



FROM POLICY TO PRACTICE

EXPANDING AFRICA'S MULTIDISCIPLINARY
SURGICAL WORKFORCE

ADDIS ABABA, ETHIOPIA
5-7 NOVEMBER 2025



PASHeF

PAN-AFRICAN SURGICAL
HEALTHCARE FORUM

CASE STUDY COMPENDIUM



ጤና ሚኒስቴር - ኢትዮጵያ
MINISTRY OF HEALTH - ETHIOPIA



UNIVERSITY OF
Global Health
EQUITY



SmileTrain



Mercy
Ships



የኢትዮጵያ

COMPENDIUM OF EXEMPLAR SURGICAL WORKFORCE DEVELOPMENT EFFORTS ACROSS AFRICA

The surgical workforce is a crucial building block of the surgical health system. From the foundations of an indigenous and then a colonial history of surgical healthcare workforce training, Africa envisions a future of innovative solutions to continental healthcare workforce challenges. The African Union Agenda 2063: The Africa We Want, as Africa's blueprint and Master plan for a resilient future, in line with the Pan African Surgical Healthcare Forum Consensus and Roadmap, suggests that innovative investment in the health workforce will be necessary to reduce death and disability, improve access to care, and ensure health systems strengthening for universal health coverage.

This compendium shares innovations in training and education of surgical providers, partnerships for education, retention strategies, surgical team optimization, and large-scale regional initiatives from which African member states can cross-pollinate knowledge and practice.

Curated by emerging African Global Surgery leaders, these exemplars highlight best practices, transferable strategies, limitations, and challenges that are helpful for countries hoping to adopt or adapt these strategies. They are fodder for further discussion at the Pan-African Surgical Healthcare Forum.

Barnabas Alayande,

*Secretary General, Pan-African Surgical Healthcare Forum
Co-Chair, Centre for Equity in Global Surgery, UGHE*

Pierrette Ngutete Mukundwa,

Lecturer, MSc in Global Health Delivery, Global Surgery option, Centre for Equity in Global Surgery, UGHE

Naol Belema Gemechu,

PASHeF Secretariat Coordinator

REGIONAL EFFORTS AND REGIONAL TRAINING INSTITUTIONS

The College of Surgeons of East Central and Southern Africa

The College of Surgeons in East, Central, and Southern Africa (COSECSA) is a key surgical training institution in Sub-Saharan Africa, spanning 14 member countries including Botswana, Burundi, Ethiopia, Kenya, Malawi, Mozambique, Namibia, Rwanda, South Sudan, Sudan, Tanzania, Uganda, Zambia, and Zimbabwe. It collaborates with 10 partner countries: Angola, Cameroon, the Democratic Republic of Congo, Eswatini, Gabon, Lesotho, Madagascar, Niger, Somaliland, and Togo (Figure 1). COSECSA offers two key qualifications: the Membership Programme (MCS) and the Fellowship Programme (FCS).

Case Report / Best Practice

COSECSA has made a significant regional impact by establishing one of the largest surgical training networks in East, Central, and Southern Africa. To date, it has trained 1,048 surgeons and currently has 1,388 trainees. Notably, 92% of graduates remain in their country of training, demonstrating the success of its local training model in increasing retention, narrowing the surgical care gap, and reinforcing national health systems. COSECSA also encourages gender equity through initiatives such as Women in Surgery Africa (WiSA), designed to inspire and support more women to pursue surgical careers through mentorship and peer support. Among its graduates, 215 are women, and 24% of current trainees are female. Graduates are recognised in 20 African countries.

Transferable Strategies / Lessons Learned

COSECSA's model demonstrates how regional collaboration and standardized training frameworks can help countries retain skilled surgeons locally, strengthen surgical capacity, and promote sustainability without relying solely on overseas training. Its in-country training model keeps practitioners embedded within their national health systems, reinforcing contextual learning and workforce retention. Additionally, gender-focused initiatives like WiSA offer a replicable approach to increasing women's participation in surgery through structured mentorship and targeted support. These strategies can be adapted by other regions seeking to expand equitable and locally relevant surgical training.

Limitations and challenges

A key limitation of the COSECSA model is that its qualifications are not universally recognized across all African countries or outside the region, which can restrict graduates' mobility and career advancement. Expanding regional and international recognition of COSECSA credentials, while maintaining rigorous training standards, would enhance its impact and professional opportunities for graduates.

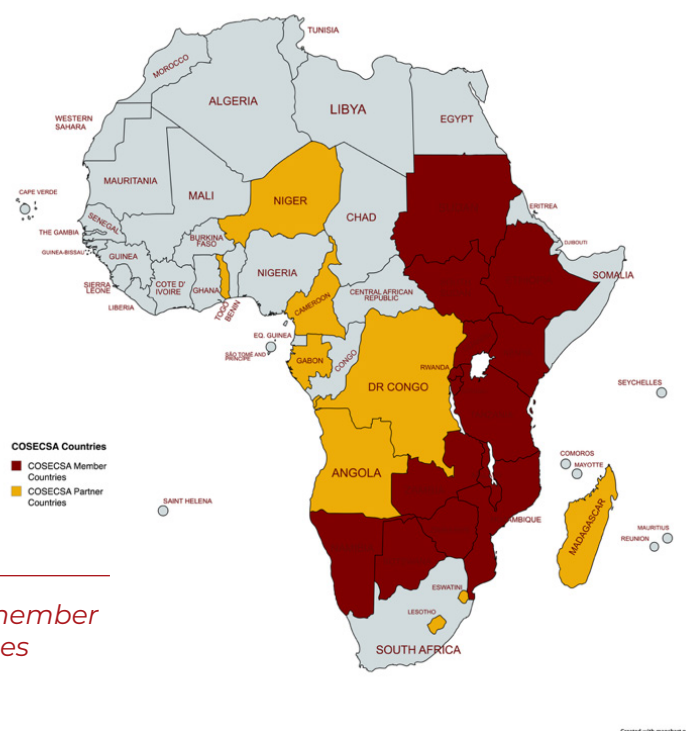


Figure 1: COSECSA member and training countries

References

1. College of Surgeons of East, Central and Southern Africa (COSECSA). (n.d.). COSECSA: College of Surgeons of East, Central and Southern Africa. Retrieved from <https://www.cosecsa.org/>
2. Osei-Kuffour, D., Banda, C. H., Campion, A., Gerba, L. B., Mutambanengwe, P., Nkoronko, M., Mwachiro, M., Aruparayil, N., Niyukuri, A., Philipo, G. S., Nally, D., Mangaoang, D., Borgstein, E., & Bekele, A. (2024). The evolution of the specialist surgeon workforce in East, Central and Southern Africa. *BMJ Open*, 14(8), e091032. <https://pmc.ncbi.nlm.nih.gov/articles/PMC11994144/>
3. Bekele, A., Alayande, B. T., Iradukunda, J., Minja, C., Forbes, C., Bachheta, N., Gulilat, D., Munthali, J., Muguti, G., Riviello, R. R., Geraghty, J., O'Flynn, E., Fualal, J. O., Chikoya, L., Mwachiro, M., & Borgstein, E. (2024). A cross-sectional survey on surgeon retention in the COSECSA region after specialist training: Have things changed? *World Journal of Surgery*, 48(4), 829-842. <https://doi.org/10.1002/wjs.12069>

West African College of Surgeons

The West African College of Surgeons (WACS) is a professional organization founded in 1960 that promotes postgraduate education, training, and research in surgical specialties. Based in Lagos, Nigeria, it serves numerous member countries in West Africa and beyond, including Anglophone nations like Nigeria, Ghana, Sierra Leone, Liberia, and The Gambia, and Francophone states such as Benin, Burkina Faso, Côte d'Ivoire, Guinea, Mali, Niger, Senegal, and Togo (Figure 2). Through its seven specialized faculties (Surgery, Dentistry, Obstetrics & Gynaecology, Ophthalmology, Otorhinolaryngology, Radiology and Anaesthesiology), the WACS awards two main qualifications: the Membership, granted after completing the Part 1 examination, and the prestigious Fellowship, the highest certification awarded to surgeons who have successfully completed the full training program and Part 2 examinations in their chosen specialty. Since the inception of its fellowship examination in 1983, more than 3000 fellows have been certified.

Case Report / Best Practice

The West African College of Surgeons (WACS) employs several innovative strategies to train and retain its students, effectively navigating the geographical and resource limitations prevalent in the region. WACS actively harmonizes surgical training across West Africa, particularly by bridging the gap between Anglophone and Francophone countries. In collaboration with the West African Health Organization (WAHO), WACS is working to unify different postgraduate training models onto a common platform. This effort standardizes surgical education, ensuring consistency and guaranteeing quality across the sub-region.

To modernize its approach, WACS leverages technology and contemporary teaching methods through blended and virtual learning. For instance, the college adopted a blended learning model for its Integrated Revision Courses in Clinical Surgery, especially during and after the COVID-19 pandemic. Didactic lectures, computer-based testing (CBT), and dissertation discussions are delivered virtually via an interactive website, while hands-on clinical and Objective Structured Clinical Examination (OSCE) sessions are conducted at multiple regional centres. A survey of 186 surgery residents who attended the blended course revealed a mean overall rating of 4.92 (on a 5-point scale), showing a positive reception. However, poor internet connectivity was a notable challenge for 102 out of the 186 respondents (54.8%).

Further innovation is seen through WACS's Partnership for surgical training modules with the Surgical Education Leaders Forum (SELF). These modules are being developed to be accessible and self-paced, focusing on practical, essential procedural skills. This initiative aims to build competence among

trainees and early-career surgeons, improve patient outcomes, and streamline the certification process within the WACS framework.

In response to the significant shortage of specialist surgeons, WACS also utilizes task shifting and mid-level personnel training. The Membership certification allows trainees to practice in secondary healthcare facilities after three years of training. This addresses urgent surgical needs in rural areas.

Transferable Strategies / Lessons Learned

The WACS model provides a replicable framework for strengthening regional surgical training and workforce retention. Its success is anchored in harmonized curricula and certification systems, which promote regional mobility and ensure consistent surgical competencies across West Africa. The College's use of technology-enabled training offers flexible and cost-effective learning opportunities suited to resource-limited contexts. Additionally, tiered certification pathways allow mid-level surgeons to address urgent surgical needs in rural areas while advancing toward higher specialization. Finally, collaborative partnerships, notably with the West African Health Organization and the Surgical Education Leaders Forum (SELF), enhance quality assurance and drive innovation in surgical education and training delivery.

Limitations and challenges

Recognition of WACS credentials outside the Economic Community of West African States region remains limited, affecting international mobility and specialist advancement. The effectiveness of virtual and blended learning is hindered by poor internet connectivity and unstable electricity, while weak ICT infrastructure disrupts online training. Additionally, low remuneration and limited welfare support reduce trainee morale and contribute to attrition.



Figure 2: WACS member countries

Created with mapchart.net

References

1. West African College of Surgeons. (n.d.). Home. <https://www.wacsoac.org/>
 2. Omigbodun, A. O. (2011). The membership certification of the West African College of Surgeons and its relevance to the needs of the West African sub-region. *Annals of Ibadan Postgraduate Medicine*, 9(1), Article 1. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4240233/>
 3. SELF. (2025). WACS training framework: Focusing on hands-on practice and simulation within the West African College of Surgeons. <https://www.self.surgery/wacs>
 4. Bode, C. O., Nwawolo, C. C., & Giwa-Osagie, O. F. (2014). West African College of Surgeons: Evolution and trends in international postgraduate surgical education in West Africa. *African Journal of Medicine and Medical Sciences*, 43(Suppl), 67–73. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4124550/>
-

The Pan-African Academy of Christian Surgeons

The Pan-African Academy of Christian Surgeons (PAACS), founded in 1996, is a non-denominational organization addressing Africa's surgical workforce shortage by integrating clinical excellence with spiritual mentorship. Operating in 21 mission hospitals across 12 African countries, PAACS offers a five-year general surgery residency along with specialized programs in orthopaedics, paediatrics, anaesthesiology, and obstetrics/gynaecology. Graduates earn a joint diploma from PAACS and Loma Linda University School of Medicine, with programs accredited by COSECSA and the College of Anaesthesiologists of East, Central, and Southern Africa, enabling eligibility for regional certification exams.

Case Report / Best Practice

The Pan-African Academy of Christian Surgeons (PAACS) employs a multifaceted approach to training and retaining surgeons in Africa, combining spiritual discipleship, high operative exposure, and a rural-focused training model. A defining feature of the program is its high surgical case volume; PAACS trainees log a median of 1,448 major cases, compared to 993 by graduates of U.S. Accreditation Council for Graduate Medical Education (ACGME) programs, ensuring strong technical competence.

Distinctively, PAACS integrates spiritual mentorship and discipleship into its curriculum, nurturing surgeons who are both clinically skilled and spiritually grounded. This integration fosters a strong sense of calling and long-term commitment to service. The program's rural-based model further supports workforce retention: 100% of graduates practice in Africa, 79% return to their home country, and over half serve in rural areas with populations under 50,000. To date, 156 PAACS graduates are serving in under-resourced regions across 23 African countries, demonstrating the program's success in building a sustainable, mission-driven surgical workforce.

Transferable Strategies / Lessons Learned

PAACS demonstrates that rural-based training, high surgical case exposure, and values-driven mentorship can effectively build and retain a skilled surgical workforce in low-resource settings. Its integration of clinical excellence with spiritual development fosters long-term commitment, while partnerships with COSECSA and CANECSA ensure regional accreditation and professional recognition, approaches that can be adapted by other training programs to strengthen retention and quality.

