>8.2</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Samoa</td>
<td>187,000</td>
<td>68</td>
<td>1.6</td>
<td>1,552</td>
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</tr>
<tr>
<td>Vanuatu</td>
<td>260,815</td>
<td>44</td>
<td>3.2</td>
<td>1,277</td>
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</tr>
<tr>
<td>Solomon Islands</td>
<td>602,000</td>
<td>20</td>
<td>2.5</td>
<td>868</td>
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<tr>
<td>Fiji</td>
<td>933,000</td>
<td>67</td>
<td>5.8</td>
<td>1,490</td>
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<tr>
<td>Timor-Leste</td>
<td>1,300,000</td>
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<td>433</td>
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<tr>
<td>PNG</td>
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<td>New Zealand</td>
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<tr>
<td>Australia</td>
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<td>98.85</td>
<td>63.9</td>
<td>10,156</td>
<td>0.19</td>
</tr>
</tbody>
</table>

The information in this table was collected by members of the Oceania Collaboration on Global Surgical Metrics.
meeting achieved consensus on the importance of measuring perioperative mortality rate (POMR) as a global surgical/anesthesia metric. At their annual meeting in Nadi, Fiji, in April 2013, the leaders of Pacific region clinical services agreed to start collecting data pertaining to the POMR. This process was relatively straightforward, as it only required the collection of the number of operations performed in the operating theater (denominator), and the number of patients who died in the hospital after a procedure (numerator). Having proved its feasibility, POMR became the entry point for health care leaders in the Pacific to recognize the value of the other LCoGS indicators when presented by John G. Meara, MD, DMD, MBA, FACS, co-chair of the LCoGS, and David Waterters, OBE, ChM, FRCSEd, FRACS, a co-author of this article, at the RACS Global Health triennial forum in October 2015. The success of this presentation resulted in a collaborative effort to report these metrics in the Pacific based on the involvement of senior clinicians working with heads of clinical services and directors of health. It is crucial that our Ministries of Health become more directly involved in this practice.

### RACS

Since 1995, 17 countries across the Asia-Pacific have partnered with RACS Global Health projects and programs featuring clinical activities, which have resulted in the provision of consultant services to more than 221,733 individuals and more than 43,055 procedures performed (see Table 4, page 28). Education and training are key to providing these clinical services, with RACS Global Health facilitating more than 100 workshops and courses, including the American College of Surgeons Advanced Trauma Life Support® course since 1993, resulting in the instruction of an estimated 2,087 health professionals across the Asia-Pacific.

### OCEANIA COLLABORATION ON GLOBAL SURGICAL METRICS

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- Jemesa Tudravu, MMed (Fiji)
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- Johnny Hedson, MMed (Micronesia)
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- Htun Oo, MB, BS, MMedSc, FRCSEd (Myanmar)
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- Lord Viliami Tangi, MB, BS, FRACS (Tonga)
- Basil Leodoro, MMed (Vanuatu)
Today, surgical, anesthesia, and obstetric (SAO) specialists are in every country in this region with a population of more than 100,000, although the SAO density per 100,000 population is well below the desirable levels in most countries.

Visiting medical teams (VMTs) offer skills transfer, mentoring, and professional development and provide essential surgery, such as pediatric surgery, cardiac surgery, club foot management, and cleft lip and palate repair. The programs include the Pacific Islands program (PIP), the ATLASS program, The East Timor Eye Program (ETEP), and a Myanamar program that has included primary trauma care, emergency medicine, surgical skills, and the management of surgical emergencies (see Table 4). Other programs in Southeast Asia include the Asia Paediatric Surgery Education Project and the Eastern Indonesia program (Nusa Tenggara Timur and Papua).

RACS continues its more than 40-year relationship with PNG through a program in which its fellows visit as examiners, as members of VMTs, and through the provision of traveling fellowships and scholarships. Further discussions are ongoing to expand our support to health education and clinical services in PNG. Since 1988, the RACS scholarship program has benefited 225 individuals from 34 countries. Evaluation of the impact of returning scholars in their home country suggest that these scholars go on to become high-profile leaders, offering many new and expanded services to their patients.15,16

ANZCA

Safe and affordable access to anesthesia is a pillar of global health. ANZCA has a number of programs and scholarships managed and supported by its Overseas Aid Committee. The focus of ANZCA’s educational outreach has been PNG, where teams of specialist anesthetists have been providing training, capacity development, and essential resources for more than 20 years. The ASA and the New Zealand Society of Anaesthetists (NZSA) have been providing similar support in the Pacific Islands, including Fiji, Tonga, the Solomon Islands, and...
Micronesia. The ASA Overseas Development and Education Committee former chair, Rob McDougal, MD, also has led global collaboration with the World Federation of Societies of Anaesthesiologists (WFSA). The building of in-country and within-region capacity to self-train has been paramount. We have further supported in-setting appropriate standards for practice, as well as assisting with resources and delivery of both education and care. We have collaborated with other colleges’ activities to help deliver primary trauma care courses. Throughout the Asia-Pacific region, anesthetists are partners in the delivery of all the surgical clinical outreach programs. To this end, they are involved in coordination with RACS, ASA, and other involved societies or specialist groups, such as Interplast or Orthopaedic Outreach. Anesthesia teaching and training also extends to Mongolia, Cambodia, and Laos.

We have implemented the successful global Lifebox pulse-oximetry project in the Pacific region through a partnership between Lifebox, ASA, NZSA, Interplast Australia & New Zealand, and ANZCA. A course developed by ANZCA faculty of pain medicine physicians, the Essential Pain Management Program, has not only become accessible to local educators across the Pacific, but also has been taken up globally following its success in the Asia-Pacific.

Coordination between colleges and societies is necessary to avoid duplication of effort and assist in managing resources. The ANZCA and ASA overseas committees work collaboratively with the RACS Global Health Committee and have a single volunteering database for anesthetists.

One of the great achievements in addressing the anesthesia workforce’s needs has been the establishment of a WFSA Global Anesthesia Workforce Survey and map, to which ANZCA Fellows from the Asia Pacific have made a major contribution.

**RANZCOG**

For 25 years, RANZCOG has supported OB/GYN colleagues and women’s health professionals in the Western Pacific region. From a logistical and organizational perspective, RANZCOG has found it mutually beneficial to collaborate with RACS in the

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**TABLE 2. GOALS AND OUTCOMES ALIGNMENT FOR RACS GLOBAL HEALTH PROGRAM DEVELOPMENT**

<table>
<thead>
<tr>
<th>Broader goals</th>
<th>Health care is affordable, appropriate to local needs, of good quality, and accessible</th>
<th>Clinical health professionals provide quality services and contribute to educational programs throughout the regions</th>
<th>Strong collaboration on regional clinical services and workforce issues</th>
<th>Strong national health leadership for delivering effective clinical services and health workforce development</th>
</tr>
</thead>
<tbody>
<tr>
<td>End of program outcomes</td>
<td>Postgraduate students are representative of the region, and successfully graduate with relevant competency</td>
<td>National bodies value and actively engage in regional fora on relevant clinical services and health workforce issues</td>
<td>Partner countries receive quality visiting medical teams that meet their priority clinical and training needs</td>
<td>Ministries of Health (MOH) better identify and prioritize clinical service and training/continuing professional development needs, to inform planning</td>
</tr>
</tbody>
</table>

**TABLE 2. GOALS AND OUTCOMES ALIGNMENT FOR RACS GLOBAL HEALTH PROGRAM DEVELOPMENT (continued on page 28)**
**TABLE 3.**
**GENERIC EVALUATION AND MONITORING FRAMEWORK BASED ON RACS PACIFIC ISLANDS PROGRAM**

<table>
<thead>
<tr>
<th>OVERALL OBJECTIVE</th>
<th>OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>To strengthen and consolidate access to safe, affordable surgery and anesthesia as needed in the Asia-Pacific region</td>
<td>O1. Specialist clinical practitioners (SCPs) in LMICs have improved competencies</td>
</tr>
<tr>
<td>O2. VMTs meet individual country and regional clinical and training needs</td>
<td>O3. Local ownership: MOH better identify and prioritize specialist clinical services, training and CPD needs, to inform MOH planning</td>
</tr>
<tr>
<td>O4. Educational providers have enhanced skills, greater resources, and sufficient faculty to meet clinical training, medical/surgical education, professionalism, and standards needs</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTPUTS</th>
<th>ACTIVITIES (INPUTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>O1.1 Increased participation of SCP in clinical assessment, procedures, and quality assurance/quality improvement</td>
<td>A1.1.1 Identify workforce and service delivery gaps to enable priorities for specialist training to be set, as well as mapping and selection of SCPs for participation in VMT visits</td>
</tr>
<tr>
<td>A1.2.1 Conduct training workshops and facilitate other CPD opportunities through skill transfer, mentorship, and specific training opportunities or scholarships for selected sponsored individuals</td>
<td>A1.2.1 Conduct training workshops and facilitate other CPD opportunities through skill transfer, mentorship, and specific training opportunities or scholarships for selected sponsored individuals</td>
</tr>
<tr>
<td>A1.2.2 Provide ongoing mentorship and support after VMT visit</td>
<td>A2.1.1 Facilitate MOH identification of gaps in service delivery to set VMT clinical and training objectives</td>
</tr>
<tr>
<td>A2.2.1 Maintain a network of ANZ, Pacific, and regional professionals and professional institutions to support the delivery of specialist medical education and VMTs</td>
<td>A2.2.1 Maintain a network of ANZ, Pacific, and regional professionals and professional institutions to support the delivery of specialist medical education and VMTs</td>
</tr>
<tr>
<td>A2.2.2 Conduct VMT review meetings with MOH personnel, clinical staff, and Department of Foreign Affairs and Trade representatives to assess VMT trip outcomes</td>
<td>A3.1.1 Conduct training and workshops to support MOH in identifying VMT objectives and priorities for specialist clinical service (SCS) delivery</td>
</tr>
<tr>
<td>A2.2.2.1 Support the development of systems and processes for promoting clinical governance, quality improvement, and continuing professional development</td>
<td>A3.2.1 Support the development of systems and processes for promoting clinical governance, quality improvement, and continuing professional development</td>
</tr>
<tr>
<td>A4.1.1 Support educational institutions to develop tailored, specialized clinical professional development and training programs, including training of specialists</td>
<td>A4.2.2 Establish and systematize professional development networks between ANZ and the region, including collaboration between ANZ and regional professional bodies</td>
</tr>
<tr>
<td>A4.2.1 Establish and systematize professional development networks between ANZ and the region, including collaboration between ANZ and regional professional bodies</td>
<td>A4.2.2 Establish and systematize professional development networks between ANZ and the region, including collaboration between ANZ and regional professional bodies</td>
</tr>
<tr>
<td></td>
<td>A4.1.2 Sharing of educational expertise, develop courses on specialist medical education (for example, surgical teachers course or Foundation for Surgical Educators), including provision of train-the-trainer courses or places on such courses to develop local faculty</td>
</tr>
</tbody>
</table>
TABLE 4.
RACS GLOBAL HEALTH-MANAGED PROGRAMS AND PARTNERS
IN THE ASIA-PACIFIC REGION

