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 Premier Health

THE IMPACT OF SURGICAL
SUPERSPECIALIZATION ON
GLOBAL HEALTHCARE

About Me



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Introduction

- What is super-specialization?
- Challenges
- Why the trend, what is the driver?
- What are the advantages?
- What is the negative impact of super-specialization?
- Ideas on a workable solution

Introduction

- Over 5 billion people especially in LMIC cannot access essential surgical and anesthesia care, resulting in avoidable deaths and lasting disabilities. Global Surgery 2030: The Lancet, 2015
- Low- and middle-income countries need 143 million more surgeries each year, and inaction could result in up to \$12.3 trillion in lost economic productivity by 2030.
- About 11 % of the global burden of disease measured in disability-adjusted life years (DALYs) could be treated with surgery. Disease Control Priorities in Developing Countries, Debas HT, Gosselin R, McCord C (2006)

Introduction

- This presentation explores the impact of surgical superspecialization on the delivery of healthcare worldwide
- Emphasis on healthcare systems in resource limited countries.
- By understanding the impact of surgical superspecialization, healthcare professionals and policymakers can make informed decisions to optimize the delivery of surgical care and improve healthcare outcomes.

The Healthcare Landscape

Healthcare Access

- Availability of healthcare infrastructure

Distribution of Healthcare Resources

- Minimize disparity in distribution
- Rural populations have limited access to quality healthcare.

Minimal Out-of-Pocket Expenses

- Minimize financial barriers
- Adequate allocation healthcare coverage or absence social insurance programs.

Healthcare Professionals Availability

- Low income tend to limit availability of physicians, nurses, and midwives
- Adequate training opportunities, and migration to higher-income countries.

Essential Medications and Supplies

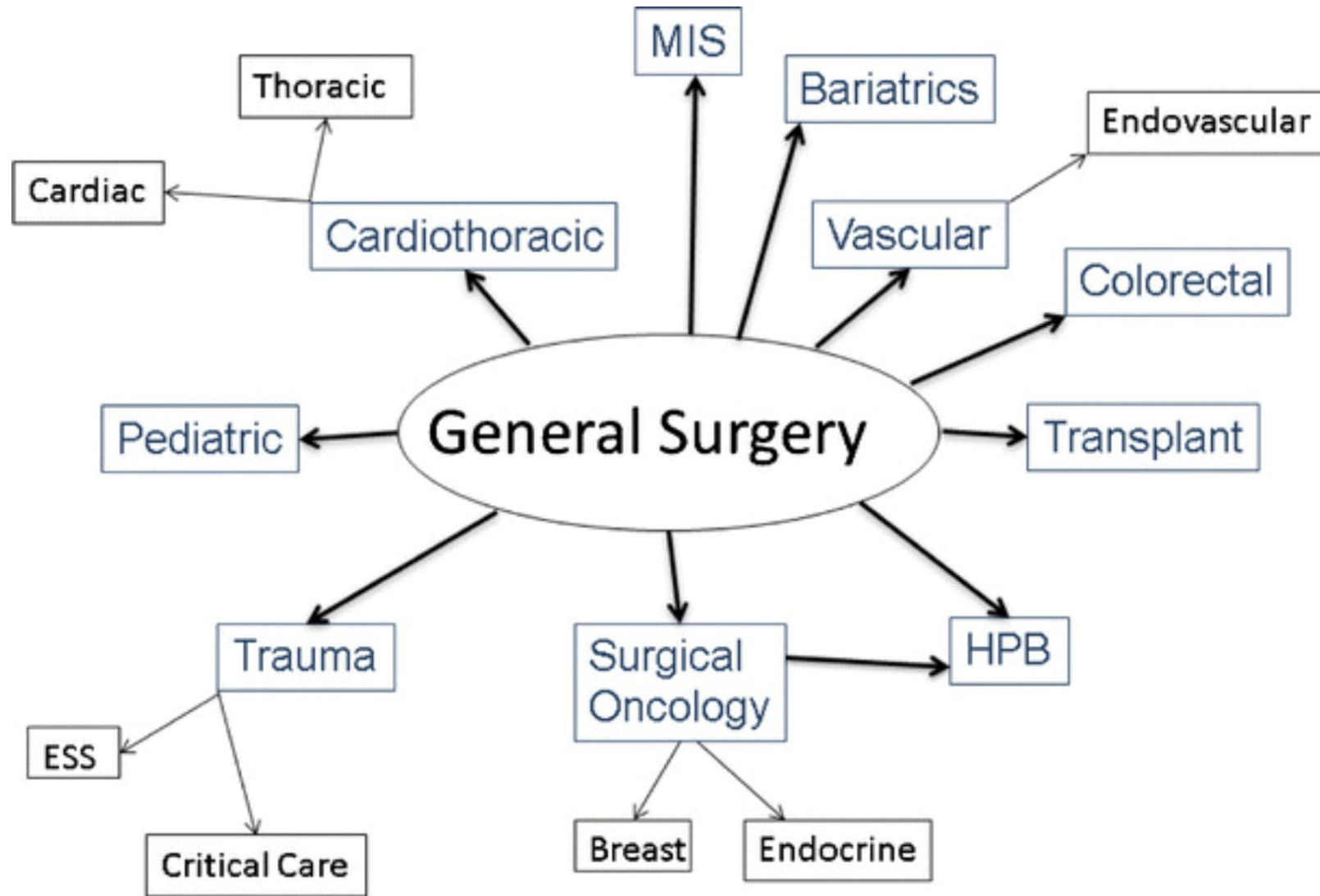
Access to essential medicines and medical supplies, including vaccines, antibiotics, and diagnostic tools.