Limitations and challenges

The program's limited training capacity and reliance on mission hospitals constrain scalability. Dependence on external funding poses sustainability challenges, and the program's faith-based model may limit collaboration with some secular or government institutions.

References

1. Pan-African Academy of Christian Surgeons. (n.d.). Programs. <https://paacs.net/what-we-do/programs/>
 2. Van Essen C, Steffes BC, Thelander K, Akinyi B, Li HF, Tarpley MJ. Increasing and Retaining African Surgeons Working in Rural Hospitals: An Analysis of PAACS Surgeons with Twenty-Year Program Follow-Up. *World J Surg*. 2019 Jan;43(1):75-86. doi: 10.1007/s00268-018-4781-9. PMID: 30178129.
 3. Parker, R. K., Topazian, H. M., Ndegwa, W., Chesang, P., Strain, S., Thelander, K., ... & Riviello, R. (2020). Surgical training throughout Africa: A review of operative case volumes at multiple training centers. *World Journal of Surgery*. <https://doi.org/10.1007/s00268-020-05463-9>
 4. https://paacs.net/file_download/inline/b060255d-9138-4cf2-9c64-8d591fc5b09f
-

World Health Organization Regional Office for Africa (WHO/AFRO) Prototype Competency-Based Curricula

The WHO Regional Office for Africa (WHO/AFRO) is spearheading a transformative initiative to harmonize and strengthen health professions education across Africa. Launched in 2025, the project focuses on 10 key health occupations including General Surgery, Obstetrics and Gynaecology, and Nursing, by designing competency-based curricula. The initiative involves regional experts, professional associations, and academic institutions, with curricula designed to align with African health system realities and support universal health coverage (UHC).

Case Report / Best Practice

From 7-9 October 2025, 25 experts from 12 countries convened in Kintele, Republic of Congo, to validate the curricula. The process included stakeholder reviews by over 300 professionals globally. By emphasizing practical competencies alongside theoretical knowledge, the curricula address identified gaps. Needs assessment showed that health workers achieve only 60% of correct diagnoses and 35% of appropriate treatments on average. The approach integrates technical skills, professional attitudes, and values to produce health workers capable of meeting local African needs rather than relying on 'cut and paste' curricula to guide training on the continent. The upcoming November 2025 launch will provide reference models for countries to adapt and institutionalize competency-based education.

Transferable Strategies / Lessons Learned

Inclusive, evidence-based curriculum development with multi-stakeholder engagement and rigorous validation can strengthen workforce readiness. Competency-focused frameworks can be adapted across professions and countries to improve clinical quality and harmonize training standards.

Limitations and Challenges

Implementation may be constrained by limited resources, variation in national accreditation frameworks, and the need for faculty development to support competency-based teaching.

References

WHO Regional Office for Africa. (2025). Africa advances health professions education with prototype competency-based curricula. Kintele, Republic of Congo. <https://www.afro.who.int/news/who-africa-advances-health-professions-education-prototype-competency-based-curricula>

East African Region

ETHIOPIA

Emergency Surgical Officers

In Ethiopia, the Emergency Surgical Officers (ESOs) or Integrated Emergency Surgical Officers (IESOs) program was implemented as a task-shifting strategy to combat a severe shortage of surgeons and to address high rates of maternal and neonatal mortality. The program was first introduced in 2009 by the Ministry of Health and Ministry of Education as a core part of the nation's "Saving Lives through Safe Surgery" initiative. This initiative aimed to improve access to essential surgical and obstetric care, especially in rural and remote communities where specialists were not available.

Case Report / Best Practice

The IESO program is a 3.5-year master's level course for Bachelor of Science in Public Health and Bachelor of Science nurses with at least two years of clinical experience. Three years after its inception, over 720 IESOs had graduated and had been deployed to upgraded rural health centres and hospitals. IESOs are trained to handle a wide range of life-threatening surgical and obstetric emergencies. Between 2012 and 2014, IESOs performed 4,075 operations, with 63% of these being caesarean sections. They also perform other procedures, including exploratory laparotomies and appendectomies. The program has been highly effective in increasing access to surgical services, with qualitative reports indicating that IESOs made emergency surgery accessible to the majority of people. The deployment of IESOs, combined with other interventions that we put in place by the Ethiopian government, contributed to a 70% reduction in maternal deaths from childbirth complications (Figure 3). Outcomes for procedures performed by IESOs are considered comparable to those performed by physicians.

Transferable Strategies / Lessons Learned

Ethiopia's IESO program demonstrates how task-shifting can effectively address critical surgical workforce shortages in low-resource settings. By training mid-level health professionals through a structured master's program, the initiative rapidly expanded access to life-saving surgical and obstetric care, particularly in rural areas. Embedding the program within the national health and education systems ensured sustainability, while its competency-based training model maintained quality comparable to physician-led care. The program's success also highlights the value of government ownership and targeted deployment to underserved regions, strategies that can be replicated by other countries aiming to strengthen emergency and essential surgical services at the district level.

Limitations and challenges

Despite its success, the IESO program has faced some challenges. Many IESOs report limited exposure to general surgical procedures compared to obstetric cases, which narrows their clinical scope. The effectiveness of their work is also constrained by frequent shortages of surgical supplies, equipment, and infrastructure, particularly in rural facilities. Heavy workloads, limited opportunities for continuous professional development, and unclear career progression pathways further affect motivation and long-term retention. Additionally, inconsistent professional recognition within the health system has contributed to feelings of undervaluation among IESOs.

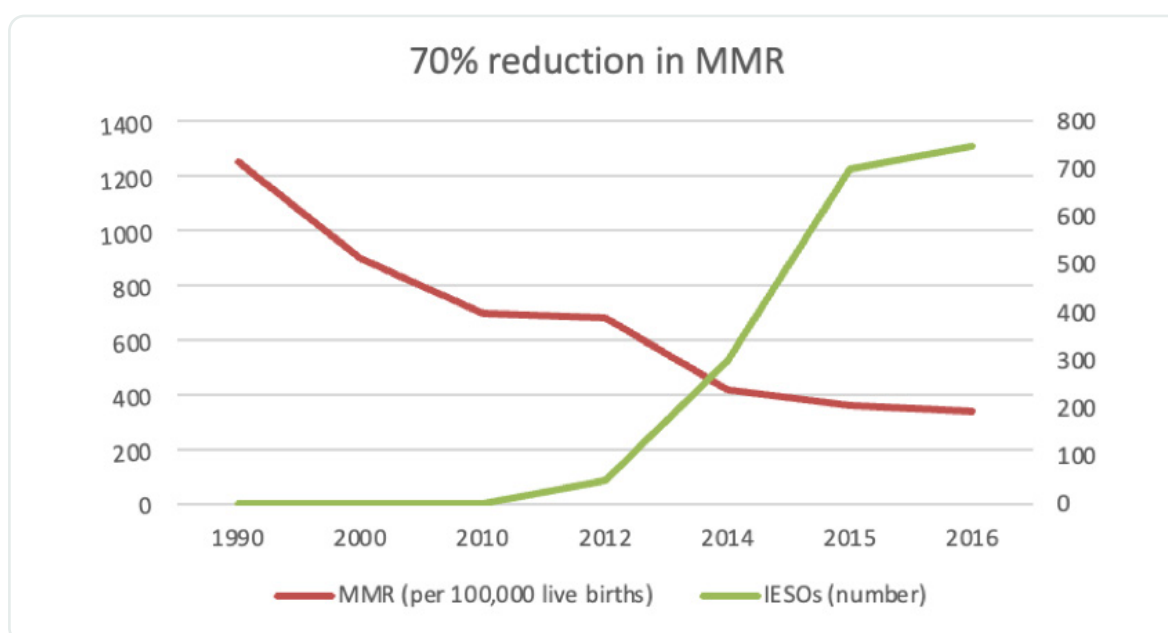


Figure 3: Association between IESO deployment and reduction of maternal mortality rate in Ethiopia (<https://paesoe.org/>)

References

1. Physician Associate and Emergency Surgical Officer Education (PAE-SOE). (n.d.). Emergency surgical officer program overview. Retrieved from <https://paesoe.org/>
2. Gobeze, A. A., Kebede, Z., Berhan, Y., & Ghosh, B. (2017). Clinical performance of emergency surgical officers in southern Ethiopia. Human Resources for Health, 15(1), 4. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5389061/>
3. Ademe, S., Edmealem, A., Tegegne, B., & Mengesha, Z. (2023). Management outcome of intestinal obstruction done by integrated emergency surgical officers and its associated factors in selected district hospitals of South Wollo Zone, North East Ethiopia in 2019 G.C. Annals of Clinical Gastroenterology and Hepatology, 2(9), Article ACGH-AID1029. <https://www.gastrohepatoljournal.com/journals/acgh/acgh-aid1029.php>
4. Teka, H., Tequare, M. H., Alemayehu, M., Berhe, H., Haileeyesus, H. G., Tadesse, Y., Tesfay, K., Brhane, T., & Nardos, R. (2025). Successes and challenges of non-physician surgeons in the Tigray health system, Ethiopia: A life history method. Discover Health Systems, 4, Article 110. <https://doi.org/10.1007/s44250-025-00277-9>

The Plastic Surgery Innovation Hub

Ethiopia has one of the lowest surgeon-to-population ratios in Sub-Saharan Africa, with particularly large gaps in access to plastic and reconstructive surgery. To address this challenge, the country established the Plastic and Reconstructive Surgery Innovation Hub, a program designed to develop sustainable, locally led training in reconstructive surgery.

Case Report / Best Practice

The hub is hosted at ALERT Hospital in Addis Ababa and implemented through a partnership with ReSurge International and Proximie. The initiative employs a remote, technology-enabled training model that allows surgical teams to connect in real time, share expertise, and engage in peer-to-peer mentorship. Through the Proximie platform, trainees can observe and interact during live surgical procedures, enabling continuous learning beyond the limitations of physical space or geography.

This approach bridges critical gaps in surgical education by leveraging digital technology to expand access to operative experiences—particularly in settings where large trainee numbers or geographic barriers limit in-person opportunities. The hub represents an innovative model for scaling surgical training and improving the quality and reach of reconstructive care across Ethiopia.

Transferable Strategies / Lessons Learned

Technology-enabled mentorship can democratize access to surgical training and specialist knowledge, particularly in resource-limited or geographically dispersed settings. Partnerships between local institutions and global organizations (e.g., ReSurge International and Proximie) can catalyse system-wide improvements when aligned with national workforce priorities.

Limitations and challenges

Connectivity and bandwidth limitations in some regions may affect real-time engagement and learning continuity. Additionally, sustaining the cost of digital infrastructure (cameras, AR systems, maintenance) requires ongoing funding and government support. Lastly, there is a need for continued faculty development to ensure local trainers can independently lead digital mentorship and simulation-based programs.

References

1. Osebo, C., Grushka, J., Deckelbaum, D., & Razek, T. (2024). Assessing Ethiopia's surgical capacity in light of global surgery 2030 initiatives: Is there progress in the past decade? *Surgery Open Science*, 19, 70–79. <https://doi.org/10.1016/j.sopen.2024.03.015>
 2. Ibrahim, A. (2014). Sub-specialization in plastic surgery in Sub-saharan Africa: capacities, gaps and opportunities. *Pan African Medical Journal*, 19. <https://doi.org/10.11604/pamj.2014.19.13.4190>
 3. Proximie Blog | Scaling sustainable surgical training in Ethiopia. (n.d.). <https://www.proximie.com/blog/scaling-sustainable-surgical-training-in-ethiopia>
-

KENYA

Mobile Obstetric Simulation-Based Team Training (MOST)

The Mobile Obstetric Simulation-based Team Training (MOST) program was developed at AIC Kijabe Hospital to tackle preventable deaths caused by delays in care and poor team coordination. Through realistic simulations of obstetric and neonatal emergencies (Figure 4), MOST aims to reduce the time from decision to intervention. Recognizing that healthcare providers may already possess strong clinical skills, the program focuses on strengthening teamwork, communication, and shared decision-making, ensuring obstetric teams perform as cohesive, high-functioning units delivering timely, high-quality care. The training focuses on common emergencies, including postpartum haemorrhage, eclampsia, obstructed labour, anaesthesia-related complications like high spinal, and neonatal resuscitation.

Initially piloted in nine hospitals in Western Kenya, MOST has expanded to over 40 facilities in Kenya, Ethiopia, Uganda, Malawi, Tanzania, Burundi, Sudan, and Somaliland, training more than 1,000 health workers, including nurses, midwives, anaesthetists, and physicians. Participants report skill acquisition and improved confidence in managing high-stress, high-risk clinical scenarios; findings corroborated by pre- and post-test assessments.

With support from the Global Surgery Foundation (GSF), Kijabe Hospital is implementing MOST in five high-volume facilities in Kenya. Implemented over 12 months, the project will impact more than 75,000 births and 21,000 caesarean sections, aiming for a 50% reduction in CS-related complications, a 30% reduction in maternal mortality, and 90% compliance with the WHO Surgical Safety Checklist.

Transferrable Strategies / Lessons Learned

MOST demonstrates that simulation-based, team-centred training can significantly enhance clinical coordination and emergency response in maternal care. Its mobile and adaptable model allows for scalability across regions, including resource-limited settings. The program's emphasis on non-technical skills, rather than only clinical skills, offers a replicable strategy for improving patient outcomes and strengthening health system performance.

Limitations and Challenges

MOST's implementation costs, need for simulation equipment, and logistical challenges of delivering mobile training limit its scalability in some low-resource settings. Sustaining outcomes also depends on ongoing mentorship and institutional integration to prevent skill decay once training ends.