<table>
<thead>
<tr>
<th>Program</th>
<th>Years</th>
<th>Clinical visits or courses</th>
<th>Consultations</th>
<th>Operations</th>
<th>Health professionals training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Islands Program*</td>
<td>Since 1995</td>
<td>807</td>
<td>93,863</td>
<td>24,356</td>
<td>103 surgeons (23 subspecialists)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29 anesthetists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90 ASO &amp; NPAPs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>59 obstetricians</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>1995–2012</td>
<td>158</td>
<td>17,174</td>
<td>6,777</td>
<td>183 enrolled</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>96 diplomates</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 pediatricians</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7 surgeons</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 anesthetist</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21 nurse anesthetists NPAPs</td>
</tr>
<tr>
<td>Timor-Leste resident specialists and visiting teams</td>
<td>Since 2001</td>
<td>4–5 resident specialists providing in-country supervision and training</td>
<td>N/A</td>
<td>N/A</td>
<td>1 ophthalmologist</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 senior registrars</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 postgraduate candidates</td>
</tr>
<tr>
<td>East Timor Eye Program</td>
<td>2000</td>
<td>93</td>
<td>100,636</td>
<td>10,888</td>
<td>2 eye care nurses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 junior ophthalmologists</td>
</tr>
<tr>
<td>Sumba Eye Program</td>
<td>2011</td>
<td>11</td>
<td>10,000+</td>
<td>1,004</td>
<td>2 eye care nurses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 junior ophthalmologists</td>
</tr>
<tr>
<td>Asia Pediatric Surgery Education</td>
<td>2016</td>
<td>15 courses 2 clinical mentoring</td>
<td>60</td>
<td>30</td>
<td>377 Aimed at competency training</td>
</tr>
<tr>
<td>Myanmar</td>
<td>2009</td>
<td>62 courses†</td>
<td>N/A</td>
<td>N/A</td>
<td>1,175</td>
</tr>
</tbody>
</table>

*Pacific Islands Program-Cook Islands, Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu

†Primary Trauma Care, Emergency Life Support, Advanced Trauma Life Support, Essential Pain Management, Emergency Medicine, Management of Surgical Emergencies, Surgical Skills Education and Training

All visiting team members and course faculty provide their services pro bono. No salaries are paid except to the resident specialists and staff in Timor-Leste.
OB/GYN specialists to focus on their professional development throughout their career while reducing feelings of isolation. These specialists and trainees also have benefited from more than 150 scholarships or short-term traveling fellowships since 1995. Building a culture of research is another key goal to improve access to and delivery of care in the future. A research workshop has been made available regularly through the Pacific Society for Reproductive Health, and the first RANZCOG Global Health research grant was awarded in 2016 to a Papua New Guinean OB/GYN specialist.

A priority for RANZCOG is reducing maternal and perinatal mortality, and improving access to safe surgery and anesthetic services is fundamental in cases where cesarean section is the best or only option for the safety of the mother and her baby. Cesarean section rates are less than 10 percent in most Pacific Island countries; however, they are increasing to 20 percent in Fiji.

Scholarships
RACS, ANZCA, ASA, and RANZCOG offer short-term traveling fellowships to their annual scientific or subspecialty meetings, as well as a range of three- to 12-month hospital placements for specialist training or extended scope of practice. These opportunities are normally awarded after obtaining the relevant specialist qualification from the scholar’s home country. A number of specialty groups offer similar opportunities, such as Orthopaedic Outreach, the Asia Pacific Orthopaedic Association, Interplast Australia and New Zealand, and ANZCA’s pain faculty. RANZCOG has facilitated resident placements or exchanges, often with Australians or New Zealanders filling positions in the Pacific, rather than vice versa, due to licensure requirements. ANZCA also offers a scholarship to enable a trainee to accompany a VMT to expose them to global health issues, as do some orthopaedic VMTs.
Summary
The development programs described in this article have fostered professional networks between individuals and institutions across the Asia-Pacific. The specialist medical colleges, together with the scholarships they provide, have generated great opportunities for professional collaboration and partnership in the region. The work of the LCoGS, with its clearly defined messages and achievable metrics, has inspired surgeons, anesthetists, and obstetricians to become more engaged in public health and to advocate for safe, affordable, and timely access to emergency and essential surgery.

To realize the goals of World Health Assembly Resolution 68.15 by 2030 and help our colleagues in the LMICs of our region deliver services to their populations, ongoing and sustained support is needed. The leadership, ownership, and strategic direction of these initiatives should be established by the individual countries themselves. The people of the Pacific and Southeast Asia deserve quality health care, but this goal can only be achieved with access to safe, affordable surgery and anesthesia.

REFERENCES, CONTINUED
The Royal Colleges of Surgeons in the U.K. and Ireland have real concerns about the inequity of care in low- and middle-income countries (LMICs). These organizations also recognize the opportunities that exist to contribute to system strengthening and to develop standards, education, assessment, and advocacy initiatives in order to enhance access to quality surgical care. A particularly important area of this work relates to the contextualized provision of curriculum development and suitable clinical examinations that allow surgeons to benchmark their training and skills against an internationally recognized standard. The Royal Colleges of Surgeons in the U.K. and Ireland work together to contribute to the development and delivery of these activities and provide career-long support for their fellows and members who work to end health care disparities in LMICs.

This article describes contributions from the four surgical Royal Colleges in the U.K. and Ireland. Much of this work is collaborative, especially in relation to advocacy and support for the mission of the World Health Organization (WHO), as well as in curriculum development, quality assurance, and the assessment of young surgeons. These efforts are coordinated activities, and this article summarizes the main areas in which we operate.

RCSI: A partnership approach to global surgery

Since its inception in 1784, the purpose of the Royal College of Surgeons in Ireland (RCSI) has been to educate and train surgeons to meet the needs of patients. Today, its reach is more extensive than its founders could have envisioned, as the RCSI helps develop health care leaders worldwide. In LMICs, the RCSI achieves this goal by partnering with local institutions and unlocking potential at the regional level.1
COSECSA collaboration
In 2007, collaborative efforts between the RCSI and the College of Surgeons of East, Central and Southern Africa (COSECSA) began to support the training of surgeons in Africa. COSECSA launched in Nairobi in 1999, and one of its aims was to stop the “brain drain” of African surgeons who trained abroad and never returned home. With funding from Irish Aid, the Irish government’s official agency for international development, RCSI and COSECSA embarked on a collaborative program to help COSECSA train more surgeons in the region.

Prior to this initiative, COSECSA’s cumulative total of graduates was 17. By December 2016, that number reached 206, which is an average increase of 39 percent in graduating surgeons year-to-year (see Figure 1, page 33).

College without walls
COSECSA is a college without walls. It trains surgeons through an expanding network of 99 accredited hospitals and 165 accredited trainers in 12 member countries. All trainees follow the same program of training for the first two years. They then are eligible to sit for COSECSA’s membership exams. In the final three years, trainees choose one of seven specialties and then are eligible to take COSECSA’s fellowship exams. The COSECSA training model is shorter than that of many comparable international surgical training institutions and is focused on clinical exposure.

The RCSI has provided support in curriculum development, examinations, and a variety of training and leadership courses. Together, both colleges have designed information technology (IT) resources, such as a mobile-optimized e-logbook and an e-learning portal with content relevant for the region. As the number of trainees enrolling in the program has increased, many RCSI departments, including finance, IT, communications, and quality assurance, have supported specific projects managed by COSECSA’s secretariat, a role that oversees the day-to-day administration of COSECSA training and examination processes.

COSECSA is now the largest single contributor to the surgical workforce in the region, and, in fact, the organization has developed an interactive map to document surgeon density. Significantly, research has shown that surgeons who train locally...
are increasingly retained in the region. More specifically, 85 percent of surgeons practice in the country in which they trained, 88 percent are practicing in East, Central, and Southern Africa, and 93 percent remain in Africa. The brain drain in Africa has become a myth.

Other positive outcomes from the RCSI's collaboration offer significant potential for the future financial support of global surgery programs. With real-time data on operations performed by more than 500 surgical trainees in 12 countries, COSECSA is now uniquely positioned to engage in collaborative research on the training of surgeons and practice of surgery in sub-Saharan Africa, and this research could generate vital, translational data for governments and potential funding bodies.

Surgery at the district level: COST- and SURG-Africa

Most countries in the region have a critical need for surgically trained clinicians who are willing to work in district hospitals. Since 2011, RCSI researchers have been leading two European Union-funded projects aiming to generate evidence that a safe surgery model for district hospitals is feasible, effective, and sustainable.

Nonphysician clinicians (NPC) are the backbone of clinical care services for rural communities in many African countries. In Malawi, COST-Africa, also known as Clinical Officer Surgical Training in Africa, accredited and rolled out a national bachelor of science in surgery for clinical officers (COs). As a result, the volume of general surgical cases at district hospitals increased by 89 percent. The outcomes of hernia operations done by COs in district hospitals were comparable with those performed in central hospitals.

COST-Africa also developed a supervision model in Zambia, enabling specialists from central hospitals to travel to district hospitals to deliver on-the-job training, to supervise, and to mentor surgically active district NPCs. This model improves the quality and scope of surgical care at the district level and allows hospitals to save money on referrals. These NPCs help build the surgical skills of general medical officers and provide a potentially sustainable strategy for making surgery available to rural populations.

In a second European Union-funded study, Scaling up Safe Surgery for District and Rural Populations in Africa (SURG-Africa), NPCs in three countries are being trained in clinical decision making, safe anesthesia, peri- and postoperative monitoring, safe surgery for Ministry of Health (MOH)-approved

FIGURE 1. COSECSA GRADUATES 2006–2016
elective and common emergency conditions, as well as surgical team leadership and management skills.\textsuperscript{12}

RCSI has chosen a point of entry—surgical training and supervision—that best leverages its strengths. Ultimately, it will not be institutions or individuals in high-income countries, but our partners, including governments, that must provide the infrastructure and institutions to train the future surgical providers in Africa.