Superspecialization

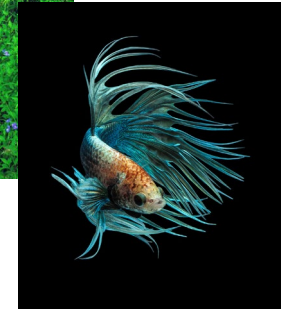
Intensified narrowing in specific area

Delving into at smaller fields: detailed understanding and skill:

- **Neurology**
 - Epilepsy, neuro vascular, neuro intervention radiology
- **General surgeon**
 - Hepatobiliary, breast, hernia, colorectal, etc
- **Surgical oncology**
 - Endocrine surgery- thyroid surgery



Superspecialization



Superspecialization



- Enhancement the quality of care.
- Narrowed focus increases depth of knowledge and skill
- Can result in improved patient outcomes
- Can lead to innovative treatment protocols
- Can facilitate research and the development of advanced therapies.

Superspecialization



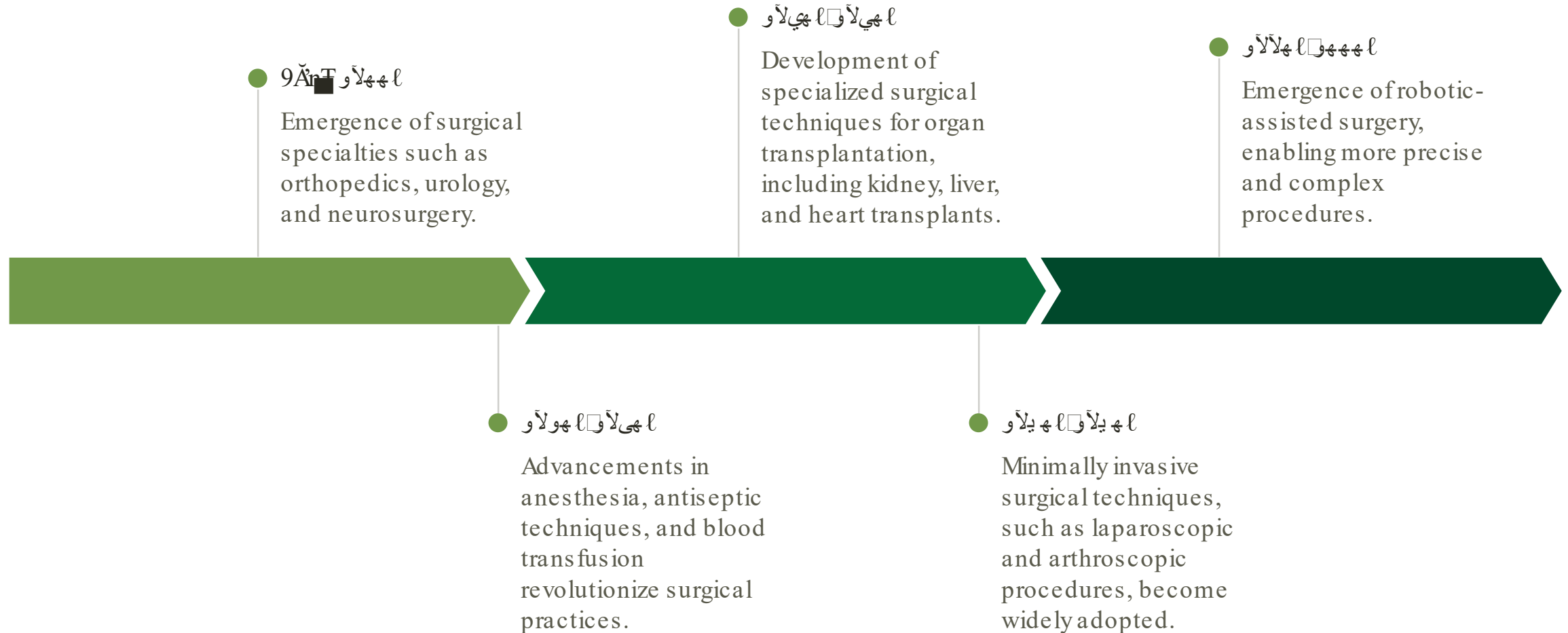
- It is the trend



- Transformative to patient care outcomes



- But has introduced significant challenges



Emerging Trends in Surgical Specialization

Integration of Technology

The increasing use of advanced technologies: robotics, 3D printing, and virtual reality.

Minimally Invasive Procedures

The growing trend towards minimally invasive surgical techniques: laparoscopic and endoscopic procedures, smaller incisions, reduced recovery time, improved patient experience.

Personalized and Precision Medicine

The focused surgical interventions to the unique needs and characteristics of individual patients, leveraging advancements in genetic and genomic analysis to optimize treatment strategies and outcomes.

Subspecialization and Interdisciplinary Collaboration

The emergence of highly specialized surgical subspecialties and the increased emphasis on interdisciplinary collaboration among various healthcare professionals to provide comprehensive and coordinated patient care.