Figure 4: MOST Training at Naivasha County Hospital. Photo courtesy Phyllis Ngure.



Reference

1. OSS Nakuru | Improve surgical care today — The Global Surgery Foundation. (n.d.). The Global Surgery Foundation. Retrieved October 20, 2025, from <https://www.globalsurgeryfoundation.org/oss-nakuru>
-

RWANDA

4x4 Initiative: Quadrupling the Surgical Workforce in Minimal Time

Rwanda still falls behind on the WHO-recommended healthcare workforce density, where instead of 4.45 healthcare workers per 1000, Rwanda is at 1 per 1000 people (Ministry of Health, 2024). It is estimated that, without intervention, it would take the country 180 years to close this gap. To accelerate progress, the Ministry of Health endorsed the 4x4 Reform in 2023, an ambitious national plan to quadruple the health workforce within four years (Table 1, Figure 5). The reform outlines four key strategies: first, scaling up enrolment and improving the quality of training for health professionals in priority programs such as medical specialization, midwifery, nurse anaesthesiology, radiology, dental therapy, ophthalmology, and biomedical laboratory sciences; second, addressing faculty shortages by redeploying local experts into teaching roles and hiring visiting faculty to fill immediate needs; third, expanding and upgrading teaching facilities, including transforming ten level-two hospitals into teaching sites; and finally, strengthening coordination and monitoring through a dedicated Health Workforce Development department and inter-ministerial steering committee to ensure quality implementation and accountability (Ministry of Health, 2024).

The University of Rwanda has also introduced 13 new training programs, including Paediatric and Plastic Surgery Residencies and Gynaecologic Oncology and Maternal-Foetal Medicine Fellowships. Additionally, the newly established Africa Health Sciences University (AHSU) and UGHE's Surgical Residency Program are expanding local capacity for clinical and surgical training. In surgical care, the Ethiopia–Rwanda Residency Partnership, in collaboration with Addis Ababa University and St. Paul's Millennium Medical College, enrolled Rwanda's first cohort of 44 doctors in key specialties such as General Surgery, Oral and Maxillofacial Surgery, Anaesthesiology, Neurosurgery, Orthopaedics, Paediatric Surgery, and Thoracic Surgery. The second cohort, comprising 47 residents, has recently begun training.

Transferrable Strategies / Lessons Learned

The 4x4 Reform underscores that strategic government leadership, strong institutional partnerships, and sustainable resource investment are essential for rapidly expanding a nation's health workforce. The Rwandan example demonstrates that strengthening the health workforce in Africa requires robust and intentional measures that go beyond traditional training approaches. Coordinated efforts between ministries, universities, and international partners have proven vital in aligning training capacity with national health priorities.

Rwanda's experience also highlights the importance of balancing quantity with quality, ensuring that as training numbers grow, the infrastructure, faculty, and teaching materials keep pace.

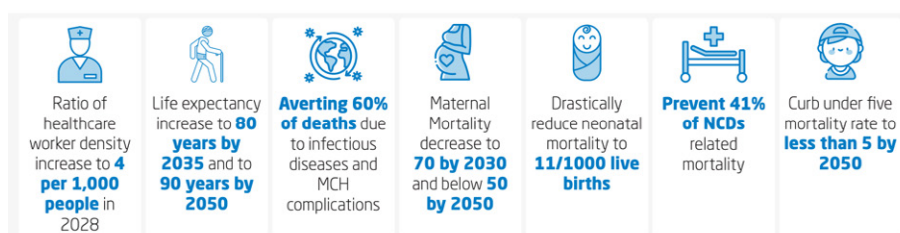
Limitations and challenges

Despite Rwanda's bold efforts to scale up its health workforce, several challenges persist. A key limitation is the shortage of qualified faculty and the limited teaching infrastructure needed to accommodate rapidly increasing student enrolment across medical and allied health programs.

Table 1: Total increased enrollment and expected graduation for aggregated healthcare cadres

Professional Cadres	Average Annual Enrollment (2020-2022)	Expected Enrollment through 4x4						Total Enrollment by 2028	Total Graduated by 2028
		2023	2024	2025	2026	2027	2028		
Residents & Fellows	72	164	208	208	208	208	208	1,204	897
General Practitioners	203	453	509	515	515	515	515	3,022	1,686
Dental Surgeons	37	60	60	60	60	60	60	360	185
Pharmacists	77	180	320	320	320	320	320	1,780	832
Nurses	648	3,541	3,701	3,712	3,712	3,712	3,712	22,090	15,770
Midwives	72	1,396	1,406	1,417	1,417	1,417	1,417	8,470	5,209
Allied Health Sciences	495	2,146	2,146	2,146	2,146	2,146	2,146	12,876	8,394
Total	1,604	7,940	8,350	8,378	8,378	8,378	8,378	49,802	32,973

Figure 5: Expected outcomes of the 4X4 reform coupled with other healthcare reforms in Rwanda



References

1. Ministry of Health. (2024). 4X4 reform: Executive summary. Republic of Rwanda, Ministry of Health. <https://www.moh.gov.rw/index.php?eID=dump-File&t=f&f=95973&token=991cc48dad7e712c7d5645533c2e06ed7fb39708>
 2. MK Scholars. (n.d.). Scholarship opportunity for international students in Ethiopia. <https://mkscholars.com/scholarship-details?scholarship-id=33&-scholarship-title=SCHOLARSHIP-OPPORTUNITY-FOR-INTERNATIONAL-STUDENTS-IN-ETHIOPIA>
 3. King Faisal Hospital Rwanda. (n.d.). Education and research. <https://kfh.rw/education-research/>
 4. Rwanda Broadcasting Agency. (n.d.). The Ministry of Health launches 13 medical training programs. <https://rbc.gov.rw/wp/the-ministry-of-health-launches-13-medical-training-programs/>
-

IRCAD Africa

The IRCAD Africa Centre of Excellence in Masaka, Rwanda, is dedicated to advancing training and research in minimally invasive medical procedures. It is the African branch of the international IRCAD France network (Figure 6). By equipping local doctors with cutting-edge technologies that remain scarce across the region, the centre aims to expand access to MIS throughout Africa. This initiative responds to the continent and Rwanda's specific health needs, guided by the prevailing burden of disease, and aligns with Rwanda's vision of becoming a regional hub for medical tourism by 2050 (IRCAD Africa).

The IRCAD initiative complements Rwanda's broader 4x4 Health Workforce Reform by training surgeons in minimally invasive surgery and, more recently, extending training to medical students and nursing staff. Through the IRCAD France network, IRCAD Africa benefits from lectures delivered to trainees, both in person and online, by over 800 experts from around the world.

Since its inauguration in October 2023, IRCAD Africa has trained approximately 369 surgeons from across Africa in various subspecialties, including general surgery, urology, skull base surgery, hernia repair, and gynaecologic surgery. The centre aims to train 1,000 surgeons within 1,000 days. In addition, 60 operating room nurses have been trained in the use of laparoscopic equipment. Recognizing the shortage of surgeons in many contexts, IRCAD Africa identified an opportunity to empower nurses who often provide critical support in operating rooms. As a result, the centre introduced specialized courses in MIS designed specifically for nurses.

Transferable Strategies / Lessons Learned

Leveraging innovative education models and public-private partnerships provide a replicable blueprint for other low- and middle-income countries seeking to strengthen their health systems through workforce development. Concentrating resources within a well-equipped centre enhances training quality, fosters collaboration, and prevents the fragmentation of limited capacities across multiple smaller institutions.

Limitations and challenges

While IRCAD Africa offers world-class surgical training, the high operational and maintenance costs of advanced robotic and laparoscopic technologies, combined with dependence on visiting international faculty, pose sustainability challenges and limit continuous local training autonomy.

Figure 6: IRCAD Africa Visit by the Centre for Equity in Global Surgery, 2024; Photo courtesy Pierrette Ngutete Mukundwa



References

1. Ministry of Health, Republic of Rwanda. (2025, July 18). IRCAD Africa: A continent on the threshold of possibilities in surgical care. <https://www.moh.gov.rw/news-detail/ircad-africa-a-continent-on-the-threshold-of-possibilities-in-surgical-care>
2. IRCAD. (2024, October). Newsletter IRCAD Africa. <https://www.ircad.fr/newsletter-ircad-africa-october-2024/>
3. IRCAD. (n.d.). Trainings. Retrieved from <https://www.ircad.space/trainings/>

University of Global Health Equity: Training Partnerships, Social Medicine, and Place-Based Medical Education

The University of Global Health Equity (UGHE) plays a key role in strengthening Rwanda's health workforce and advancing the government's 4×4 Health Workforce Reform through its innovative, competency-based teaching model. All UGHE's initiatives are anchored in a partnership-based model, which brings together national and international universities, teaching hospitals, and health institutions to co-develop curricula, share faculty, and enhance clinical training capacity. This collaborative, equity-driven approach improves the quality and sustainability of medical education, building a strong, interconnected health workforce for Rwanda and the wider region (Gemechu et al.).

The university trains the next generation of healthcare providers using an experiential learning approach that integrates hands-on clinical practice, simulation-based training, research, and community engagement. This approach ensures that students acquire the practical knowledge, technical proficiency, and contextual understanding required to deliver high-quality, equitable care even before entering real clinical settings. Since the launch of its MBBS–MGHD dual-degree program, UGHE has enrolled six cohorts of students, with the class size increasing from 30 to 60 students in the most recent intake. The program brings together a diverse cohort from across Africa, including Burundi, the Democratic Republic of Congo, Rwanda, Tanzania, Sierra Leone, Liberia, Malawi, Lesotho, Eritrea, South Sudan, and Sudan, as well as students with refugee status in African countries. Additionally, 70% of medical students are female by policy. This diversity fosters cross-country collaboration and prepares future clinicians to address health challenges across varied contexts. Surgical programs are executed through the Centre for Equity in Global Surgery and the Department of Surgery across five key pillars (Figure 7). The Centre curated an Africa-relevant surgical and anaes-

thetia curriculum through an Africa-wide Delphi study, and prepares general practitioners who have committed to 5 years of service in areas of greatest need for post-graduation surgical practice through intense simulation.

Co-founder Paul Farmer's vision was place-based medical education embedded within a social medicine ethos. Therefore, the UGHE was strategically located in rural Northern Rwanda, so that care and learning could happen closer to rural and remote communities. The University students learn from the community they are embedded in and are taught using a strong liberal arts curriculum on a foundation of African studies and humanities.

UGHE's state-of-the-art Simulation and Skills Laboratory further supports workforce development by providing advanced, hands-on learning opportunities (Figure 8). Using the ENTRUST platform, a unique gamification system, surgical skills are taught using modern technology. Beyond medical students, the simulation lab also trains faculty and clinical educators from partner institutions through its annual Simulation Educator Course, which builds capacity for high-quality, simulation-based teaching and debriefing across the region.

In addition, UGHE offers specialized short courses for practicing doctors, nurses, and Non-Physician Anaesthetists (NPAs) from public hospitals in Rwanda. These trainings strengthen clinical competencies in emergency care (BLS, ALS), anaesthesia and critical care (mechanical ventilation), and trauma management (ATLS).

Transferable Strategies / Lessons Learned

UGHE's partnership-based and competency-driven model shows how collaborative, place-based education can strengthen health systems. Training students within rural communities fosters contextual learning, equity, and social accountability, while simulation-based and experiential teaching enhances clinical skills. Its focus on regional diversity and gender equity offers a replicable framework for inclusive health workforce development.

Limitations and challenges

The model's high operational costs, dependence on external partnerships, and limited scalability pose sustainability challenges. Expanding community-based learning also requires substantial infrastructure and faculty investment, while the rural location can affect staff and student retention.

Figure 7: Five pillars of the UGHE Centre for Equity in Global Surgery-secretariat of the Pan-African Surgical Healthcare Forum

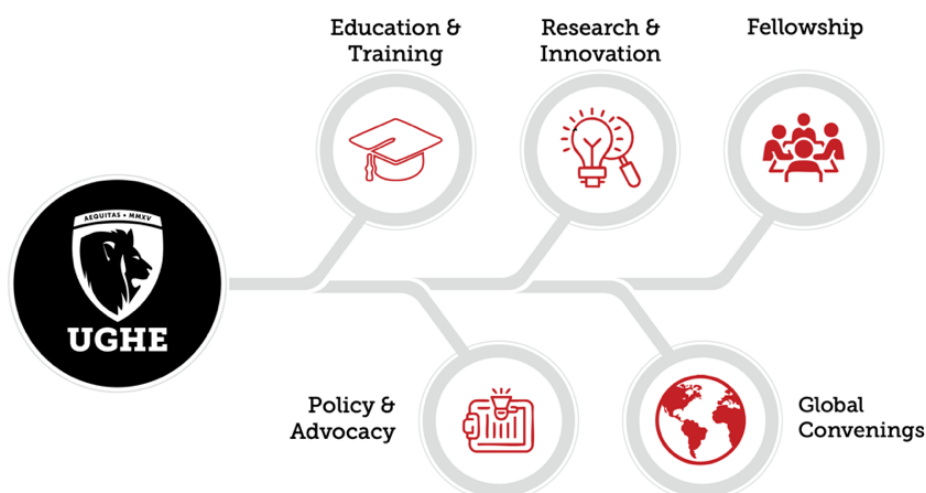


Figure 8: UGHE MBBS students conducting a hands-on simulation using innovative, low-cost models for practical surgical training. Photos courtesy CEGS



References

1. University of Global Health Equity (UGHE). (n.d.). University of Global Health Equity. Retrieved October 22, 2025, from <https://ughe.org/>
2. University of Global Health Equity (UGHE). (n.d.). Centre for Equity in Global Surgery (CEGS). Retrieved October 22, 2025, from <https://ughe.org/centre-for-equity-in-global-surgery-cegs/>
3. Gemechu, N. B., Murithi, G., Berhe, D. F., Fenta, B. A., Bitew, A. A., Fofanah, T., Alayande, B. T., Bekele, A., Anderson, G., & Riviello, R. (2025). Assessing a partnership-based model of surgical education in the Global South: A mixed methods study of the University of Global Health Equity, Rwanda. BMC Surgery, 25, 258. <https://doi.org/10.1186/s12893-025-02996-5>

SUDAN

Cross-Border Academic Solidarity: Rwanda's Support for Sudan's Displaced Medical Students

Following the outbreak of armed conflict in Sudan in April 2023, the University of Medical Sciences and Technology (UMST) in Khartoum was seized by paramilitary forces and converted into military barracks, halting medical education. To preserve their training and future careers, 160 displaced UMST students, including 130 Sudanese and others from Nigeria, India, Jordan, Canada, France, the United States, and Ireland, were received by the University of Rwanda (UR) to continue their studies.