\textbf{RCPsG: Training, advocacy, and delivery}

The Royal College of Physicians and Surgeons of Glasgow (RCPsG) was founded in 1599 by Maister Peter Lowe, who left his native Scotland for surgical training in France, where he remained for many years. He then returned to improve the medical standards of his local community. More than 400 years later, the RCPsG’s vision remains “the highest possible standards of healthcare.” It pursues this vision through the provision of academic resources, examinations, educational activities, and contributions to medical regulation and public policy. Uniquely for a U.K. Royal College, the Glasgow College membership encompasses surgeons, physicians, dentists, travel medicine specialists, and podiatrists.\textsuperscript{13}

Having demonstrated in the 16th century that health care training and experience gained outside a local community can ultimately serve home populations, as well as build bridges abroad, the RCPsG continues to maintain and promote this perspective today.

\textbf{Advocacy}

With the support of the Scottish government, the RCPsG has recently taken a leading role in reviewing and analyzing the policy background that surrounds global health volunteering work in Scotland. This endeavor resulted in a major report, \textit{Global Citizenship in the Scottish Health Service: The Value of International Volunteering}, published in May 2017, which challenged the Scottish government to institutionally recognize the mutual benefits of engagement in global health (see Figure 2, page 35). The report made eight recommendations to the government, which focused on improved support and coordination of international volunteering efforts by National Health Service workers. Scotland’s Minister for International Development welcomed the report at its launch, and the leaders of this initiative anticipate that the recommendations will be taken forward fully in the coming years.

The RCPsG also has realized its potential to advocate for the prioritization of surgical capacity building in resource-challenged environments. Together with other U.K. surgical colleges, we established a correspondence with Tedros Adhanom Ghebreyesus, PhD, MSc, around the time of his election to WHO director-general, and urged him to place resources behind the World Health Assembly (WHA) landmark 2015 Resolution 68.15 on building capacity in emergency and essential surgical and anesthetic care. Dr. Tedros responded with a letter that demonstrated his commitment to work in consultation with Member States to build national capacity for emergency and surgical care to implement WHA 68.15. “As stated in WHA 68.15, surgical capacity is an essential part of universal health coverage and our political commitment and programs must reflect that,” Dr. Tedros wrote in the letter.\textsuperscript{14,15} This correspondence was subsequently circulated to multiple nation states at the 2017 WHA to establish his commitment to surgical capacity building, and the RCPsG intends to monitor progress carefully.

\textbf{Facilitation of medical training}

Alongside other Royal Colleges, the RCPsG supports the U.K. Department of Health’s Medical Training Initiative (MTI), which offers a time-limited opportunity for postgraduate medical professionals, primarily from LMICs, to obtain training experience in the U.K. before returning to their country of origin. In addition to sourcing and
FIGURE 2.
MUTUAL BENEFITS FOR GLOBAL HEALTH VOLUNTEERING WORK IN SCOTLAND


coordinating placements for a range of applicants on a cost-recovery basis, the RCPSG has instituted its own MTI bursary scheme, the Livingstone Fellowship, which supports some of the start-up costs for Malawian trainee physicians or surgeons coming to the U.K. for targeted training. Physicians who have benefited from this program recently include Wone Banda, MB, BS, MSCS, FCS, and T.K. Itaye, MB, BS, MMed (respectively training in plastic surgery and general and breast surgery), and following a successful year of training in Scotland they have returned to posts in Malawi as consultant specialist surgeons.

Glasgow College fellows and members have a history of supporting underserved communities beyond their home environment. The college has delivered some of its standard educational courses in low-income environments, including the Basic Surgical Skills course, and is scoping future educational opportunities with the Malawian College of Medicine and other institutions. RCPSG fellows and members from around the world can access a variety of travel bursaries, which aim to support the delivery of high-quality clinical input overseas and ensure the effective transfer of learning back into the home environment. Recipients of college support include general surgeons, orthopaedic surgeons, and gastroenterologists. The college has provided resources to provide training and capital equipment for endoscopic services, which is much-needed care in a country with a high incidence of esophageal varices related to schistosomiasis and upper gastrointestinal cancer.

The Glasgow College has restructured to enhance these vital areas of global health involvement and has active projects in sub-Saharan Africa, Sierra Leone, Tamil Nadu, India, Sri Lanka, and Malaysia.
This article describes contributions from the four surgical Royal Colleges in the U.K. and Ireland. Much of this work is collaborative, especially in relation to advocacy and support for the mission of the World Health Organization (WHO), as well as in curriculum development, quality assurance, and the assessment of young surgeons.

**FIGURE 3.**

**INTERNATIONAL STRATEGY 2016–2020**


**RCSEng: Global surgery research and training**

The Royal College of Surgeons of England (RCSEng)\(^6\) has developed a broad portfolio of activities in recent years as highlighted in the *International Strategy, 2016–2020* (see Figure 3, this page). These efforts are designed to create sustainable surgical services in LMICs. The RCSEng is a member of the G4 Alliance (also known as the Global Alliance for Surgical, Obstetric, Trauma, and Anaesthesia Care).\(^7\)

**International development project**

The RCSEng’s international development project focuses on resource-poor countries to establish basic practices that support continuous quality improvement. At present, the following five projects are under way:

- **Core surgical skills training.** This project involves working in Gaza at the Al-Shifa Hospital to train local surgeons to become leaders of basic surgical skills courses.

- **The safe operating theater.** This program involves training a multidisciplinary team to develop best practices in operating theater function and management. This project is taking place in Ethiopia, where a local team will be trained at a large center, enabling these physicians to deliver training to a wider community of health care professionals elsewhere in the country.

- **Objective structured clinical examinations development.** This project has been initiated in Ethiopia in conjunction with the Ministry of Health and provides examinations for trainee surgeons specifically contextualized for local health problems.

- **Surgical capacity building.** This project has been developed for northern Sri Lanka and involves week-long workshops in a number of surgical...
specialties intended to develop skills to manage priority surgical challenges at the local level.

- Development of hub-and-spoke training models. These models are based in Vellore, India, and involve teaching general surgeons in district hospitals how to identify, treat, or refer pediatric surgical conditions.

**International surgical training program**

As part of the U.K. MTI, surgeons from LMICs are admitted to two-year surgical training placements in the U.K. through the RCSEng. Approximately 40 surgical trainees are successfully placed annually, and the college assists other overseas surgeons with visa (tier 2) procurement and registration with the general medical council, and serves as a source of education, support, and advice.

**Global Surgical Frontiers Conference**

The RCSEng hosted the sixth annual Global Surgical Frontiers Conference in April 2017. This meeting involves collaboration between the college, international organizations, surgical trainee bodies, and student societies with the goal of introducing young surgeons to the needs and opportunities related to the development of surgery at a global level. The next conference will take place in June, and the theme will be trauma.

**Global surgical research**

The RCSEng has played a pivotal role in the development of trainee-led clinical research, establishing a trials network in the U.K. that now covers all surgical specialties. In the last two years, this system has been expanded to an international trainee-led research group—GlobalSurg. This group has already undertaken cohort studies, accumulating data on more than 27,000 patients involving more than 1,000 collaborators in more than 100 countries, half of which are LMICs. The group recently initiated the world’s first trainee-led surgical trial centered on LMICs and involving 5,500 patients. Oversight committees and policy and implementation committees to support this organization are both provided through RCSEng.

The RCSEng also provides individual support (full salary plus running costs) to enable U.K. trainees to undertake research activities abroad. At present, the college supports three fellows in North America, one in mainland Europe, and one in sub-Saharan Africa. International traveling fellowships also were awarded in 2017 to seven trainees, four of whom are overseas trainees visiting the U.K. from Myanmar, Ethiopia, and India, with three U.K. trainees visiting the Democratic Republic of Congo for trauma, Nepal for pediatric surgery, and Ethiopia for head and neck surgery.

**RCSEd: The value of specific partnerships**

The Royal College of Surgeons of Edinburgh (RCSEd) has historically been involved in education and assessment on many continents. It also shares its innovative surgical distance learning masters programs, ESSQ (Edinburgh Surgical Sciences Qualification), in association with the University of Edinburgh since 2007, with 1,750 students enrolled in some 70 countries over 10 years (see Figure 4, page 38). In 2017–2018, the total number of surgical trainees includes 530 students enrolled for the master of science in surgical sciences and for the ChM (master of surgery) programs in surgical specialties. These programs typify the global impact of the RCSEd on surgical education and training.

In an effort to focus on global surgery specifically, this section of this article concentrates on capacity-building initiatives of the RCSEd in two major areas: Malawi and Myanmar, with which the college has had longstanding relationships. The RCSEd has recently developed a partnership with the University of North Carolina (UNC) at Chapel Hill to facilitate the delivery of its surgical training program initiative based in Lilongwe, Malawi.
The RCSEd has bases of operation in Edinburgh and Birmingham in the U.K., and it has an international office in Kuala Lumpur, Malaysia. It aims to improve the health of our LMIC partners by delivering what they have requested of us, rather than attempting to identify the problems and enforcing change or perhaps providing unwanted resources or systems. Similarly, the RCSEd does not donate large sums of money without restriction, but instead directs its funding to specific projects where there will be a measurable impact and outcome.

Malawi
Scotland has provided support to Malawi for decades, specifically through the organization’s overseas development fund, as well as via the Scotland Malawi Partnership, the largest community-based international development network in the U.K. The RCSEd also has longstanding links with the government of Malawi, and Malawian surgical students are well-represented in the postgraduate surgical distance-learning programs offered jointly with the University of Edinburgh, ESSQ resulting in an MSc (loosely equivalent to membership of the Royal Colleges of Surgeons’ examination) and the ChM in specialty surgery (similar to Fellowship of the Royal Colleges of Surgeons examination standards at the completion of training). Fellows of the RCSEd are involved in the Queen Elizabeth Hospital, Blantyre, and the Malawi College of Medicine; the Edinburgh College was a cofounder of COSECSA, of which Malawi is a member. The RCSEd continues to support COSECSA through an annual traveling fellowship, awards, courses, and assistance with assessments. RCSEd members and fellows also contribute to humanitarian work in Malawi, largely independent efforts that the college does not directly oversee.

Training fellowships
The RCSEd’s recent initiative offers a fundamental new direction for surgical training in Malawi, following publication of the LCoGS. The RCSEd provides financial and professional support for the training of Malawian-born surgeons for five years in their own country under COSECSA guidelines. This effort represents true capacity building, and the aspiration is that the total number will rise to five trainees on a rolling cycle as each year’s activity is assessed for successful training outcomes and financial tolerances. The UNC department of surgery has close links with the RCSEd and is facilitating financial support and training on-site with a model that parallels the path of their own students, and as a result, the college will be offering appropriate courses for visiting teams. The first surgical trainee is badged as an RCSEd training fellow with college benefits. She commenced training in March and is expected to visit the college in the...
U.K. at its expense and for mutual benefit. This model presumably could safely be replicated elsewhere.

**Myanmar**

Myanmar has been an RCSEd partner for more than four decades. Training and assessments are provided in Yangon (formerly known as Rangoon) and Mandalay, with membership examinations and a biannual diploma ceremony occurring in Yangon. Collaboration between the RCSEd and surgeons in Myanmar is underpinned by a memorandum of understanding (MoU) with the Department of Medical Science in the Ministry of Health and Sport. The MoU terms reflect the importance of maintaining standards, sustainability, responsibility, and ownership of a health care partnership project. The five-year agreement commenced in 2013 and provides support for surgical training, education, and assessment activities. In addition to specific surgical training resources, topics such as working with multidisciplinary teams, morbidity and mortality conferences, grand rounds, and other topics related to professional practice are embedded in the program.

The RCSEd carried out an early needs assessment for surgical training, with support from a start-up grant from the Tropical Health Education Trust (THET), a charitable funding organization linked to the U.K. government. This assessment led to a successful bid for funding from U.K. Aid, managed by THET, as part of the Trust’s Health Partnership project. This funding has enabled the RCSEd to work closely with the Myanmar Nephro-Urological Society to facilitate capacity building in an underprovided specialty, resulting in 17 trained government urologists for a population of 53 million in 2013.

The two-year pilot program consisted of visits by senior British urologists acting as visiting professors to operate and teach clinical skills, as well as provide general professional training in Yangon and Mandalay. These visits were complemented by short visits of selected Myanmar trainees to specific

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**REFERENCES**


*continued on next page*
departments in the U.K. The selected surgeons were accorded observer status with full participation in the host department’s activities, short of direct patient treatment.

This effort has resulted in effective sustainable local delivery of a new surgical training program in urology incorporating workplace-based assessments, a quality improvement program, portfolio development, and an annual appraisal of trainees. Ultimately, these activities will be delivered locally to a high standard, while maintaining a role for the RCSEd in quality assurance and guidance where requested. Again, this model could be readily adopted for other specialties.

Both of these international initiatives are examples of local requests for directed assistance, which the RCSEd, through its examinations and education departments, is able to achieve.

Acknowledgments

The authors gratefully acknowledge the contributions of the following individuals: David Tolley, MB, FRCSEd, past-president, RCSEd; Mike Lavelle-Jones, MB, ChB, president, RCSEd; and O. James Garden, CBE, BSc, MB, ChB, MD, FRCS, FRCP, FRSE, regius professor of clinical surgery, dean international, University of Edinburgh.

REFERENCES, CONTINUED


The College of Surgeons of East, Central and Southern Africa (COSECSA) was founded in 1999. COSECSA is a not-for-profit organization that operates in 12 countries in sub-Saharan Africa and is an independent body that fosters postgraduate education in surgery and provides surgical training throughout sub-Saharan Africa (see Figure 1, page 42). COSECSA’s primary objectives are to advance education, training, standards, research, and practice in surgical care in this region. More specifically, COSECSA shapes and leads the training of surgeons in East, Central, and Southern (ECSA) Africa. The College offers a surgical training program with a standardized examination that is internationally recognized. To date, 214 specialist surgeons have graduated from COSECSA-affiliated programs. Admission to the College is open to all registered health care practitioners who comply with the professional requirements for admission.

Surgical workforce in the ECSA region
Access to surgical care remains one of the most significant and underreported issues in the region. A situational analysis of the COSECSA region workforce was recently conducted. The study results indicate that the region has only 1,690 surgeons serving a population of more than 320 million. Of these surgeons, 53 percent are general surgeons, whereas the others have additional subspecialty training. The surgeon-to-population ratio is 0.53 per 100,000 population. In addition to the workforce shortage, the region has a significant misdistribution issue. The data indicate that 71 percent of surgeons practice in urban areas with populations greater than 500,000. Women are underrepresented, comprising only 7 percent of the surgical workforce.

In partnership with the Royal College of Surgeons in Ireland (RCSI) and other members of the International Collaborators for Essential Surgery network of surgeons and public health specialists, an interactive map showing the location of all surgeons throughout the ECSA region has been created. The interactive map shows the number of surgeons per 100,000 individuals in any given COSECSA region.

Strategic plan and implementation of WHA Resolution 68.15
A five-year strategic plan for implementing the World Health Assembly (WHA) Resolution 68.15 in 2016–2020 has been developed and is under way. The COSECSA...
strategic plan is a dynamic blueprint for the growth of COSECSA as an organization and is based on four key goals. These strategic goals are as follows.

**Graduate 500 surgeons by 2020**

COSECSA training sites have been increasing steadily. A recent count shows 99 accredited sites. The enrollment of surgical trainees continues to increase, with 127 enrollees in 2017 and 135 in 2018. Because of the innovative approach to hospital-based training in the COSECSA region, the attrition of graduates has been minimal. A study on the retention rate of surgical graduates (COSECSA and 24 master of medicine institutions) from 1974 to 2013 across eight COSECSA countries was completed in October 2017. The data showed that 85.1 percent of graduates were retained in their home country, 88.3 percent in the COSECSA region, and 93.4 percent of graduates remained within Africa.

**Achieve excellence in training and research**

Together with international partners, COSECSA is building the research infrastructure. Data collection through a resident logbook has been centralized, and the electronic logbook contains records of more than 100,000 cases. In 2016, four COSECSA trainees (Philip Blasto, MD, from Kenya; Gift Mulima, MD, from Malawi; Vanda Amado, MD, from Mozambique; and Ryuba Nyamsogoro, MD, from Tanzania) received research grants of $3,500 (U.S.) each to undertake independent research projects in the ECSA region. A COSECSA country representative supervises each grant, and the research findings are due to be published soon.

COSECSA has a comprehensive e-learning platform known as School for Surgeons (SFS), which contains mandatory learning materials for trainees in the following programs: Fellowship of the College of Surgeons (also known as FCS) and Membership of the College of Surgeons (also known as MCS). The SFS was fully redeveloped in 2016 to match the new COSECSA branding and make it more user-friendly and accessible. The new features of the SFS included mobile optimization of the platform. This platform is viewed as a more effective and efficient way of delivering mobile-optimized learning for trainees.

Increasing knowledge and competence in surgery through skills courses is one of the strategies the College has been developing. In 2016, more than 40 courses were conducted for different surgical specialties in the COSECSA member countries. The number of courses conducted increased to 45 in 2017.

Essential surgical training (EST) aims to ensure that standardized, cost-efficient, and high-quality essential surgical services are accessible to the rural population in the district's hospitals in Zimbabwe (ZEST) and Rwanda (REST). A total of 102 nonsurgeons participated in ZEST courses, and 87 nonsurgeons participated in REST courses.

In addition to these basic courses, four additional basic surgical skills courses took place in conjunction with the RCSI COSECSA Mobile Surgical Skills Unit in 2016.
Maintain best practice in examinations and assessment
The COSECSA Council has recently passed a resolution to inaugurate the college’s own court of examiners from among its senior fellows. The main responsibility of the examiners will be to participate in a training workshop prior to the examinations and to administer the clinical examinations. We anticipate that the establishment of the court will improve the postgraduate surgical examining process and the standardization of the exam.

Build to organizational excellence, financial sustainability, and partnerships
Within the COSECSA, Women in Surgery Africa (WISA) was founded in December 2015, with the aim of increasing the number of women surgeons in the region by supporting women physicians who train in surgery. The college will ensure these physicians are mentored while they complete the training program and beyond. This initiative will increase the number of women surgeons, which comprise just 9 percent of the total number of surgeons in the region.

COSECSA’s standing and recognition in the region is growing, as evidenced by the fact that more countries in Africa have joined our organization. We continue to build international partnerships based on mutual benefits. Over the last few years, COSECSA has partnered with the American College of Surgeons to support the increase of women in surgery efforts, sharing educational resources, and supporting leadership training when there is greatest need. COSECSA’s relationships with the Royal Colleges of Surgeons in the U.K. and Ireland have been very productive. COSECSA and the RCSI just celebrated 10 years of collaboration—a partnership that has been the most productive for our college.

Conclusion
The COSECSA region is facing one of the greatest surgical workforce shortage crises in the world. It is of paramount importance that the organization’s partnerships focus on workforce development. COSECSA is looking forward to improving the quality of our trainees, as well as scaling up the overall number of trainees. We welcome support and collaborative partnerships with surgical organizations from high-income countries and nongovernmental organizations dedicated to improving the care of the surgical patient to help us achieve our goal of graduating 500 surgeons by 2020.

REFERENCES
WFSA describes its vision for implementation of WHA 68.15

by Julian Gore-Booth, MA; Jannicke Mellin-Olsen, MD; Wayne W. Morriss, BS, MB, ChB, FANZCA; Carolina Haylock-Loor, MD; Bisola Onajin-Obembe, MB, BS, MBA, FWACS; and Adrian W. Gelb, MB, ChB, FRCPC

HIGHLIGHTS

- Summarizes the mission and goals of the WFSA to support universal access to safe surgery and anesthesia
- Describes the WFSA Global Anesthesia Workforce Survey and how it is used to measure the scope of this health care crisis
- Outlines the four WFSA program areas, including advocacy, training, safety, and research, to ensure proper anesthesia care
- Highlights the challenges to WHA 68.15 implementation

The World Federation of Societies of Anaesthesiologists (WFSA) is composed of 135 member societies in more than 150 countries and represents hundreds of thousands of anesthesiologists around the world.

The WFSA’s vision is of “universal access to safe anesthesia,” and its mission is “to unite anaesthesiologists around the world to improve patient care and access to safe anaesthesia and perioperative medicine.” Anesthesiologists are leaders in teamwork and patient safety and are experts in anesthesia and perioperative care, resuscitation, intensive care medicine, and pain management.

WHA 68.15, safe anesthesia, and safe surgery

The year 2015 marked a turning point for the 5 billion out of 7 billion people in the world without access to safe, affordable, and timely surgery and anesthesia care. With the release of the following publications and reports—the third edition of Disease Control Priorities: Essential Surgery, The Lancet Commission on Global Surgery (LCoGS) “Global surgery 2030: Evidence and solutions for achieving health, welfare, and economic development”; and the unanimous passage of World Health Assembly (WHA) Resolution 68.15, Strengthening Essential and Emergency Surgery and Anaesthesia as a component of Universal Health Coverage—a platform was established to ensure that the surgical patient is included in any commitment and action to ensure universal health coverage (UHC), as outlined in the United Nations’ sustainable development goal (SDG) 3.