Case Report / Best Practice

Through an emergency collaboration between the Sudanese and Rwandan Ministries of Education and UR's College of Medicine and Health Sciences, the students were integrated into the university's clinical training programs across four teaching hospitals. Most were in their final year of medical or dental studies, requiring hands-on clinical rotations. The arrangement, initially born out of crisis, was supported by institutional assessments confirming UR's facilities met the requisite training standards. The chairman of the board of trustees at UMST described the relocation as a "brotherly gesture" and a milestone in regional academic cooperation.

Similar arrangements were also established in Tanzania, where 150 UMST students were received at Muhimbili National Hospital, showing a regional commitment to protecting medical education amid crisis.

Transferrable Strategies / Lessons Learned

This case demonstrates how cross-border academic partnerships can serve as a rapid-response mechanism to sustain medical education during conflict. Rwanda's willingness to integrate displaced students shows the importance of institutional flexibility, regional solidarity, and recognition of transferable curricula and training standards. The case also highlights the potential for such partnerships to evolve into sustainable inter-university collaborations, offering a blueprint for other regions affected by instability.

Limitations

Challenges include limited training capacity at host institutions, language and cultural adaptation barriers, and uncertainty over the long-term reintegration of Sudanese students once peace returns.

Financial and psychosocial support for displaced learners also remains limited, affecting well-being and academic continuity.

References

1. Medical students from war-torn Sudan arrive in Rwanda. (n.d.). University World News. <https://www.universityworldnews.com/post.php?story=2023080310410443>
2. Rwema, E., Bagiruwubusa, E., & Hakizuwera, F. (2023, August 9). Medical Students from War-Torn Sudan Find Hope in Rwanda. Voice of America. <https://www.voanews.com/a/medical-students-from-war-torn-sudan-find-hope-in-rwanda/7217437.html>

Rebuilding Trauma Capacity in War-Torn Sudan

The ongoing conflict in Sudan has led to the collapse of healthcare infrastructure, creating a burden of war-related injuries and a collapse of surgical training. There is a surgical caseload that almost entirely accounts for complex trauma.

Case Report / Best Practice

Healthcare facilities in war-torn areas such as Khartoum, as noted by MSF (2023) and Ashraf et al. (2024), have had to adjust to a dire situation. Surgical teams, comprised of the remaining residents and specialists, are conducting a significant number of critical procedures for saving lives and limbs amidst overwhelming pressure and workload. This encompasses the treatment of complicated orthopedic injuries, blast wounds, and infected lacerations.

The development, arising from need, involves the swift, hands-on training of the existing surgical personnel in trauma and disaster management. With the official “surgical theatre learning environment” (Abu Aagla et al., 2025) dismantled, attention has moved from organized curricula to urgent, task-specific survival competencies. This signifies a reckless and risky type of task-sharing, where trainees and general surgeons are compelled to handle specialist-level orthopedic and reconstructive operations due to the lack of specialists and the overwhelming number of casualties.

Transferrable Strategies / Lessons Learned

The Sudanese crisis highlights that post-conflict recovery must go beyond restoring pre-war systems and instead focus on building resilience within health education and surgical care.

Key lessons point to the need for a new framework for rebuilding. First, integrating trauma and disaster education into all surgical training programs through structured postgraduate modules is essential to prepare future clinicians for crisis contexts. Second, global collaborations with organizations such as Médecins Sans Frontières (MSF) are crucial for strengthening training capacity and enhancing health system responsiveness. Finally, national surgical strategies should explicitly include measures to expand surgical capacity for conflict and disaster settings, ensuring preparedness and sustainability in fragile environments.

Limitations and Challenges

It can lead to severe burnout among healthcare workers, further decreasing the workforce. The total systemic collapse, including lack of supplies, equipment, and safe facilities, makes any consistent, quality training nearly impossible.

References

1. Ashraf A, Ibrahim A, S Ibrahim, et al. 291 The Impact of War on Surgical Interventions: A Comparative Analysis on Prevalence and Types of Post-operative Complications Across Conflict and Safe Sudanese States, 2024. *British Journal of Surgery* 112(Suppl_10). doi:10.1093/bjs/znaf128.475.
 2. Nawari A, Zahir J, Gomez J. Orthopaedic Trauma in Sudan: Delivering Care and Improving Outcomes in a War-Torn System. *Orthopaedic Reviews*. 2025;17:142600. doi:10.52965/001c.142600. orthopedicreviews.openmedicalpublishing.org
 3. Sudan: Exceptional number of war surgeries show suffering in Khartoum. Doctors Without Borders / Médecins Sans Frontières (MSF). June 15, 2023. Accessed March 23, 2025. [https:// www.doctorswithoutborders.ca/ sudan-exceptional-number-of-war-surgeries-show-suffering-in-khartoum/](https://www.doctorswithoutborders.ca/sudan-exceptional-number-of-war-surgeries-show-suffering-in-khartoum/)
-

SOMALIA

Emerging Surgical Training Models in Somalia

After decades of conflict and fragility, Somalia's health system is rebuilding, with growing efforts to strengthen surgical education and workforce capacity. New training models and regional collaborations are emerging to close the gap in surgical access and build a resilient health workforce.

Case Report / Best Practice

A key milestone in Somalia's surgical education landscape is the General Surgery Assistant Residency Program, developed in partnership between Istanbul Medeniyet University and Somali universities. This model combines in-country theoretical and practical training with short, focused clinical attachments abroad, equipping trainees with both technical competence and international exposure. Graduates of the program have begun returning to Somalia to contribute to surgical service delivery and teaching, demonstrating the sustainability of a localized yet globally linked approach.

Institutional integration is also progressing. Somalia's application to join COSECSA marks a pivotal step toward standardized regional surgical training and accreditation, ensuring that future graduates can align with continental competency frameworks. Additionally, mentorship programs in collaboration with the African Union Transition Mission (ATMIS) in Somalia and other partners are enhancing the skills of the allied surgical workforce, including perioperative nurses, orthopedic technologists, and emergency care providers, addressing essential components of safe surgical systems (Figure 9).

Transferrable Strategies / Lessons Learned

Somalia's experience highlights the potential of hybrid training models, combining local education with international mentorship, to rebuild national surgical capacity. The regional integration through COSECSA offers a scalable framework for accreditation and quality assurance. Partnering with military and humanitarian missions, such as ATMIS, also demonstrates how collaboration beyond traditional health sectors can accelerate skills transfer in fragile contexts.

Limitations and Challenges

Despite this progress, Somalia still faces significant workforce shortages, inadequate surgical infrastructure, and limited investment in training institutions. Sustainability depends on continued advocacy, local faculty development, and stronger institutional funding mechanisms to ensure equitable access to safe surgical care across all regions.

Figure 9: ATMIS Deputy Force Commander Maj. Gen. Marius Ngendabanka with ATMIS officers and Somali medical trainees at the closing ceremony of the medical mentorship programme in Dhobley, Jubaland State (September 2024).



References

1. Somalia welcomes new surgeons trained in IMU MASAM's assistant training program. (n.d.). <https://www.medeniyet.edu.tr/en/news/somalia-welcomes-new-surgeons-trained-in-imu-masams-assistant-training-program>
2. Somalia, F., & Somalia, F. (2023, December 4). Somalia submits bid to join College of Surgeons. FTL Somalia. <https://www.ftlsomalia.com/somalia-submits-bid-to-join-college-of-surgeons/>
3. Kithumbu, A., & Kithumbu, A. (2024, September 27). ATMIS doctors from Level II hospital in Dhobley mentor 15 Somali Medics in specialized skills. African Transition Mission in Somalia (ATMIS). <https://atmis-au.org/atmis-doctors-from-level-ii-hospital-in-dhobley-mentor-15-somali-medics-in-specialized-skills/>

TANZANIA

Task-Sharing: Tanzania's Model for Surgical Equity

Tanzania faces a critical shortage of surgical specialists, with only 0.14 surgeons per 100,000 people compared to high-income countries like the United States, which has over 6 surgeons per 100,000 people in high-income countries. This shortage is particularly severe in rural areas, where most of the population resides but where few physicians are available. To bridge this gap, Tanzania pioneered an innovative task-shifting strategy, training and deploying nonphysician clinicians (NPCs), including Assistant Medical Officers and Clinical Officers, to perform essential surgical procedures. Other countries employ similar surgical task shifting and sharing strategies, but the terminology and the cadres of health workers involved differ from one context to another (Figure 10).

Case Report / Best Practice

The policy of surgical task-sharing in Tanzania dates back to the 1960s. In a 2014 study across seven hospitals in the Pwani Region, NPCs performed 55.8% of all major non-obstetric surgeries, far surpassing surgical specialists (28.7%) and medical officers (15.5%). The most common procedures performed by NPCs were elective hernia repairs (81.8%), prostatectomies (69.5%), exploratory laparotomies (53.2%), hydrocelectomies (77.2%), and emergency hernia repairs (81.2%). Importantly, patient outcomes were comparable between NPCs and physicians: postoperative mortality was 1.7% for NPCs versus 1.5% for physicians, with no significant difference in overall morbidity or adverse events after adjusting for risk factors. These findings demonstrate that, with proper training and supervision, task-shifting can safely expand surgical access in underserved regions.

Transferable Strategies / Lessons Learned

Tanzania's experience provides a scalable, low-cost model for addressing the surgical workforce crisis in low- and middle-income countries. By formally integrating task-shifting into national health policy, countries can increase surgical coverage, especially in rural areas, at low cost and short training time. However, success depends on standardized training and credentialing, regular supervision by surgical specialists, and investment in hospital infrastructure and data systems.

Limitations and Challenges

Despite its success, the task-sharing model faces challenges that threaten long-term sustainability. Rural hospitals often experience shortages of essential surgical supplies, anaesthesia machines, and trained anaesthesia staff, compromising the quality of care. Additionally, limited supervision and training opportunities for NPCs constrain their professional growth and the consistency of surgical quality. Further, poor record-keeping and limited follow-up data have been noted, which make continuous monitoring and quality assurance difficult.

Figure 10: Countries employing major surgical task shifting policies (Federspiel et al, 2018)



Reference

1. Beard, J., Oresanya, L. B., Akoko, L., Mwanga, A., Mkony, C., & Dicker, R. (2014). Surgical task-shifting in a low-resource setting: Outcomes after major surgery performed by nonphysician clinicians in Tanzania. *World Journal of Surgery*, 38(6), 1391–1396. <https://doi.org/10.1007/s00268-013-2446-2>
2. Federspiel, F., Mukhopadhyay, S., Milsom, P. J., Scott, J. W., Riesel, J. N., & Meara, J. G. (2018). Global surgical, obstetric, and anesthetic task shifting: A systematic literature review. *Surgery*, 164(3), 553–558. <https://doi.org/10.1016/j.surg.2018.04.024>

UGANDA

Strengthening Surgical Workforce Through Regional Training: Lessons from the COSECSA program in Uganda

Uganda is one of the fourteen member countries for the College of Surgeons of East, Central, and Southern Africa (COSECSA) which provides a regional framework for surgical training and accreditation. Uganda's integration into the COSECSA program has decentralized surgical training through 16 accredited hospitals distributed across the country, enabling trainees to undergo structured mentorship and regional examinations (Figure 11). The program's competency-based curriculum and e-learning platforms have complemented traditional academic models, improving access and efficiency in postgraduate and specialist training.

Through regional accreditation and standardized curriculum, the COSECSA program allows mobility of trainers and trainees across borders, reducing brain drain and optimizing mentorship capacity. The "train where you work" model has minimized urban migration and strengthened surgical ecosystems in rural Uganda, including the post-conflict Northern region. Between 2004 and 2021, Uganda produced 54 COSECSA-trained surgeons, with a 85.7% retention rate within the country.

Transferable Strategies / Lessons Learned

Uganda's experience highlights that regional collaboration, decentralized training sites, and flexible, competency-driven curricula can rapidly expand the surgical workforce. This is similar to other COSECSA countries.