The WFSA has official liaison with the World Health Organization (WHO) and was part of the campaign to promote the passage of WHA Resolution 68.15, which is intended to ensure that safe anesthesia is an indivisible and indispensable element of safe surgery, and that both are a human right.
In addition to supporting the resolution, the WFSA has been active in ensuring that key indicators, such as perioperative mortality rate and surgical workforce density, are included in the WHO list of 100 Core Health Indicators, and that the WHA commits to regular progress reporting against the resolution. Ongoing reporting is an essential requirement if we are to convert WHA 68.15 into action and measurable change.

Our framework for action

As part of its response, the WFSA defined its goals, described the size of the crisis in anesthesia, and outlined a plan for achieving its mission and measuring its progress.

The plan is based on the WFSA International Standards for a Safe Practice of Anesthesia. The latest revision of these standards will be published in 2018 and will be a shared WFSA-WHO set of guidelines establishing the minimum standards required for the provision of safe anesthesia in the areas of workforce, equipment and infrastructure, and medicine. With the establishment of a clear description of safe anesthesia practice, the WFSA can define which efforts are required to ensure safe, affordable, and timely anesthesia care. The standards also can be used to inform the development of national guidelines, which are useful in achieving more local buy-in, targets, legislation, and national improvement plans.

The WFSA Global Anesthesia Workforce Survey highlights the breadth of this health care crisis and helps measure how it progresses in the future. Conducted in 2015–2016, the survey documented the shortage of anesthesia providers against the LCoGS recommendation of 20 specialist surgeons, anesthesiologists, and obstetricians (SAOs) per 100,000 population, with an interim target for the number of anesthesiologists set at five per 100,000 population. The survey showed the stark differences in physician and nonphysician anesthesia provider numbers between different regions of the world and between resource-rich and resource-poor countries. The study also found that to meet the target, at least an additional 136,000 anesthesiologists are needed—mostly in low-income countries.

To measure differences in anesthesia provider numbers, the aim is to repeat the survey every four years. Notably, the survey also is augmented by a web-based map, which is a real-time tool for tracking the anesthesia workforce and is updated as new information becomes available.
is received (see Figure 1, page 45). The survey also is enhanced by ongoing support of advocacy efforts.

In 2017, the WFSA member societies unanimously approved a position statement on anaesthesiology and UHC, describing how the federation and anesthesia providers will respond. The statement describes anaesthesiology as a medical specialty, one that is potentially high-risk and that must, wherever and whenever possible, be provided, led, or overseen by physicians. The statement explains that in many countries, nonphysician providers (nurses, clinical officers, and technicians) are and will be part of any solution and acknowledges that a range of trained providers are necessary to achieve UHC by 2030. Teamwork is vital to meeting this goal, as is the development of a task-sharing approach across the anesthesia-surgical team.

### Four programs for accessibility

The WFSA has four program areas that are intended to ensure access to proper anesthesia care for all global populations, including: advocacy, education and training, safety and quality, and innovation and research.

The WFSA’s advocacy-related priorities include informing both the public and policymakers about the role of anesthesia and positioning it as a priority for all stakeholders, including the United Nations’ WHO/ WHA, government bodies, nongovernmental organizations, industry, and funders, as well as for the surgical team itself. As part of its mission to inform and support anesthesia care health policy, the WFSA organized the inaugural SAFE-T (Safe Anaesthesia For Everybody—Today) Summit, which took place in London, U.K., in April 2018.

Education and training priorities include the expansion of the WFSA’s fellowship program—a subspecialty mentoring program that provides clinical and leadership training for up to 50 young anesthesiologists every year. The WFSA also intends to expand short-term Safer Anaesthesia From Education (also known as SAFE) training aimed at all anesthesia providers, including those who work in obstetrics, pediatrics, and operating room settings, as well as training for those who work in pain management. In addition, the WFSA supports the attendance of young anesthesiologists at scientific conferences, including the World Congress of Anaesthesiologists, through the WFSA scholarship program.

The WFSA will continue to produce a range of online educational materials, including the web-based
Anaesthesia Tutorial of the Week, the continuing medical education journal Update in Anaesthesia, and the global health section in Anesthesia and Analgesia via our partnership with the International Anesthesia Research Society. The federation plans to engage in ongoing improvement of in-person and online education resources available through the WFSA, member societies, and other partners.

The safety and quality goals include all WFSA program areas, specifically the ongoing revision and dissemination of the international standards, as well as the support of professional well-being programs for anesthesiologists. The WFSA soon will expand its role and that of its member organizations in the development of national surgical, obstetric, and anesthesia plans. The WFSA has developed an anesthesia capacity assessment tool (based on the standards) to help with the expansion process.

The innovation and research goals include a global innovation awards program and research fellowships. Alongside these programs, our publications aim to encourage more research in low- and middle-income countries (LMICs) where the lack of evidence and data hinders the drive for policy change and action.

**WHA 68.15: The main challenge to implementation**

The WFSA maintains that the primary hurdle to the implementation of WHA 68.15 is the workforce deficit—a deficit that is heightened when one considers the concentration of anesthesiologists in urban centers and, as is often the case, in private practice. Other resources, such as equipment and medicines, are also important, but workforce needs must be met first, both as a driver for change and as the essential resource to ensure that equipment and medicines are used appropriately and safely.

Although the WFSA has a well-developed strategy for strengthening the skills, knowledge, competencies, and leadership of anesthesia providers who are already qualified and providing anesthesia, the Federation recognizes that much more needs to be done to qualify and retain new anesthesia providers. In response to WHA 68.15, the WFSA is now developing a framework for anesthesia training that will help
national societies determine the different levels of competency required for specific operations at different levels of hospitals. In some countries, the guidelines might go on to provide a foundation for training programs to develop an expanded cadre of nonspecialist nurse and physician anesthesia providers who can be trained, mentored, and overseen by anesthesiologists (see Figure 2, page 46).

The data suggest that less than 1 percent of global health funding is spent on any aspect of anesthesia-surgical care, despite surgical conditions accounting for 30 percent of the global burden of disease. These disparities must change, and the WFSA will continue to work with partners such as the WHO and the G4 Alliance (also known as the Global Alliance for Surgical, Obstetric, Trauma, and Anaesthesia Care) to ensure that health care leaders and funders are aware of these inequities.

Governments seem to have a tendency to undervalue anesthesia, with providers in many LMICs unable to qualify in and go on to develop careers in the specialty. Indeed, in some low-income countries, anesthesia trainees do not receive a salary. Strengthened partnership with surgeons will be helpful in this regard, as will a broader acknowledgment of the role of anesthesia care in health system strengthening, mother and child health, pain management, palliative care, noncommunicable diseases, and trauma and critical care.

The WFSA’s solutions
Advocacy and education are paramount in the WFSA’s implementation of Resolution 68.15. The WFSA will continue to scale up activity, provided that funding and resources are available. The WFSA recognizes that large numbers of new providers are required and is working with national societies, educational organizations, and other stakeholders to scale up training of specialists and nonspecialist providers. In so doing, the WFSA is aware of both the urgency of the need and the economics involved, but is also determined to help every patient achieve access to safe and timely anesthesia.

The WFSA’s network is unique. Physician-led but patient-focused, this organization provides extraordinary and investible resources to ensure the realization of the goal of universal access to safe anesthesia and surgery.

REFERENCES, CONTINUED
HIGHLIGHTS

• Describes models for building academic and professional association partnerships to improve surgical and obstetrical care
• Identifies NSOAP’s six domains for improving access to quality care, which are applicable to the reduction of maternal and neonatal mortality
• Summarizes lessons learned to build global clinical research capacity

Obstetrics and gynecology in global health: Lessons learned for advancing public health to achieve universal health care

by Frank W. J. Anderson, MD, MPH; Lina Roa, MD; Chiara Benedetto, MD, PhD; Isabelle Citron, MB, BCh; Luis Curet, MD; Carla Eckhardt; Clark Johnson, MD, MPH; Barbara S. Levy, MD; Dereje Negussie, MD, MPH; Stephen Rulisa, MD, PhD; Rubina Sohail, MD; Rachel Spitzer, MD, MPH; Michael Stark, MD; Bellington Vwalika, MD, MSc; and Kwabena Danso, MB, ChB
Addressing global health inequities requires a comprehensive response from the world’s surgical, anesthesia, and obstetrics and gynecology (OB/GYN) communities. These health care professionals need to share evidence-based knowledge and experience and collaborate to develop training programs and initiatives that ensure sustained, functioning health care systems. The world has experienced significant improvements in health care for millions because of effective global public health programs. However, these improvements have exposed the significant burden of obstetrical and surgical disease facing most of the world’s population. Tremendous gaps exist in expertise, workforce, and infrastructure, all of which are essential to provide critical surgical, anesthesia, and modern OB/GYN care in low- and middle-income countries (LMICs).

International efforts are under way to address these gaps. In 2015, the 68th World Health Assembly (WHA) passed Resolution 68.15 to strengthen emergency and essential surgical care and anesthesia as a component of universal health care. That same year, The World Bank released the third edition of Disease Control Priorities, highlighting surgical procedures as cost-effective health care interventions and advocating for universal coverage of emergency surgery. Further evidence for the need to strengthen health care systems was provided by The Lancet Commission on Global Surgery (LCoGS), which reported that 5 billion people lack access to safe and affordable surgical and anesthesia care, recommending six core indicators to monitor the strength of surgical systems. Within this framework, the OB/GYN, surgery, and anesthesia global communities have a unique opportunity to develop a comprehensive partnership approach that provides the level of expertise needed to lead a coordinated public health response.

The Millennium Development Goals (MDGs) project, led by the United Nations (UN) from 2000 to 2015, included eight primary goals, ranging from halting the spread of the human immunodeficiency virus (HIV) to reducing neonatal and maternal mortality. Although the MDGs for neonatal and maternal health were not achieved, substantial progress was made, and the maternal mortality ratio (MMR) fell from 385 to 216 deaths per 100,000 live births.

Upscaling high-quality obstetrical interventions continues to be part of the response to the new sustainable development goal (SDG) of eliminating preventable maternal and early neonatal mortality. The SDG now calls for reducing global MMRs from 216 per 100,000 live births in 2015 to less than 70 per 100,000 live births by 2030 (SDG 3.1). This objective will be achieved only by expanding comprehensive obstetrical, anesthesia, and surgical care to a level not offered by community workers, general physicians, or midwives. These interventions will require novel partnership approaches and evidence-based strategies that go beyond relief and vertical programs and work toward long-term, sustainable capacity development.

OB/GYN services are linked to the environments that support the treatment of other surgical conditions, both requiring widely available anesthesia capabilities. Providing safe deliveries, including cesarean sections (C-sections), has been shown to be cost-effective. Furthermore, investing in improving access to safe reproductive health care, including family planning and abortion, when coupled with obstetric surgical care powerfully synergize cost-effectiveness. The importance of providing these services is based not only on ethical grounds, but on sound economic policy.

The maternal health community benefits from many years of global prioritization on these issues with funding and programmatic momentum. Moving forward to address more comprehensively the surgical burden of disease requires the coalescence of a global health agenda, with a strong collaboration between OB/GYN, surgery, and anesthesia to lead the next generation of global public health interventions.

The LCoGS created a road map for the way forward and recommended a list of key indicators to assess the strength of surgical systems and provide a baseline for measuring improvement. The improved health outcomes measured by these indicators can...
be accomplished if surgery, OB/GYN, and anesthesia unite for a coordinated global effort of prospective data collection. Coordinating the collection and reporting of these indicators at the national level with The World Bank Development Indicators will provide the metrics for the global community to measure progress and to achieve the 2030 targets.

This article describes some of the major interventions that the global OB/GYN community has implemented to build long-term and sustainable capacity around the world. It identifies successful models for academic and professional society partnerships and highlights areas of collaboration to build surgical, obstetrical, and anesthesia capacity. Through strong partnerships to build OB/GYN residency programs, strengthen professional societies, and create certification programs, we are growing and mentoring leaders in research, clinical care, education, and policy development. The lessons learned from these interventions can be applied to other surgical specialties and pave the way forward in building capacity to provide sustainable, high-quality obstetrical, gynecological, surgical, and anesthesia care globally.

**Academic partnerships**

Partnerships between OB/GYN departments in sub-Saharan Africa with academic OB/GYN departments in high-income countries are a feasible and resilient approach to building obstetric capacity in LMICs. These partnerships increase the capacity of faculties and departments to provide clinical service, education, and research in the African OB/GYN community. These model programs are informative and present opportunities for replication in surgery and anesthesia.

Ghana, for example, has used a university partnership approach to advance obstetric capacity development when faced with a health care workforce crisis. Until 1989, Ghana sent OB/GYN trainees to train in the U.K. with only three out of 30 specialists returning in a 20-year period. The residency program established in 1989 resulted from a collaboration between the local medical community, the Ministry of Health, and academic partners in the U.S., the U.K., and the West African College of Surgeons. As of July 2017, according to Frank W. J. Anderson, MD, MPH, a co-author of this article, the program has graduated 246 certified OB/GYNs, 238 of whom have remained in Ghana, providing clinical services, academic leadership, and contributing to governmental policymaking. Those physicians choosing faculty positions are conducting high-quality basic science and clinical research, and many are working in rural district hospitals, opening new facilities, and leading OB/GYN departments in four new medical schools in Ghana. Subspecialty training in maternal-fetal medicine (MFM), gynecologic oncology, urogynecology, and reproductive health is now available.

This model of academic partnership is being replicated in Ghana in other specialties, including emergency medicine, family medicine, and otolaryngology, as well as in nonclinical departments. Notably, the “Charter for Collaboration” was created as part of the program implementation plan by partners in the U.S. and Ghana to foster an open dialogue on how to optimize the partnership. A concerted effort was made to ensure the priorities and concerns of both partners were integrated into the project’s development and implementation. A series of guiding principles were articulated by the group and featured in the charter, including trust, mutual respect, accountability, leadership, transparency, inclusion, communication, and sustainability. Now, the charter serves the function as a guideline for new collaborative projects.

The Ghana experience in training OB/GYNs and developing a model for partnerships provides a road map for numerous OB/GYN departments. At least four new OB/GYN partnerships have emerged and are actively training new OB/GYNs and other specialists.

The 1000+ OBGYNs Project is another collaborative effort, led by the department of OB/GYN at the University of Michigan, Ann Arbor, comprising a network of U.S. and African academic OB/GYN
The project was created after two global meetings of OB/GYN leadership in Rome, Italy, in 2012 and in Accra, Ghana, in 2014 and is poised to train more than 1,000 new OB/GYNs in the sub-Saharan region over the next decade. At these meetings, 10 critical components of OB/GYN training were identified to provide a base from which to replicate these partnerships (Figure 1, this page). The educational programs will be supported by lectures, videos, textbooks, and curricula provided without cost. Online materials, together with the Global Library of Women’s Medicine, provide hundreds of OB/GYNs in sub-Saharan Africa with access to quality standardized material on the most prevalent issues in the region, as well as content related to general OB/GYN care, family planning, and cancer screening.

The Academic Model Providing Access to Healthcare (AMPATH) is an academic medical partnership between North American academic health centers and Moi University School of Medicine, Eldoret, Kenya. The partnership was initially focused on the department of internal medicine and progressed into a holistic HIV treatment program. A decade ago, the partnership expanded to include the University of Toronto, ON; Indiana University, Indianapolis; and Moi University to build capacity in OB/GYN. AMPATH leverages the tripartite academic mission of clinical care, research, and education. The focus has been prevention of maternal mortality and prevention and treatment of gynecologic malignancies. AMPATH has instituted numerous hospital-based training and protocol initiatives and has started a two-year training program in gynecologic oncology in Kenya. The program’s success has led to its expansion to a similar two-year in-country MFM fellowship in 2018.

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<th>Critical components of comprehensive OB/GYN training, as identified during Rome (2010) and Accra (2014) meetings of the 1000+ OBGYNs Project partners</th>
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<td>Authentic partnership</td>
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<td>Infrastructure</td>
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<td>Certification/professional society engagement</td>
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**FIGURE 1. 10 CRITICAL COMPONENTS OF COMPREHENSIVE OB/GYN TRAINING PROGRAMS**
The Human Resources for Health (HRH) program in Rwanda resulted from the Ministry of Health’s (MOH) vision to strengthen and sustain a specialized health workforce. With the help of the Clinton Health Access Initiative, an academic consortium was formed by U.S. universities, medical centers, and schools of nursing, dentistry, and public health to develop a seven-year partnership for sustained collaboration and the establishment of new medical residency programs. Since 2012, the program has deployed nearly 100 U.S. faculty members to Rwanda annually to partner with local faculty in clinical and academic teaching. A total of 19 OB/GYNs have participated in this program, including 11 MFM specialists who have provided training in high-risk obstetric management, curriculum development, teaching, and testing.

Ultrasound is an essential diagnostic tool for OB/GYN. MFM specialists provide ongoing training in ultrasound diagnosis, and more than 90 percent of admitted patients at the partnership sites receive an ultrasound in the triage unit. Furthermore, the number of OB/GYN residents has increased by 45 percent in Rwanda, and quality improvement measures, such as guidelines development and maternal mortality conferences, have been initiated. The partnerships facilitate research capacity, clinical teaching, and the development of Rwandan specialists to address the specialized health care workforce shortage.

Professional society partnerships
After completion of residency training, physicians need ongoing medical education and access to professional associations to maintain their knowledge base and provide quality care, sustain the specialty, and inform policy development. Unlike high-income countries (HICs) where these institutions and their infrastructure exist, many LMICs have yet to create their own national societies, or have young and nascent programs.

The effort to build workforce capacity is best achieved starting at the education level, then continuing through participation in lifelong learning opportunities. Certification programs lead to the creation of an objectively assessed professional status, which is critical for public confidence. Ongoing maintenance of certification allows for peer learning and participation in continuing education while in practice. The content of the training must be informed by the local context, academic curriculum, and professional associations and defined by best clinical evidence.

A process for certification of specialists in OB/GYN is in development in Ethiopia. In 2005, a new health care strategic plan was created to increase the number of trained medical physicians annually from 120 to 3,000, and the national government increased the number of OB/GYN residency programs from three to 12. The Ethiopian Society of Obstetricians and Gynecologists (ESOG) was well-suited to define the quality of medical training and standards for providers. Together with consultation from the American College of Obstetricians and Gynecologists (ACOG) and with endorsement from the MOH, ESOG launched a national harmonized residency curriculum in July 2017. The project has ambitious goals to expand collaboration between universities in the areas of education, research, and service, not only focusing on technical capabilities and quality assurance, but also on leadership, social accountability, and advocacy. The curriculum development resulted from the ESOG-ACOG partnership, a supportive government, and collaboration between experts and residency program directors. This model has been successful, and other national associations are considering replicating it.

Similarly, the Federation of Central American Associations and Societies of Obstetrics and Gynecology (FECASOG) and ACOG partnered in 2003 to strengthen residency training in Central America. The Comité de Acreditación FECASOG-ACOG (CAFA) created a residency accreditation committee and an
in-service examination for residents and a certification exam for graduates, allowing them to become fellows. ACOG fellows assisted the programs seeking accreditation, facilitating and mentoring local leaders to institutionalize regular quality assurance measures. Residency programs received feedback and accreditation. An annual examination process was developed for administration to OB/GYNs in six countries across Central America. CAFA examinees receive a detailed report on their performance relative to peers nationally and internationally, and CAFA members get an in-depth review and track performance at the individual, program, and national level over time.

Professional societies have great potential to play a significant role in promoting national policies, establishing national standards, developing quality assurance and outcome measures, and monitoring health care indicators. Professional associations are well-positioned to influence national policy and advocate for prioritization of improved health services and strengthening of surgical systems. The ability of professional societies to assume this leadership role relies on their overall organizational capacity, their ability to identify gaps and solutions, and the ongoing development of a vibrant professional cadre. OB/GYN societies have recognized the need for comprehensive education that includes nontechnical skills. Leveraging the experience of mature OB/GYN associations, partnerships between established and newer professional societies promote credibility with policymakers and facilitate advocacy for comprehensive training, thereby expanding the role of physicians as drivers of change.

Quite often, physicians without training or experience find themselves in leadership roles that use these skill sets. Training future specialists in the importance of nontechnical skills and teamwork among surgery, obstetrics, and anesthesia is key in the provision of safe surgery. Professional OB/GYN societies are able to assume a leadership role in the development of these skills for practicing physicians and those in training.

A substantial proportion of intraoperative adverse events are due to surgeons’ poor behavior and a lack of communication. An example of an association actively enhancing communication skills is the Society of Obstetricians and Gynaecologists of Canada, which has long been involved in organizational capacity development through the International Federation of Gynecology and Obstetrics’ (FIGO) Leadership in Obstetrics and Gynecology for Impact and Change (LOGIC) program. The LOGIC program has developed a toolkit for professional associations to strengthen capacity or institute organizational change. The toolkit focuses on the areas of culture, organizational capacity, performance, external relations, and function.