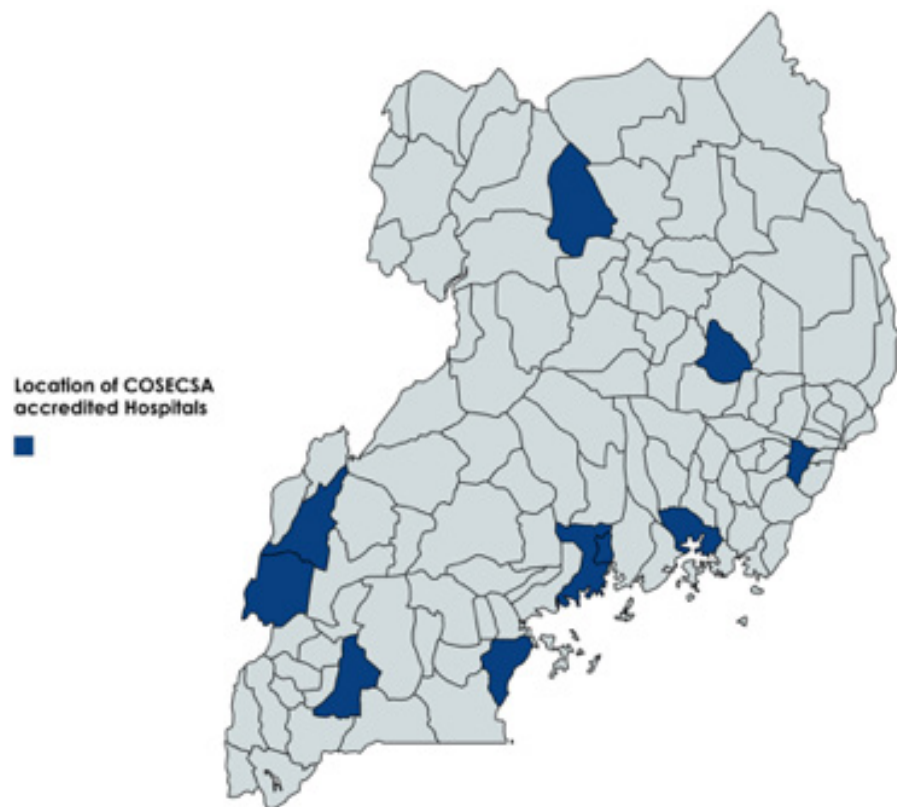
Limitations and Challenges

Funding constraints, limited trainer-to-trainee ratios, uneven distribution of accredited centers and post-certification retention challenges significantly undermine the impact of this program.

References:

1. <https://www.cosecsa.org/wp-content/uploads/2024/09/COSECSA-Info-Booklet-2024-Artwork-print-final.pdf>
2. Bekele, A., Alayande, B. T., Iradukunda, J., Minja, C., Forbes, C., Bachheta, N., Gulilat, D., Munthali, J., Muguti, G., Riviello, R. R., Geraghty, J., O'Flynn, E., Fualal, J. O., Chikoya, L., Mwachiro, M. M., & Borgstein, E. (2024). A cross-sectional survey on surgeon retention in the COSECSA region after specialist training: Have things changed? World Journal of Surgery, wjs.12069. <https://doi.org/10.1002/wjs.12069>

Figure 11: The map of Uganda showing the distribution of COSECSA-accredited training sites



West African Region

BURKINA FASO

Emergency Surgery Training for Mid-Level Health Workers in Burkina Faso

Burkina Faso's program trains mid-level health workers in a rapid, six-month curriculum to perform essential emergency surgery in rural district hospitals. This cost-effective task-shifting strategy quickly increased access to life-saving operations, especially Cesarean sections. Its sustainability is challenged by a lack of professional incentives and the need for rigorous quality assurance.

Case Report / Best Practice

The Ministry of Health developed a six-month, competency-based curriculum in essential surgery for existing mid-level cadres, such as assistant medical officers and clinical Officers. This initiative focuses on high-impact emergencies such as caesarean sections, laparotomies, and hernia repairs to quickly decentralize care. By deploying these trained providers to district hospitals, the program aims to provide immediate surgical services, drastically reducing the patients' "third delay" in accessing definitive care and relieving the burden on regional hospitals.

Lessons Learned/Transferable Frameworks

The core innovation is the rapidity and cost-efficiency of the six-month training, allowing for a swift increase in surgical capacity. The transferable lesson is that a short, focused curriculum is viable and effective. Still, it must be paired with institutional incentives, including formal recognition, salary bonuses, and a defined career path, to ensure retention.

Limitations and Challenges

The Burkina Faso program is a pragmatic model for rapidly expanding emergency surgical access through task-shifting. While successful in building quick capacity, its long-term viability requires a commitment to formally recognise and appropriately incentivise mid-level health workers, alongside robust investment in mentorship and supportive infrastructure.

References

1. 1. Hounton, S.H., Newlands, D., Meda, N. et al. A cost-effectiveness study of caesarean-section deliveries by clinical officers, general practitioners and obstetricians in Burkina Faso. Hum Resour Health 7, 34 (2009). <https://doi.org/10.1186/1478-4491-7-34>
 2. 2. Dawson AJ, Buchan J, Duffield C, Homer CS, Wijewardena K. Task shifting and sharing in maternal and reproductive health in low-income countries: a narrative synthesis of current evidence. Health Policy Plan. 2014 May;29(3):396-408. doi: 10.1093/heapol/czt026. Epub 2013 May 8. PMID: 23656700.
-

GHANA

College of Surgeons Residency Reform in Ghana: An Innovative Strategy to Increase Specialist Surgeons in the Country.

In Ghana, the postgraduate surgical training system led by the Ghana College of Physicians and Surgeons (GCPS) has undergone a major residency reform to build specialist capacity within the country. The reform included new selection pathways, decentralised training sites and stronger workforce incentives to increase surgical and related specialist output. The reform addressed workforce shortages in priority disciplines and created more structured training mechanisms for Ghanaian doctors.

Case Report / Best Practice/Best Practice

Established by Act of Parliament in 2003, the GCPS was tasked to train specialists in medicine, surgery, and allied fields in Ghana. With its new mandate, the College identified low enrolment and slow throughput in key surgical subspecialties (cardiothoracic surgery, neurosurgery, pediatric surgery, plastic surgery, urology) and other priority areas such as anaesthesia, emergency medicine, ophthalmology, and radiology.

In response, the College implemented a multi-faceted initiative that included an accelerated speciality training pathway (direct entry for the top 10% of graduating medical doctors), government scholarships for trainees in identified shortage specialities, accreditation of new specialities and training sites, and development of international partnerships with organisations like AO Alliance. These interventions collectively transformed how surgical/residency training is delivered in Ghana.

The real innovation lies in both workforce training and financing. What made this initiative unique and innovative came from its targeted speciality prioritisation, accelerated entry to residency training, decentralisation of training sites, incorporation of non-technical surgical skills (such as leadership, communication and teamwork) and collaboration with national (private) and international bodies. The workforce innovation not only addresses training more specialists but also ensures that the right specialists are trained quickly and in more diverse settings.

Lessons Learned/Transferable Frameworks

Other LMICs seeking to reform surgical residency may learn the following transferable lessons from Ghana's experience: surgical workforce gap identification, targeted training pathways, decentralised training and accreditation, and partnerships.

Limitations and Challenges

While the GCPS's surgical residency reform was a success, it faced several challenges and limitations. Given the expansion of the training sites, resource constraints, funding gaps, and stretched trainers' capacity and supervision kicked in. Additional challenges include the excessive workload and burnout during the training, which made it even more difficult to retain specialists in underserved areas or in-country after the training.

Key References

1. Ghana College of Physicians & Surgeons. (n.d.). The College enrolls its first batch of residents through its accelerated speciality training. <https://gcps.edu.gh/the-college-enrolls-its-first-batch-of-residents-through-its-accelerated-specialty-training/> (GCPS)
 2. AO Alliance. (2018, March 29). AO Alliance and GCPS Ghana Country Initiative: A five-year project to build national capacity for trauma & fracture care in Ghana. <https://ao-alliance.org/aoa-and-gcps-launch-ghana-country-initiative/> (AO Alliance)
-

NIGERIA

NSOANP Training of General Practitioners and Clinicians on Life Support and Essential Surgical Skills to Scale-up Surgical Workforce in Nigeria.

Nigeria's National Surgical, Obstetric, Anaesthesia and Nursing Plan (NSOANP) was launched in 2019 to close large gaps in access to safe, timely, and affordable surgical care. There was an early nationwide, competency-based training effort that equipped general practitioners (GPs) and other non-specialist clinicians with life-support and selected essential surgical skills, ensuring that first-level hospitals could deliver emergency and essential surgical care.

Case Report / Best Practice

In 2019–2022, the Federal Ministry of Health, professional surgical societies, and implementing partners operationalised the NSOANP by developing short, practical training packages delivered across Nigeria's six geopolitical zones. The activities included basic life support (BLS) and paediatric advanced life support (PALS) courses, peri-operative nursing (Nursing Care Saves Lives/NCSL) workshops, and focused obstetric and surgical skills courses for non-specialist doctors and examiners. The approach used nationally endorsed curricula aligned to NSOANP priorities, training-of-trainers to multiply reach, zonal roll-out to reach remote facilities, and partnership with NGOs (mostly Smile Train) and academic centres for technical support (Figure 12). By September 2021, 144 doctors had been trained in life-support courses as part of the NSOANP rollout, with parallel nursing and research-capacity training for perioperative teams.

This was a deliberate, government-led task-sharing and up-skilling of GPs and peri-operative nurses to expand the pool of clinicians capable of providing emergency and essential surgical services at first-level hospitals. Due to insufficient specialist surgeons, anaesthetists and obstetricians, the NSOANP implementation invested in short, competency-based courses (BLS/PALS, perioperative nursing, focused obstetric/surgical skills) and training-of-trainers to enable safe task-sharing.

Transferable Strategies / Lessons Learned

The short, competency-based packages (BLS, PALS, peri-operative nursing, focused obstetric/surgical skills) produced measurable knowledge/skill gains and were easier to deliver at scale than specialist programs, which makes it

an innovative way to expand emergency surgical capacity. Nigeria's experience in implementing NSOANP shows that having a policy is not enough; there is a need to engage partners to support the training of the surgical task-sharing workforce and ensure that they are linked to systems that guarantee their continued program growth. This was a deliberate, government-led task-sharing and up-skilling of GPs and peri-operative nurses to expand the pool of clinicians capable of providing emergency and essential surgical services at first-level hospitals. Due to insufficient specialist surgeons, anaesthetists and obstetricians, the NSOANP implementation invested in short, competency-based courses (BLS/PALS, perioperative nursing, focused obstetric/surgical skills) and training-of-trainers to enable safe task-sharing.

Limitations and Challenges

The major challenge faced during this innovative scale-up of the surgical workforce was a shortage of trainers (addressed through paired trainers and zonal rotation). The reliance of the project on external funding from donors such as Smile Train made sustainable financing a significant challenge.

Figure 12: BLS and PALS training for perioperative teams, including nurses and biomedical technicians. Photo courtesy of Prof. Emmanuel Ameh



References

1. Obisesan, A. O., Aria, O. N., Seyi-Olajide, J. O., Obi, N. (Nk), & Ameh, E. A. (2024). Strengthening safe children's surgical care in Nigeria through paediatric advanced life support training. *Journal of Global Health Reports*, 8. <https://doi.org/10.29392/001c.121802>
2. Seyi-Olajide, J. O., Anderson, J. E., Williams, O. M., Faboya, O., Amedu, J. O., Anyanwu, S. N., Bethuel-Kasimu, A., Lawal, O. A., da Lilly-Tariah, O. B., Onajin-Obembe, B., Farmer, D. L., & Ameh, E. A. (2021). National surgical, obstetric, anaesthesia and nursing plan, Nigeria. *Bulletin of the World Health Organisation*, 99(12), 883–891. <https://doi.org/10.2471/BLT.20.280297>

Figure 12: The Smile Train-sponsored trainings of GPs and non-physician clinicians on surgical skill in Nigeria.



NIGER

Capacity of District Surgery Diploma in Niger

Niger's Capacity of District Surgery (CDS) diploma is a 12-month task-shifting program that trains General Practitioners (GPs) for essential surgery in rural district hospitals. This innovation addressed the specialist shortage by creating a locally-trained workforce, significantly increasing surgical capacity (over 18,000 procedures in one study period) and reducing patient transfers. It is a successful, formal model for decentralised surgical care with acceptable outcomes.

Case Report / Best Practice

Faced with a critical shortage of surgeons in its vast rural areas, Niger launched the CDS diploma in 2005. The program selects government GPs for an intensive 12-month curriculum. This includes 3 months of theoretical and practical work at a university hospital, followed by 9 months of supervised practical training at regional hospitals. The training focuses on high-impact procedures like Cesarean sections, hernia repair, and wound management. Graduates are deployed to District Hospitals (DHs), creating a functional surgical team supported by trained Nurse Anaesthetists and Surgical Aids. This systematic approach rapidly established surgical services in previously underserved communities.

The core innovation is the formalisation and incentivization of task-shifting. The CDS is an official university diploma, not just a certificate, which grants the GPs professional recognition and a salary bonus. This combined strategy of credentialing and financial reward is crucial for workforce retention in challenging rural posts. It effectively addresses the “brain drain” by creating a defined, rewarded career path for generalist physicians who provide a broad, essential surgical scope, making a compelling case for domestic capacity building.

Lessons Learned/Transferable Frameworks

The key lesson is that contextualised, short-term training with strong incentives is highly effective. Other low-income countries (LICs) can adopt a competency-based curriculum framework focused on addressing local health burdens (e.g., emergency obstetrics and common general surgery). Crucially, pairing the training with mandatory deployment, formal credentialing, and financial bonuses is essential to ensure the new workforce remains and functions in rural areas. The model demonstrates that quality surgical care can be decentralised by building functional, team-based units.