OB/GYN societies have recognized the need for comprehensive education inclusive of advocacy. FIGO is the international coordinator of many global OB/GYN professional development projects. FIGO’s strategy to achieve SDG 5 on gender equality and empowerment of women involves an advocacy and education strategy to eliminate gender violence and ensure universal access to sexual and reproductive health. Advocacy actions prompt policymakers and regulators to further the recognition, promotion, and protection of girls’ and women’s human rights.

In addition, an essential component of women’s health advocacy is education of women to take ownership of their health, and education of professionals to integrate a human rights framework into projects and policies. As part of the training, regular workshops take place in several countries to raise awareness on providing human rights-based health care assistance to women. Furthermore, FIGO is in the process of publishing a handbook titled *Women’s Health and Human Rights: Mapping Possible Contributions to the United Nations Selected Bodies for More Conductive Legislation, Regulations and Policies at Country Levels*.

Standardization of surgical methods is essential for comparison of surgical outcomes and meta-analysis. To address the need for evidence-based and standardized procedures, FIGO initiated the All-African
Surgical Database project focusing on C-section, hysterectomy, and basic endoscopy. FIGO partnered with the New European Surgical Academy (NESA) and the International Society for Gynecologic Endoscopy to standardize and transfer evidence-based surgical knowledge to LMICs. The Université Cheikh Anta Diop, Dakar, Senegal, provides the platform for training, which includes lectures, workshops, and live operations. Furthermore, NESA and the Institute of Numerical Mathematics in Russia have partnered to establish a standardization of surgical methods with a detailed collection of surgical steps that allow for comparison between different surgeons and institutions. The All-African Surgical Database project is the first of this type, and its model can be applied to different disciplines and localities with high potential to measure and improve surgical outcomes worldwide.

Other professional clinical and certifying organizations have been critical in expanding clinical and research expertise across the globe. The Royal College of Obstetricians provides extensive clinical and certification support, as outlined in its strategy document. The Association of Professors in Gynecology and Obstetrics, through its global health committee, contributes faculty development resources, scholarships, and educational materials for the international OB/GYN community. The Council on Resident Education in Obstetrics and Gynecology offers scholarships for the residency director program "school," whereas the Society for Maternal and Fetal Medicine has created capacity-building fellowships through its global health committee, which seeks to improve outcomes for pregnant women in resource-limited areas of the world. The International Urogynecological Association has extended its mission to assist in training OB/GYNs and others in pelvic surgery and fistula repair.

Bringing obstetrical, anesthetic, and surgical capacity together
Efforts to reduce maternal and neonatal mortality have traditionally been a central part of the global health agenda as reflected by the MDG and SDG frameworks. Consequently, most LMICs have
integrated initiatives to reduce maternal mortality into core elements of national strategic health plans. These programs have succeeded to the extent to which emergency care, capacity building of community health workers and midwives, and decentralization of services to increase facility-based deliveries can be effective. However, universal access to comprehensive, modern obstetrics and essential and emergency surgery by qualified specialists and anesthesia is still lacking. The LCoGS proposed a framework to assist countries in creating national surgical, obstetrical, and anesthetic plans (NSOAP) which, when implemented, would comprehensively address the need for universal, safe, and affordable surgery, anesthesia, and obstetrical services. The NSOAP originally set forth five domains for improvement of access and quality: service delivery, infrastructure, workforce, information management, and financing. A sixth domain, governance, has subsequently been recommended (see Figure 2, page 55). Leveraging the success around programs to reduce maternal and neonatal mortality, to expand obstetric, anesthesia, and surgical capacity is key to improving health outcomes.

Monitoring and evaluation through a common set of health indicators, with a consistent method of data collection is another key area of collaboration between the maternal health and the surgical communities. One LCoGS indicator focuses on tracking surgical volume, with a target of 5,000 surgical procedures per 100,000 population by 2030. Data on C-section volumes are widely collected, and these reporting systems could be expanded to report more broadly on other surgical procedures.

Another indicator of a strong surgical system is tracking of perioperative mortality. Countries have been reporting maternal mortality ratio for several years, and, as a result, many have started systems for quality improvement review around mortality cases. These review and reporting systems could go beyond obstetrics and expand to cover perioperative mortality from all surgical procedures. By leveraging existing structures, surgery and anesthesia can leapfrog many

<table>
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<th>TABLE 1. KEY LESSONS LEARNED IN OB/GYN TO BUILD GLOBAL CAPACITY</th>
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<tr>
<td>• Academic institutions and hospital-based training programs: Engage in long-term multidisciplinary partnerships with LMIC institutions to build clinical, research, and leadership capacity to create a sustainable workforce</td>
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<tr>
<td>• Global researchers: Ensure long-term research projects are driven by local needs and experts while supporting the development of research training among clinicians</td>
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<td>• Professional societies: Create global networks to strengthen residency program certification, accreditation, and continuing medical education</td>
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<td>• Clinical professional organizations: Facilitate and share resources to standardize clinical care and training</td>
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<tr>
<td>• MOH: National surgical, obstetric, and anesthesia plans offer platforms for interdisciplinary collaborations at the national level to strengthen universal access to care</td>
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<tr>
<td>• Collection and reporting of the surgical indicators recommended by the LCoGS will require the collective efforts of the surgery, anesthesia, and OB/GYN communities to measure progress and achievement of the 2030 targets</td>
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Monitoring and evaluation through a common set of health indicators, with a consistent method of data collection is another key area of collaboration between the maternal health and the surgical communities.

years of slow and costly institutional reform by learning from the advances achieved by the maternal health community.

Another key area of synergy between NSOAP and maternal health planning is the sharing of infrastructure and workforce resources. Most maternal health plans dedicate resources to decentralization of comprehensive emergency obstetric and newborn care (CEMONC) services to ensure the provision of C-sections at the district- or health-center level. This endeavor will require significant investment in functional and well-equipped operating theaters, as well as qualified personnel. For example, Tanzania’s national health strategy includes upgrading all district hospitals and 50 percent of the health centers to provide CEMONC. This move has resulted in significant upgrading or construction of operating rooms to provide C-sections. The incremental infrastructure required to convert a CEMONC-ready facility to one that provides all other emergency and essential surgical procedures expected at the district level is minimal. The expansion of surgical services should be tied to expansion in the workforce of qualified anesthesia and surgery providers.

Zambia has been a leader in NSOAP. Facing a workforce shortage, weak infrastructure, and poor referral systems that resulted in high mortality, morbidity, and financial catastrophe for patients led the MOH to prioritize access to surgery as an essential component of universal health care. In May 2017, the Zambian MOH drafted, budgeted, and signed the world’s first NSOAP to be integrated into Zambia’s National Health Strategic Plan. By coordinating and leveraging existing momentum around maternal and neonatal health, surgery and anesthesia can accelerate progress in implementing NSOAP, with the overarching goal of decreasing the global burden of disease preventable with timely accessible surgery.

REFERENCES


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REFERENCES, CONTINUED


Conclusion

Improving health for all requires expansion of public health interventions to include obstetrics, surgery, and anesthesia. Consequently, a professional class of surgeons, OB/GYNs, and anesthesiologists will need to define and maintain quality standards, provide leadership and supervision, and promote growth of their medical fields. To achieve these outcomes, strong university and hospital-based training programs must exist in every country. In many LMICs, the ability to train, certify, and maintain the programs, institutions, and infrastructure that define surgical professions is weak and cannot be initiated again without significant inputs from experienced academic and professional society partners. Leaders in OB/GYN, surgery, and anesthesia who participate in functioning departments and supportive policy environments have a unique opportunity to share their expertise for replication in LMICs.

Established departments anywhere in the world can initiate a process for mutually beneficial partnerships to strengthen research, service, and education. Success in these partnerships has been demonstrated by OB/GYN in Ghana, Ethiopia, and Kenya, among other locations, and serves as a template for any specialty to work in global health. Creating the appropriate context for academic partnerships is a critical first step in sharing expertise across the world. A long-term capacity-building context also is critical. When authentic partnerships are created, the goals, barriers, and opportunities must be clearly defined. The examples described previously did not include short-term clinical interventions, surgical camps, or one-week training workshops. The sustainably successful interventions are those that lead to benefits for faculty and students on both sides. In this context, efforts to improve research, education, and service can all occur within the overall goal

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of long-term capacity building, professional and leadership development, and measurably improved clinical outcomes.

As the number of professionals increases, certification and ongoing continuing medical education are critical components that must be strengthened or, in many cases, created for each country. Professional associations ensure their members meet high professional and ethical standards while promoting collegiality, mentoring, and lifelong learning. Creating professional association partnerships in surgery, anesthesia, and OB/GYN to achieve this goal must be initiated in tandem with academic partnerships. By creating partnerships between strong, long-standing professional associations in HICs with nascent societies in LMICs, the sustainable infrastructure for creating quality, consistent, and properly staffed surgical, obstetrical, and anesthesia services can be developed.

This article discusses only some of the initiatives the global OB/GYN community has led to build long-term and sustainable capacity around the world (see Table 1, page 56). By developing residency programs, strengthening professional societies, and creating certification programs, the field of OB/GYN is growing and mentoring leaders in research, clinical care, training, and policy development. The lessons learned from these endeavors can be applied to all surgical specialties and anesthesia. Furthermore, the opportunity to leverage ongoing national efforts in maternal health with NSOAP is compelling. As public health interventions are expanded to include global surgery, anesthesia, and modern, comprehensive obstetrics and gynecology, these disciplines must support each other and partner to achieve the SDGs and the global goal of strengthening universal health coverage.

REFERENCES, CONTINUED

The West African College of Surgeons (WACS) started as an association in 1960, with a membership of 25 surgeons.* According to Ajayi and co-authors in Knife in Hand: History of the West African College of Surgeons, the end of World War II resulted in a wave of disentanglement from colonial vestiges in Africa, Asia, and around the world.† This decolonization resulted in a need to focus on the surgical needs of these newly independent countries. It was in this environment that Victor Anomah Ngu, MD, FWACS, a 33-year-old Cameroon-born, English-trained surgeon, met an Irish surgeon, Charles Bowesman, MD, on a ship heading to Nigeria from the U.K. Both men identified the need for a forum of practicing surgeons in West Africa to exchange ideas and share experiences. Letters of invitation were sent to known individuals and Ministries of Health of all West African countries, describing the formation of the Association of Surgeons of West Africa (ASWA) and announcing the inaugural meeting on December 3, 1960, in Ibadan, Nigeria. This organization eventually transformed into a College in 1973 to address the growing demand for surgical specialists in the region, as it had become obvious that the cost of overseas training was unsustainable.