Limitations and Challenges

A significant challenge is the sustainability of surgical infrastructure and equipment. In one study, nearly half of the district hospitals planned for the program were not fully functional due to issues such as inadequate equipment maintenance and unreliable supply chains for consumables. Furthermore, while outcomes are generally acceptable, the mortality rates for complex emergency procedures, particularly Cesarean sections (2.87%), highlight the need for continuous quality improvement and better-resourced post-operative and critical care capacity at the district level.

References

1. Sani, R., Sanoussi, S., Didier, J. L., Salifou, G. M., & Abarchi, H. (2013). Rural surgery in Niger: a multicentric study in 21 district hospitals. *Indian Journal of Surgery*, 77(S3), 822–826. <https://doi.org/10.1007/s12262-013-1015-0>
 2. Sani, R., Nameoua, B., Yahaya, A., Hassane, I., Adamou, R., Hsia, R. Y., Hoekman, P., Sako, A., & Habibou, A. (2009). The impact of launching surgery at the district level in Niger. *World Journal of Surgery*, 33(10), 2063–2068. <https://doi.org/10.1007/s00268-009-0160-x>
-

SENEGAL

Healthcare Workers Recruitment and Retention in Underserved Areas: Experience from Senegal.

To address the persistent shortage of healthcare professionals in rural and remote regions, the Government of Senegal launched the “Plan Cobra” initiative in 2006. The program aimed to reduce disparities in healthcare access between urban and rural populations, particularly in border areas where maternal and child mortality rates were significantly higher than national averages.

Case Report / Best Practice

Implemented jointly by the Ministry of Health and the Ministry of Public Service, Plan Cobra sought to attract medical professionals to underserved areas through annual government contracts offering job stability, housing, and hardship allowances. Between 2006 and 2008, the initiative recruited 365 health professionals, including doctors, nurses, and midwives, and successfully reopened 122 rural health posts. The scheme temporarily improved service delivery and access to care in isolated regions.

Workforce Innovation

Plan Cobra introduced a flexible contractual system distinct from traditional public service hiring. Contracts specified posting location, job duration, and benefits, providing more predictability for workers and enabling rapid deployment to priority areas. This model demonstrated how short-term incentives and targeted recruitment can quickly boost the rural health workforce in low-resource settings.

Transferrable Strategies / Lessons Learned

Senegal's experience shows that while contract-based recruitment can enhance short-term workforce deployment, long-term retention requires permanent employment, adequate working conditions, and a balance of monetary and non-monetary incentives such as supportive supervision, career development, and community integration. Future policies should combine stable contracts, continuous professional training, and improved rural infrastructure to sustain workforce presence.

Limitations and Challenges

Despite its initial impact, Plan Cobra was limited by the temporary nature of its contracts and the narrow focus on border regions, leaving many rural communities underserved once contracts expired. The absence of permanent incentives and professional growth opportunities led to high attrition after the first contract term, reducing the program's sustainability.

References

1. <https://documents1.worldbank.org/curated/en/600731468006606426/pdf/707780ESWOP1150untries00Senegal-pdf.pdf>
 2. Honda, A., Krucien, N., Ryan, M. et al. For more than money: willingness of health professionals to stay in remote Senegal. *Hum Resour Health* 17, 28 (2019). <https://doi.org/10.1186/s12960-019-0363-7>.
 3. Zurn P, Codjia L, Sall FL, Braichet JM. How to recruit and retain health workers in underserved areas: the Senegalese experience. *Bull World Health Organ*. 2010 May;88(5):386-9. doi: 10.2471/BLT.09.070730. PMID: 20461134; PMCID: PMC2865655.
 4. Nagai, M., Fujita, N., Diouf, I. S., & Salla, M. (2017). Retention of qualified healthcare workers in rural Senegal: lessons learned from a qualitative study. *Rural and remote health*, 17(3), 4149. <https://doi.org/10.22605/RRH4149>
-

SIERRA LEONE

Expanding Surgical Access through Task-Sharing: The CapaCare Model in Sierra Leone

Following an eleven-year civil war that devastated its health system, Sierra Leone was left with one of the lowest densities of surgical specialists in the world. By 2012, 92% of the population had unmet surgical needs, with most procedures performed by non-specialist doctors. The CapaCare Surgical Training Program, launched in 2011 in partnership with the Government of Sierra Leone, emerged as an innovative response to this gap, designed to strengthen district-level surgical capacity through task-sharing.

Case Report / Best Practice

CapaCare trains Community Health Officers (CHOs), Physician Assistants (PAs), and junior doctors to perform essential and emergency surgeries at district hospitals. The program includes two years of intensive training followed by a one-year supervised internship at regional or tertiary hospitals. Since inception, 109 graduates (89 CHOs, 19 PAs, and 5 MDs) have completed the program, with over 86% currently practicing in rural areas, where access to surgical care was historically limited.

Evidence from nationwide studies shows that between 2012 and 2023, surgical task-sharing contributed significantly to increasing national surgical capacity. The annual surgical volume rose from 24,152 to 38,946 procedures, a 61% increase, and the surgical rate improved from 400 to 505 per 100,000 population. The surgical workforce more than doubled, from 164 to 347 full-time providers, with associate clinicians performing 41% of all surgeries and over 55% of operations in rural areas. Notably, 64% of their procedures were obstetric surgeries, highlighting their critical role in maternal health. The public sector now performs 56% of all surgeries, up from 40% in 2012, signaling stronger government engagement and the growing integration of trained non-physician clinicians into the national health system.

Lessons Learned / Transferrable Strategies

Sierra Leone's CapaCare program demonstrates that structured surgical task-sharing, when supported by strong government collaboration, can effectively expand surgical access in underserved regions. The model's success rests on rigorous training, supervised internships, and the deployment of graduates to rural facilities, ensuring continuity of care where specialists are scarce (Figure 13).

Embedding the program within the national health system and maintaining close collaboration between the Ministry of Health and Sanitation and training institutions have proven essential for sustainability.

Limitations and Challenges

Despite its impact, the program faces structural challenges that threaten long-term sustainability. Lack of official degree recognition for Surgical Training Program (STP) graduates limits their career advancement and remuneration, creating disparities between cadres such as Physician Assistants (who now receive bachelor's degrees) and Community Health Officers. Additionally, the absence of a distinct surgical license leaves graduates legally vulnerable and demotivated, as they perform complex operations without formal protection or professional status. These gaps in regulation and recognition risk undermining morale and retention, emphasizing the need for policies that align training, licensing, and accreditation to secure the future of task-sharing in Sierra Leone.

Figure 13: Task-sharing program in Sierra Leone (CapaCare): trainees participating in an outdoor surgical simulation session. Photo courtesy Tairu Fofanah, Sierra Leone.



References

1. Van Kesteren, J., Langeveld, M., Ashley, T., Fofanah, T., Bonjer, H. J., & Bolkan, H. A. (2025). Surgical task-sharing in Sierra Leone: barriers and enablers from provider and facilitator perspectives. *BMJ Global Health*, 10(5), e018512. <https://doi.org/10.1136/bmjgh-2024-018512>

2. Bolkan, H. A., Hagander, L., Von Schreeb, J., Bash-Taqi, D., Kamara, T. B., Salvesen, Ø., & Wibe, A. (2016). The surgical workforce and surgical provider productivity in Sierra Leone: a countrywide inventory. *World Journal of Surgery*, 40(6), 1344–1351. <https://doi.org/10.1007/s00268-016-3417-1>
3. Johnson, D. (n.d.). WHO - Surgical Care at the District Hospital (WHO 2003). Scribd. <https://www.scribd.com/document/333800445/WHO-Surgical-Care-at-the-District-Hospital-WHO-2003>
4. Kannah, S. L. (2025, February 24). Nine Sierra Leonean Specialist Doctors Graduate from West African College of Surgeons. Sierraloadead. <https://sierraloadead.sl/news/9-specialist-doctors-graduated-college-surg/>

TOGO

Use of the FinHealth Tool to Revamp the Medical Supply Chain and Medical Bills Payment

Togo's healthcare system faced persistent financing and procurement challenges, including multi-layered approval processes that delayed insurance reimbursements and prevented timely access to essential medicines and equipment. The central procurement agency also relied on outdated historical sales data rather than real-time needs captured through the Health Management Information System (HMIS). To address these inefficiencies, the government, in partnership with the World Bank, deployed the FinHealth Tool to identify bottlenecks and guide targeted reforms.

Healthcare Financing Solution

Through the FinHealth initiative, the Togolese government streamlined the health insurance payment process by eliminating redundant approval layers and digitizing claims workflows, which reduced administrative costs and delays. Health facilities were encouraged to adopt electronic records systems to better identify their supply needs and submit timely requests. Inter-ministerial collaboration between the Ministry of Health, Ministry of Finance, and development partners also played a key role in aligning financial reforms with frontline service delivery goals.

Lessons Learned

Togo's experience highlights how a problem-driven, collaborative approach can improve the efficiency of health financing and strengthen the medical supply chain. By directly linking public financial management (PFM) to service delivery outcomes, the government reduced delays in resource allocation, improved expenditure tracking, and enhanced accountability. This reform underscores the importance of political commitment, cross-sector coordination, and data-informed decision-making in achieving sustainable health system improvements.

Limitations and Challenges

Despite notable gains, the FinHealth reform continues to face several challenges. Limited institutional capacity at health facilities constrains the use of digital financial tools and data analysis. Integrating FinHealth with existing systems such as the HMIS and treasury platforms remains technically complex, reducing the availability of real-time information for decision-making. Sustainability is another concern, as the initiative still relies on external technical support and funding from development partners. Additionally, behavioral resistance among administrative staff has slowed the adoption of simplified processes, and infrastructure constraints, such as weak internet connectivity and unreliable electricity in rural areas, continue to hinder consistent data reporting and system performance.

References

1. Elghandour, I., Donfouet, H. P. P., & Barry, F. (2025, June 27). ToGO's innovative approach to solving healthcare delivery challenges. World Bank Blogs. <https://blogs.worldbank.org/en/governance/eng>
 2. P4H Network. (2025, July 27). ToGO's innovative approach to solving healthcare delivery challenges - P4H Network. <https://p4h.world/en/news/togos-innovative-approach-to-solving-healthcare-delivery-challenges/>
-

Central Africa Region

CAMEROON

Faith-based Surgical Training Centres

Mbingo Baptist Hospital in Northwest Cameroon hosts a faith-based, PAA-CS-accredited surgical residency that trains African surgeons locally through hands-on mentorship, addressing workforce shortages in underserved areas. The PAACS general surgery residency at Mbingo is a five-year, competency-based program aligned with COSECSA standards. It integrates teaching within clinical service, supported by long-term local faculty and visiting mentors focused on education rather than short-term surgical missions.

This model is innovative for training surgeons in-country within resource-limited, faith-based hospitals. It emphasizes mentorship, contextual learning, and retention through mission-driven commitments, ensuring graduates remain to serve locally.

Transferrable Strategies / Lessons Learned

Training where the need exists strengthens sustainability and retention. Embedding mentorship, standardized accreditation, and interdisciplinary collaboration creates a replicable model for other LMICs. Visiting specialists add most value through teaching and capacity building rather than episodic surgery.

Limitations and Challenges

Regional insecurity, limited infrastructure, and dependence on external support may threaten continuity and sustainability. Balancing mission values with inclusivity remains essential.

References

1. PAACS general surgery programs. (n.d.). <https://paacs.net/what-we-do/programs/general-surgery.html>
 2. BIHS | Welcome. (n.d.). <https://bihs.mbingo.org/en/>
-

DEMOCRATIC REPUBLIC OF CONGO

D.R. Congo Surgical Workforce: The Unmet Need

The surgical workforce in the Democratic Republic of Congo, a large country both in terms of land and population, does not meet the recommended requirement of 20 SAOs (Surgeons, Anaesthesiologists, and Obstetricians) per 100,000 people. More investment is needed to deliver safe and affordable surgery.

Various initiatives are being undertaken to address this deficit, including local training of healthcare professionals at universities and continuing education for medical staff. For instance, Smile Train offers postgraduate training in surgery and anaesthesia in collaboration with the WACS and COSECSA. They also provide continuing education for nurses, nutritionists, speech therapists, and biomedical engineers. Despite these efforts, the country's needs remain vast. By increasing its surgical workforce, Centre Hospitalier Bethesda—a faith-based hospital—has increased the number of surgeries by 18%, improved the quality of perioperative care, and reduced hospital stays. However, in rural areas, the need is still acute, and capacity building remains an important strategy to close this gap.

References

1. Improving surgical outcomes in Democratic Republic of Congo :: King's Health Partners. (n.d.). <https://www.kingshealthpartners.org/latest/improving-surgical-outcomes-democratic-republic-congo#:~:text=26%20March%202024,leadership%20to%20drive%20needed%20improvements>

Safe Surgery Save Lives Initiative

The Democratic Republic of Congo (DRC) faces a severe shortage of surgical services and one of the world's highest burdens of unmet surgical need. In response, the Provincial Ministry of Health in Kongo Central, in partnership with King's Global Health Partnerships (KGHP) and international collaborators, launched the Safe Surgery Saves Lives initiative in 2018. Adapted from the World Health Organization (WHO) Safe Surgery Saves Lives framework, the program aims to reduce surgical complications and deaths by improving surgical safety, quality of care, and health system performance at multiple levels.

Case Report / Best Practice

Implemented across four provincial hospitals—St. Luke’s Hospital (Kisantu), IME Hospital (Kimpese), Kinkanda Provincial Reference Hospital (Matadi), and Boma General Hospital, the initiative focuses on building safer surgical systems through training, data collection, and improved infection control.

Key components include the WHO Surgical Safety Checklist, which enhances communication and teamwork in operating rooms; infection prevention and control measures, such as training on hand hygiene, sterilization using new autoclaves, and appropriate gowning and gloving procedures; and clinical monitoring improvements, including the use of pulse oximeters to ensure safer anesthesia care. The program also established a province-wide surgical data management system to monitor outcomes and guide local and provincial decision-making, which has been identified as one of the most transformative elements of the intervention.

Training is delivered through a “Training of Trainers” model, which empowers local surgeons, anesthetists, and nurses to mentor district-level teams, embedding capacity-building within the provincial health system. Supported by partners such as the Else Kröner-Fresenius-Stiftung, the initiative applies a three-level approach that operates simultaneously at multiple tiers of the health system. At the individual level, it focuses on building the skills and confidence of healthcare workers; at the institutional level, it strengthens hospital equipment, infrastructure, and infection control capacity; and at the system level, it integrates surgical data and evidence into strategic health planning and decision-making.

Transferrable Strategies /Lessons Learned

The DRC experience shows that a partnership-driven, data-informed, and multi-level approach can significantly improve surgical safety even in resource-limited settings. Embedding the WHO checklist, infection control, and monitoring tools within routine surgical workflows improved communication, reduced complications, and enhanced accountability. The emphasis on local ownership, continuous mentorship, and use of surgical data provides a transferable model for other countries seeking to strengthen surgical systems through collaborative, context-appropriate interventions.

Limitations and Challenges

Despite meaningful progress, challenges persist. Maintaining accurate surgical data collection and checklist compliance remains difficult due to workload pressures and limited digital infrastructure.

The program's reliance on external technical and financial support raises concerns about long-term sustainability and national scale-up. Continued investment in local capacity building, institutional integration, and policy alignment will be essential to sustain and expand the initiative's impact.

References

1. Mambu Vangu, A., Kambu, M. N., Mfundu Mbuangi, J., Leather, A. J., & Tissingh, E. H. (2025). Health Systems Strengthening in the Democratic Republic of Congo: The importance of surgical data. *BMJ Global Health*, 10(9). <https://doi.org/10.1136/bmjgh-2024-017759>
 2. Charlotte. (2021, February 4). Safe surgery saves lives in the Democratic Republic of the Congo. Global Health Partnerships. <https://www.global-healthpartnerships.org/safe-surgery-saves-lives-in-the-democratic-republic-of-the-congo/>
 3. Tissingh, D. E. K. (2025, February 26). Safe surgery saves lives. Feature from King's College London. <https://www.kcl.ac.uk/safe-surgery-saves-lives>
-

North Africa Region

EGYPT

Home-Based and Collaborative Surgical Initiatives

Egypt's Presidential Initiative, "Eliminate Surgical Waiting List," launched in 2018, aims to ensure equitable and timely access to essential surgical services for all citizens. The program provides free procedures in priority areas, including organ transplantation, cardiac surgery, oncology, and orthopedics, thereby contributing to national objectives of health equity, improved surgical outcomes, and life-saving care.

Case Report / Best Practice/Best Practice

The initiative mobilized EGP 417 million from the Tahya Misr Fund in 2023 to eliminate surgical backlogs. By June 2025, over 2.5 million surgeries had been completed under the program.

In addition, Egypt established the region's largest organ-transplant center at Nasser Institute Hospital in May 2023, positioning the country as a regional leader in advanced surgical and transplant care.

The initiative pioneered a homegrown funding model, mobilizing contributions from citizens and the private and public sectors. The President led by example, donating half of his salary and personal wealth, inspiring widespread participation in supporting life-saving surgeries.

Transferrable Strategies /Lessons Learned

The experience demonstrates several key lessons that can inform similar initiatives across Africa. Strong political leadership is essential for prioritizing surgical care, mobilizing resources, and sustaining reform momentum. The case also shows that small, coordinated contributions—whether from citizens, the private sector, or regional partnerships—can collectively achieve large-scale impact. Furthermore, well-coordinated health systems, guided by clear targets and strategic investments, are critical to ensuring sustainable, equitable, and replicable outcomes across different contexts.

Limitations and Challenges

Despite its success, the program's reliance on political leadership poses challenges for continuity, as maintaining high-level commitment can be difficult to sustain or replicate elsewhere. Dependence on one-time or donation-based funding raises concerns about long-term financial sustainability, while rapid expansion or scale-up risks straining existing health system capacity, including the workforce, infrastructure, and equitable service delivery across regions.

References

1. Egypt Today. (2023, December 28). More than 2.7 million surgical procedures performed under presidential initiative of ending waiting lists. Egypt Today. Retrieved from <https://www.egypttoday.com/>
 2. Egypt Independent. (2023, December 30). Egypt establishes largest center for organ transplantation in Middle East: Minister. Egypt Independent. Retrieved from <https://www.egyptindependent.com/>
 3. Yousry, O. (2022, September 27). Egypt's president orders construction of largest organ transplantation facility in MENA. Scoop Empire. Retrieved from <https://scoopempire.com/egypts-president-orders-construction-of-largest-organ-transplantation-facility-in-mena/>
-

4. State Information Service. (2023, December 30). Health ministry: 2.2 million surgeries conducted under presidential initiative to end waiting lists. State Information Service (SIS). Retrieved from <https://sis.gov.eg/en/media-center/news/health-ministry-22-mln-surgeries-conducted-under-presidential-initiative-to-end-waiting-lists/>

Local and Global Partnerships in Surgical Advancement

Egypt has strengthened its surgical capacity through local and global partnerships, complementing national efforts to expand access to advanced care while advancing Universal Health Coverage goals. Key initiatives include the Surgical Workforce Hub, supported by Operation Smile and the Royal College of Surgeons of Edinburgh and the Robotic Surgery Hub, developed in collaboration with Chinese medical technology companies.

Case Report / Best Practice/Best Practice

These programs aim to build specialized skills, modernize training curricula, and integrate innovative technologies, contributing to improved surgical outcomes and national health system resilience.

The Surgical Workforce Hub creates regional training centers in major cities to develop surgeons, nurses, and allied health professionals from underserved regions. Supported by international partners such as Operation Smile and the Royal College of Surgeons of Edinburgh, Egypt has modernized curricula, expanded anesthesia and nursing programs, and introduced telemedicine to enhance surgical capacity and workforce distribution.

The Robotic Surgery Hub establishes centers equipped with advanced robotic systems, initially implemented at Ain Shams University Specialized Hospital and Qasr El-Aini Hospital (Cairo University).

The hub-and-spoke system decentralizes expertise, promoting equitable access to surgical care while improving retention. Incentives for rural deployment, leadership training, and integration with health information systems enhance planning and sustainability.

Transferrable Strategies /Lessons Learned

Other African countries can replicate Egypt's model by creating regional training hubs, offering rural incentives, and integrating leadership programs and digital mentorship platforms to maintain skill equity across geographies. In addition, partnerships must be rooted in local needs and priorities, ensuring external collaborations strengthen, not replace, domestic systems and capacities.

Limitations and Challenges

Persistent physician migration, difficulties in retaining staff in rural areas, balancing innovation and technology with local capacity remain challenging, and the need for continuous funding remain key barriers.

References

1. Daily News Egypt. (2024, November). Egypt explores cooperation with Chinese firms to advance robotic surgery. Daily News Egypt. Retrieved from <https://www.dailynewsegypt.com/>
 2. Ain Shams University. (2024, April 12). For the first time in Egypt, Ain Shams University prepares to implement robotic surgery in its university hospitals. Retrieved from <https://www.asu.edu.eg/2399/news/for-the-first-time-in-egyptain-shams-university-prepares-to-implement-robotic-surgery-in-its-university-hospitals>
 3. Company News Egypt. (2025, May). From commitment to change: Leaders call for action to bridge a gap in surgical access. Retrieved from <http://www.cnegypt.com/2025/05/from-commitment-to-change-leaders-call.html>
 4. World Economic Forum. (2024). Sustainability and resilience in the Egyptian health system. Retrieved from https://www3.weforum.org/docs/WEF_PHSSR_Egypt_2024.pdf
-

MOROCCO

Regional Neurotraining Hub

Morocco is one of the key training hubs for neurosurgery in Africa, but comprehensive data on neurosurgical training in Morocco remains limited. Morocco has collaborated with international bodies like the World Federation of Neurosurgical Societies (WFNS), which has made it a leading regional centre for advanced neurosurgical training (Figure 14). The Rabat WFNS Reference Training Centre (RTC), established in 2002, serves as the principal platform for capacity building in neurosurgery for Morocco and the wider African region (El Ouahabi, 2021). By 2019, the center had enabled the training of more than 58 neurosurgical candidates, from approximately 18 countries in SSA.

Case Report / Best Practice/Best Practice

Morocco operates 10 national neurosurgery training programs, which are similar in structure, content, and duration. This lasts for 5 years and leads to a national diploma in neurosurgery. The training is conducted primarily in university hospitals, mainly at the hospital des spécialités in Rabat, a neuroscience Centre. This institution also houses the WFNS Rabat Training Centre, the continental training hub for sub-Saharan Africa for 23 years.

The WFNS RTC Rabat enrolls 4-5 African residents annually and 5-10 Moroccan residents trained in university centers. Over 70 residents from 17 African countries have been trained in Morocco under this initiative, contributing to expanding neurosurgical capacity across the continent. There are approximately 250 practicing neurosurgeons in Morocco serving a population of 36 million, representing a ratio of 1 neurosurgeon per 144,000 individuals. These specialists are distributed across 35 neurosurgical facilities in 25 cities, with 14 departments in university hospitals such as Rabat, Casablanca, Marrakech, Fez, etc.

Transferrable Strategies /Lessons Learned

The Moroccan experience demonstrates that developing specialist training programs locally, rather than relying solely on external institutions, is both feasible and effective for strengthening health workforce capacity in Africa. The establishment of the WFNS Rabat Training Centre has shown the value of sustained international collaboration, standardized curricula, and mentorship in building regional expertise. Morocco's model underscores the importance of institutional partnerships, which facilitate high-quality training and resource sharing while fostering professional networks across the continent.

The program also highlights the need for continuous professional development, with opportunities for subspecialty fellowships, research collaboration, and engagement through professional bodies such as the Société Marocaine de Neurochirurgie (SMNC) and WFNS-led initiatives.

Limitations and Challenges

Despite its success, Morocco's neurosurgical training system continues to face several challenges. The neurosurgeon-to-population ratio remains low, and the urban-rural distribution gap limits access to specialized care outside major cities. The training intake capacity is insufficient to meet regional demand, and resource disparities persist between well-equipped urban hospitals and smaller regional centres. Moreover, there is continued dependence on external funding for international trainees and an absence of a centralized tracking system to monitor graduate outcomes and workforce retention.

Figure 14: WFNS logo



References

1. Karekezi, C., & Khamlichi, A. E. (2019). Takeoff of African Neurosurgery and the World Federation of Neurosurgical Societies Rabat Training Center alumni. *World Neurosurgery*, 126, 576–580. <https://doi.org/10.1016/j.wneu.2019.03.141>
 2. El Ouahabi, A. (2021). Moroccan Neurosurgery: Current Situation and Its Contribution to Global Neurosurgery. *JOURNAL OF GLOBAL NEUROSURGERY*, 1(1), 41–42. <https://doi.org/10.51437/jgns.v1i1.14>
 3. Khamlichi, A. E. (n.d.). Chapter 26 Neurosurgery In Africa.
 4. WFNS. (2023). Rabat Reference Training Centre. <https://wfns.org/training-centers/5/>
-

Southern Africa Region

MADAGASCAR

Cost-Effective Surgical Care Delivery In Madagascar

Cost-effective surgical care delivery in Madagascar involves the use of strategies like task-shifting, improving surgical infrastructure in rural areas, the use of existing facilities, and implementing international surgical and anesthetic guidelines through international collaboration to enhance quality and reduce costs.

Non-physician clinicians were trained to perform essential surgeries, while mobile units provided low-cost, high-quality surgical care on a rotational schedule to rural districts. The government also partnered with international and non-governmental organizations, including Mercy Ships, which trained over 2,500 healthcare professionals, delivered free and cost-effective surgeries, and strengthened local healthcare capacity within Madagascar's resource context.

Similarly, Operation Smile contributes to surgical capacity-building by providing leadership training for key personnel in major teaching hospitals and developing infrastructure. The program trains local doctors, nurses, and staff in essential surgical practices, strengthens networks between urban hospitals and regional clinics, and supports administrators in establishing sustainable supply-chain and logistics systems.

In May 2019, the Ministry of Health of Madagascar launched its first National Surgical, Obstetric, and Anesthesia Plan (NSOAP), Le Plan National de Développement de la Chirurgie à Madagascar.

Madagascar's workforce innovation relies on task shifting and cascade training, enabling non-physician clinicians to perform safe surgeries. Community health workers and general surgeons receive specialized training through theoretical and practical workshops and medical education opportunities. Mercy Ships and Operation Smile collaborate to train local surgeons, anesthesiologists, nurses, and nutritionists through hands-on mentorship aboard hospital ships and in local facilities, creating a multiplier effect where trained professionals can then train others. The innovative aspect is sustainability rather than dependence on visiting surgical missions; Madagascar is systematically building local capacity for ongoing care delivery.