The WACS membership now consists of more than 6,000 Fellows in seven surgical specialties, from 18 countries in West Africa (see map, page 61, for a visual representation of the West Africa sub-region). The mission of the WACS is to promote postgraduate professional surgical education, disseminating surgical knowledge and technical skills toward the attainment of the highest possible standards, with the overall goal of protecting the health of the peoples of West Africa, through cooperation among member countries.

The WACS now has more than 220 accredited surgical training programs in 120 institutions, and between 4,000 and 5,000 trainees sit for examinations annually. In 2017, the WACS examined the first post-fellows in trauma care within the faculty of surgery.
**The WACS mission**
The main objectives of the WACS include the following:

- The promotion, organization, and conduct of postgraduate education, training, and certification in surgery, related disciplines, and specialties in West Africa.

- Cooperation with appropriate national and international bodies worldwide with aims and objectives likely to promote, assist, develop, and advance the interests of the WACS.

Although the mission of the WACS is broad, the core has always been training skilled surgical specialists to provide surgical services to the population of member countries. In its 57 years of existence, the WACS has made significant strides in achieving its objectives, including middle-level workforce training, endowment funding, and professional development.

**Middle-level workforce training**
In response to the immense need for surgical services, the WACS in the late 1980s introduced diplomate programs in anesthesia, ophthalmology, and otorhinolaryngology. Approximately 1,000 physicians have been trained so far under this model.

Today, the WACS has introduced the membership program as an exit platform to serve workforce needs of the sub-region and fast-track capacity building. There is a mandatory supervised rural surgery posting for membership level trainees, intended to scale up rural surgical services and improve trainee retention in the rural district and rural hospitals that serve the bulk of the population in West Africa.

**Endowment funds**
Introduced in 1990, the endowment fund program was designed to help meet the needs of local surgical training programs for the enhancement of surgical practice for community health care facilities (district and general hospitals) in member countries. All member countries have such funds, which are used under the direction of a board of trustees to fund locally identified relevant surgical training or programs. The endowment fund in each constituent country is relaunched each time the WACS Scientific and Annual Conference is held in that country.

**Professional development programs**
As part of its mission to update surgical knowledge and skills, the WACS organizes regional courses and workshops during the year using local, regional, and international faculty. These workshops are well-attended and some are mandatory for trainee eligibility.
to sit for examinations. These courses include the following:

• Manuscript writing workshop
• Health management and ethics course
• Research methodology course
• Basic surgical skills courses
• Basic laparoscopic and endoscopic skills training
• Advanced Trauma Operative Management course
• Disaster management course

Challenges, goals, and opportunities for collaboration

Despite significant strides, much more work is necessary to achieve the goals of the organization. Surgical workforce density is extremely low, and with a population of 300–350 million in the sub-region, West Africa is far below the minimum of 20 specialist surgeons, anesthesiologists, and obstetricians per 100,000 recommended by The Lancet Commission on Global Surgery.

In addition to these workforce shortages, rapid population expansion and frequent disease outbreaks in the sub-region increase the burden for existing health care providers and highlight the need for a larger, more robust surgical workforce. The following areas are ripe for collaboration with our international partners:

• Improve the quality of skills training by supporting more basic skills programs within existing training institutions and expanding the number of institutions with basic skills training programs
• Establish a small number of regional advanced skills acquisition centers with simulation
• Improve the efficiency of fellowship examinations using new technology and modernized testing methods
• Enhance research capacity building and attract funding for regional multi-institutional research projects
• Streamline data collection of basic surgical health indices from member countries through the West African surgical obstetrics and anaesthesia planning committee of the WACS

It is our hope that our sister colleges in North America and Europe will find value in working with the WACS to accomplish these goals.
The American College of Surgeons (ACS) was founded 105 years ago to provide opportunities for the continuing education of surgeons, rooted in a deep and effective concern for the improvement of surgical patient care and for the ethical practice of medicine in the U.S. and Canada. The ACS always has been a global organization, now with more than 80,000 members representing six continents. It is the premier surgical organization in the world—a recognized leader with respect to surgical education, with its mission to ensure access to quality surgical care and to develop trauma systems and educational programming worldwide.

This article outlines some of the College’s global engagement activities and future initiatives.

International Guest Scholarships program
For half a century, the International Guest Scholarships have provided young surgeons from around the globe with opportunities to visit clinical, teaching, and research facilities in North America with the goal of enhancing the scholars’ patient care and research practices when they return to their respective countries. The scholarships, in the amount of $10,000 each, also provide scholars with the opportunity to participate in the annual ACS Clinical Congress and to observe and participate in clinical, teaching, and research activities in the U.S. and Canada. Over the years, approximately 326 surgeons from 70 countries have received this scholarship and have benefited from this program.

Other scholarships for international surgeons
The ACS offers a variety of scholarships for surgeons outside of the U.S. and Canada. Examples are as follows:

• ACS/AAST International Scholarship: This scholarship is awarded to surgeons in acute care surgery, trauma, and emergency general surgery in countries other than the U.S. and Canada to improve the quality of acute care surgical services. Preference is given to applicants from developing nations. The scholarship, in the amount of $5,000, provides scholars with an opportunity to attend the annual meeting of the American Association for the Surgery of Trauma (AAST) and to visit one or two Level I trauma centers and/or the Trauma Quality Improvement Program (TQIP®) at the College’s headquarters in Chicago, IL, to learn about the standards for a trauma program/database and the importance of multidisciplinary acute care surgery.

• ACS/ASBrS International Scholarship: This scholarship is awarded to breast cancer surgeons in countries other than the U.S. and Canada to improve the quality of breast cancer surgical services. Preference is given to applicants from developing countries. The scholarship,
in the amount of $5,000, provides the scholars with an opportunity to attend the annual meeting of the American Society of Breast Surgeons (ASBrS) and to visit the National Accreditation Program for Breast Centers headquarters in Chicago, IL, to learn about the standards for a breast cancer program/database and the importance of multidisciplinary breast cancer care.

- **Community Surgeons Travel Awards:** The ACS International Relations Committee provides travel awards for surgeons ages 30 to 50. This award supports community surgeons in countries outside the U.S. and Canada to attend and participate fully in the educational activities at the ACS Clinical Congress.

- **International ACS NSQIP Scholarships:** The College’s National Surgical Quality Improvement Program® (ACS NSQIP®) and the International Relations Committee offer International ACS NSQIP Scholarships for two surgeons from countries other than the U.S. or Canada who demonstrate strong interest in surgical quality improvement.

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**Further educational opportunities for international surgeons**

The ACS Division of Education and the International Relations Committee provide two international scholarships focused on surgical education. These awards are for young faculty members from countries other than the U.S. and Canada and provide opportunities for these individuals to participate in a variety of educational opportunities for faculty development and enhancement that will result in the acquisition of new knowledge and skills in surgical education and training.

The Advanced Trauma Life Support® (ATLS®) program is designed to teach a systematic and reliable approach to the care of trauma patients. With leadership from the ACS Committee on Trauma, ATLS was first widely introduced in the U.S. and abroad in 1980. Since its inception, ATLS for health care professionals has spread to more than 60 countries. The MyATLS app, a mobile electronic platform, has been downloaded in more than 170 countries.

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**Operation Giving Back**

Operation Giving Back (OGB) is the volunteer arm of the ACS. OGB grew out of an interest in surgical volunteerism expressed both by the ACS Board of Governors Committee on Socioeconomic Issues and by the membership-at-large as represented in a study spanning from 2001 to 2003. OGB was established in 2004 with the mission to “leverage the passion, skills, and humanitarian ethos of the surgical community to effectively meet the needs of the medically underserved.” The organization’s objective is to serve as a comprehensive resource center for surgeons at any level of training who want to participate in volunteer activities, encouraging the formation of a cohesive community of volunteers.

The web-based OGB resource center matches fellow surgical volunteers of the ACS with opportunities to provide patient care and teaching in low-resource communities. Over the years, thousands of volunteers have been placed to provide much-needed care to underserved populations. One of the activities of OGB is to support peer-initiated selection of the recipients of the ACS/Pfizer Surgical Humanitarian and Volunteerism Awards each year.

To underscore the need for global surgical system improvement, the World Health Organization (WHO) passed the World Health Assembly Resolution 68.15 in May 2015. The resolution, which includes surgery as an essential component of universal health care, was accepted and signed by all participating countries with the understanding that more than 5 billion people lack access to basic surgical care and that the major deficit is a shortage of surgical workforce. Following a retreat on global engagement in 2016, the ACS Board of Regents (the highest governing body of the College) provided strategic direction for the ACS leadership to engage
directly in the training of surgical workforce in low- and middle-income countries (LMICs). ACS OGB, in addition to improving existing services, is actively working to develop programs to implement this strategic direction. Developing partnerships with surgical colleges and societies in LMICs based on mutual benefits and shared goals is our guiding principle. ACS Fellows have been engaged in volunteerism across sub-Saharan Africa. OGB and the College of Surgeons of East, Central and Southern Africa (COSECSA) have developed working relationships based on local priorities, including the following:

• The ACS-COSECSA Women Scholars program promotes and encourages women to join the surgical workforce (see photos, this page).

• The ACS Surgeons as Leaders: From Operating Room to Boardroom Course is a recognized national program. COSECSA leaders have attended this training.
program with the intention of recreating a contextually relevant leadership course for COSECSA.

- The OGB has supported the COSECSA fellowship examination process by recruiting ACS Fellows to serve as external examiners (see photo, this page).

- The *East and Central African Journal of Surgery* is developing a twinning partnership with the *Journal of the American College of Surgeons* to improve its standing in quality as reflected in impact factor and PubMed indexing.

- A proposed partnership between COSECSA; the ACS; U.S. Consortium of Academic Global Surgery Programs, in development at present; and a COSECSA-accredited training program in Hawassa, Ethiopia, would develop a surgical training center of excellence. The goal is for this site to serve as a training hub with local and regional impact that will encourage improved innovation, clinical research, and patient care. The pilot project for this initiative will be implemented by fall 2018.

As we celebrate the passage of the third anniversary of the WHA Resolution 68.15, the ACS will continue to engage in the implementation of the global surgery agenda. To this end, the College looks forward to working closely with WHO and the office of the Global Initiative for Emergency and Essential Surgical Care. ♦

### REFERENCES