Transferrable Strategies / Lessons Learned

The experience highlights several strategies that can inform surgical system strengthening in other countries. Government support and political commitment—particularly from the Ministries of Health, Economy, and Finance—are essential for successful program implementation and sustainability. The development of the PNDCHM was guided by the Lancet Commission's NSOAP framework, which provides structured guidance for designing and strengthening comprehensive surgical systems. Furthermore, partnerships between government institutions, international NGOs such as Operation Smile and Mercy Ships, and local training institutions have proven critical for combining complementary strengths, ensuring knowledge transfer, and building permanent local capacity.

Limitations and Challenges

Despite progress, several challenges persist. The program faces complex coordination among stakeholders, insufficient budget allocation, and disruptions caused by political instability and frequent turnover within the Ministry of Health. Economic hardship and geographic barriers continue to limit access to surgical care, resulting in delayed treatment. Persistent workforce distribution challenges stem from the shortage of medical providers in rural areas and difficulties in retaining them due to limited incentives and poor working conditions. Additionally, cultural barriers, stigma, and limited awareness prevent some patients from seeking surgical care even where services exist. Finally, infrastructure gaps and insufficient surgical supplies restrict what trained providers can effectively deliver, hindering the overall impact of the program.

References

1. Bruno, E., White, M. C., Baxter, L. S., Ravelojaona, V. A., Rakotoarison, H. N., Andriamanjato, H. H., Close, K. L., Herbert, A., Raykar, N., Saluja, S., & Shrim, M. G. (2017). An Evaluation of Preparedness, Delivery and Impact of Surgical and Anesthesia Care in Madagascar: A Framework for a National Surgical Plan. *World Journal of Surgery*, 41(5), 1. <https://doi.org/10.1007/s00268-016-3847-9>
 2. Madagascar. (n.d.). World Children's Initiative. Retrieved October 18, 2025, from <https://www.wciprojects.org/madagascar>
-

3. Ravelojaona, V., Ma, X., Samison, M.-F., Rabemalala, D., Ayala, R., Ramamonjisoa, A., Andriamanjato, H. H., Ravoniaritsoa, V., Jumbam, D. T., & Andriamanarivo, L. M. (2023). Incorporating surgical and anesthesia care into universal health care: A national plan for the development of surgery in Madagascar. *Canadian Journal of Anesthesia/Journal Canadien d'anesthésie*, 70(7), 1131–1154. <https://doi.org/10.1007/s12630-023-02500-8>

NAMIBIA

Motor Vehicle Accident Fund

Namibia's Motor Vehicle Accident Fund (MVA) is a national, social protection scheme created to support people with healthcare and medical bills after road traffic injuries. Established in 1991, it finances acute care, rehabilitation, and family support while coordinating transfers to appropriate facilities, aiming to close catastrophic-expenditure gaps for crash survivors.

The MVA provides financial benefits and care coordination to people injured by road traffic accidents across Namibia, as well as families of non-survivors. Services include funding for medical treatment, rehabilitation, and assistive technologies (such as wheelchairs and crutches, with replacement when needed), plus facilitation of inter-facility transfers. Importantly, financial support is provided regardless of fault.

The Fund is primarily financed through a fuel levy of approximately US\$0.03 per liter, collected by the National Energy Fund. This micro-levy is small enough to be politically and economically acceptable, yet broad-based and counter-cyclical, aligning revenue with road-use risk. The design, adapted from regional peers in South Africa, Botswana, and Lesotho, creates predictable financing independent from annual budget negotiations, enabling medium-term planning for rehabilitation services, device procurement, and survivor support.

Transferrable Strategies /Lessons Learned

A few features are useful lessons, implementable in other contexts. First, the no-fault entitlement simplifies claims, reduces legislation and waiting time for support; consequently, increasing equitable access to appropriate trauma care. Second, the financing mechanism using a fuel levy offers a pragmatic, scalable revenue stream tied to the risk pool. Third, combining direct financial support with care navigation and focus on rehabilitation and quality of life improves functional outcomes.

Challenges and Limitations

Despite progress, important constraints persist. Awareness and physical access in remote areas remain uneven, and individuals with minor injuries under-utilize the system. Lengthy registration processes can delay disbursements, blunting the value of early rehabilitation. Revenues are insufficient to reliably cover prolonged, complex care needs, and the health-centric mandate leaves adjacent needs, such as mobility and transport after vehicle loss, less well served. Replacement cycles for assistive devices can be long; localized repair and manufacturing ecosystems could shorten lead times, reduce costs, and improve fit-for-purpose solutions.

References

1. Chatukuta M, Groce N, Mindell JS, Kett M. Road traffic injuries in Namibia: health services, public health and the motor vehicle accident fund. *Int J Inj ContrSafPromot*. 2021 Jun;28(2):167-178. doi:10.1080/17457300.2021.1879870. Epub 2021 Feb 10. PMID: 33567973.
 2. The Motorvehicle Accident Fund. 2024, MVA Fund – About us, <https://www.mvafund.com.na/about-us/> (visited 22nd of October 2025)
-

SOUTH AFRICA

Clinical Associates: Expanding Surgical and Clinical Capacity at District Level

South Africa introduced the Clinical Associate (ClinA) cadre, a mid-level medical profession, to strengthen human resources for health (HRH) and expand access to essential surgical and clinical services at district hospitals. ClinAs are trained to provide general clinical care and assist with basic surgical procedures under supervision, addressing persistent workforce shortages in underserved areas.

Case Report / Best Practice

Beginning in 2008, the National Department of Health (NDoH), in partnership with several universities, launched Clinical Associate (ClinA) training programs designed to place graduates in rural and district hospitals. This was in

response to the chronic shortage of healthcare workers, particularly doctors. The three-year Bachelor of Clinical Medical Practice (BCMP) equips ClinA with clinical, procedural, and emergency skills, using the latest educational models and incorporating workplace-based learning, technology-enhanced learning, and curriculum integration (Mgobozi, 2024). Upon completion of their study, they assist physicians in theatres, support minor surgeries, manage emergency cases, and provide pre- and post-operative care (Health Systems Trust, 2019). Their introduction has improved surgical throughput and alleviated pressure on doctors in resource-constrained settings.

The ClinA initiative is a healthcare workforce solution that involved creating a nationally recognized mid-level cadre formally regulated within the health system. This model increases service coverage at a lower cost, improves rural staff retention, provides good value, and builds sustainable capacity where specialists are scarce. It bridges the service-delivery gap between nurses and doctors, providing an adaptable framework for similar contexts across Africa (Ngcobo, 2024; Health Systems Trust, 2019). Furthermore, it provides employment opportunities for young South Africans.

Transferrable Strategies /Lessons Learned

Key strategies for strengthening ClinA programs include establishing accredited curricula linked to a clearly defined scope of practice and supported by a robust regulatory framework. Ensuring continuous mentorship and supervision from physicians or surgeons is essential to maintaining clinical quality and patient safety. ClinAs should also be integrated into broader health system structures, including supply chains and referral networks, to maximize their effectiveness and ensure continuity of care. Finally, providing career progression pathways and formal professional recognition is vital for enhancing motivation, retention, and long-term workforce sustainability.

Limitations and Challenges

Despite its success, several constraints persist. The scope of practice remains inconsistently interpreted across provinces, affecting ClinAs' ability to perform certain procedures (van Heemskerken et al., 2020). Regulatory and professional recognition processes have been slower than anticipated, and supervision of quality varies by facility. Moreover, resistance to change, resource limitations, lack of sufficient posts for new graduates, and logistical and technological challenges have proven to be barriers (Awuah et al., 2024). Furthermore, empirical evidence directly linking ClinA deployment to improved surgical outcomes is still limited, with most studies focusing on workforce distribution rather than patient outcomes (Ngcobo, 2024).

References

1. Health Systems Trust. (2019). Clinical Associates in South Africa. In South African Health Review 2019 (pp. 147–156). Health Systems Trust. Retrieved from <https://www.hst.org.za/publications/South%20African%20Health%20Reviews/SAHR2019.pdf>
 2. Ngcobo, S., Bust, L., Couper, I., & Chu, K. (2024). The role of clinical associates in South Africa as a health workforce: A scoping review. *African journal of primary health care & family medicine*, 16(1), e1–e11. <https://doi.org/10.4102/phcfm.v16i1.4421>
 3. Awuah, W. A., Tan, J. K., Bharadwaj, H. R., Aderinto, N., Ferreira, T., Patel, H., Shah, M. H., Kapoor, A. A., Banerjee, S., Abdul-Rahman, T., & Atallah, O. (2024). Surgical mentorship in low-resource environments: Opportunities and challenges, a perspective. *Health science reports*, 7(8), e2258. <https://doi.org/10.1002/hsr2.2258>
 4. AviweMgobozi. Clinical associate programme in South Africa: Achievements and challenges. *WJCM*. 2024. Vol. 6(2):109-112. DOI: 10.18772/26180197.2024.v6n2a9
-

ZAMBIA

Paediatric Anaesthesia Training in Africa (PATA) Collaborative

The Paediatric Anaesthesia Training in Africa (PATA) Collaborative was launched by Vanderbilt Institute for Global Health, Boston Children's Global Health Program, Smile Train, The ELMA Foundation, and the World Federation of Societies of Anaesthesiologists (WFSA) to address the severe shortage of paediatric anaesthesiologists in Africa. With an estimated 1.75 billion children lacking access to safe surgery and anaesthesia, particularly in low- and middle-income countries, PATA aims to strengthen perioperative care through education, training, and local capacity building.

Case Report / Best Practice

Before PATA, Africa produced only two paediatric anaesthesiologists annually. Since its inception, fellowship programs have been established in Zambia, Nigeria, and Uganda, graduating nine fellows in the first year alone. Currently, 28 paediatric anaesthesiologists have been fully trained across 3 cohorts,

providing specialised anaesthesia in 5 African countries, and 10 are currently in training. The program features an annual bootcamp each September in Lusaka, Zambia, led by regional and international faculty from seven countries, offering advanced airway management, regional anaesthesia, and paediatric life support training. Locally led, the program integrates mentorship, skill development, and faculty exchange to build sustainable capacity across institutions.

Transferable Strategies / Lessons Learned

PATA demonstrates that regionally anchored fellowship programs, with local leadership paired with strong international partnerships and faculty development, can rapidly expand specialist capacity and improve paediatric surgical safety.

Limitations and Challenges

Scalability is constrained by funding, faculty availability, and the need for sustained institutional and governmental support. Engaging and remunerating local faculty may improve sustainability of the program.

References

1. Paediatric Anaesthesia Training in Africa (PATA) Collaborative. (2025). Program overview and fellowship information. World Federation of Societies of Anaesthesiologists (WFSA) and University of Zambia. <https://wfsahq.org/our-work/education-training/fellowship-programme/paediatric-anaesthesia-training-in-africa-pata/>
 2. Vanderbilt Institute for Global Health. (2024, October 15). Pediatric anesthesia training in Africa (PATA) bootcamp 2024. Vanderbilt University Medical Center. <https://www.vumc.org/global-health/latest-news-vigh/pediatric-anesthesia-training-africa-pata-bootcamp-2024>
 3. Boston Children's Global Health Program. (n.d.). Pediatric anesthesia training in Africa. Boston Children's Hospital. <https://global-health.childrenshospital.org/project/pediatric-anesthesia-training-in-africa>
-

Contributors (MSc in Global Health Delivery/Global Surgery Students and Alumni)

1. Fozeya Mohammed Sayied (Ethiopia)
 2. Phyllis Ngure (Kenya)
 3. Solange Uwingeneye (Rwanda)
 4. Tsion Teshome Gebrekidan (Sudan)
 5. Eric Ssennuni (Uganda)
 6. Clemence Uwase (Somalia)
 7. Honorine Munezero (Tanzania)
 8. Majok Deng Akok Deng (Ghana, Nigeria)
 9. Tairu Fofanah (Sierra Leone)
 10. Constancia Anthony Bayona (Senegal)
 11. Fabrice Iradukunda (Mali, Burkina Faso)
 12. Grace Mutimukeye (Togo)
 13. Marie Merci Cyuzuzo (Morocco)
 14. Alexandre Muhawenimana (DRC)
 15. Nebiyu Simegnaw Bayleyegn (Cameroon)
 16. Alexander Habte Habtemariam (Egypt)
 17. Yassine Nsanzabaganwa (Morocco)
 18. Amatsasan Sabo Danjuma (South Africa)
 19. Sarah Warunee Derichs (Namibia)
 20. Sonia Iradukunda (Madagascar)
 21. Gatwiri Murithi (Zambia)
 22. Barnabas Alayande (Zambia, WHO)
 23. Lindiwe Oslee Chilambe
 24. Gratien Nzayikorera
 25. Pierrette Ngutete Mukundwa (COSECSA, WACS, PAACS, Ethiopia)
-

Editors (Centre for Equity in Global Surgery)

1. Dr. Georges Bucyibaruta
 2. Dr. Victor Mgonjesti Mithi
 3. Gatwiri Murithi
 4. Dr. Mulugeta Tenna
-

Editors-in-Chief (Centre for Equity in Global Surgery)

6. Dr. Pierrette Ngutete Mukundwa

7. Dr. Barnabas Tobi Alayande

For further information or inquiries, kindly contact cegs@ughe.org and pmukundwa@ughe.org



ጤና ሚኒስቴር - ኢትዮጵያ
MINISTRY OF HEALTH - ETHIOPIA



UNIVERSITY OF
Global Health
EQUITY



SmileTrain



Mercy
Ships

Ethiopian
የኢትዮጵያ

FROM POLICY TO PRACTICE

**EXPANDING AFRICA'S MULTIDISCIPLINARY
SURGICAL WORKFORCE**

ADDIS ABABA, ETHIOPIA
5-7 NOVEMBER 2025