Telemedicine and Remote Surgical Assistance

The integration of telemedicine and remote surgical assistance

Superspecialization in Surgery



Increased complexity of surgical procedures

Specialized knowledge more skill increased complex techniques



Improved patient outcomes

Focused attention to a specific area leads to higher skill



Demand for specialized expertise

Patients and healthcare providers are increasingly seeking out surgeons with specialized expertise, leading to a rise in the number of subspecialists in the field.



Challenges in training and education

Challenges in medical education and training, as programs must adapt to provide comprehensive training in an increasingly specialized field.



Potential impact on healthcare costs

Higher healthcare costs, as patients may need to seek out specialized care from multiple providers, improved outcomes may outweigh the increased costs.

Benefits of Specialization

1. Improved Patient Outcomes

Specialized general surgeons have a deeper understanding of complex procedures and can better tailor treatments to individual patient needs, leading to better surgical outcomes and reduced complication rates.

2. Reduced Complication Rates

By focusing on a specific set of procedures, specialized general surgeons develop refined techniques and expertise, which results in fewer surgical complications and improved patient safety.

3. More Efficient Use of Healthcare Resources

Specialized general surgeons can perform procedures more quickly and effectively, allowing for better utilization of hospital resources, such as operating room time and staff, leading to cost savings for the healthcare system.

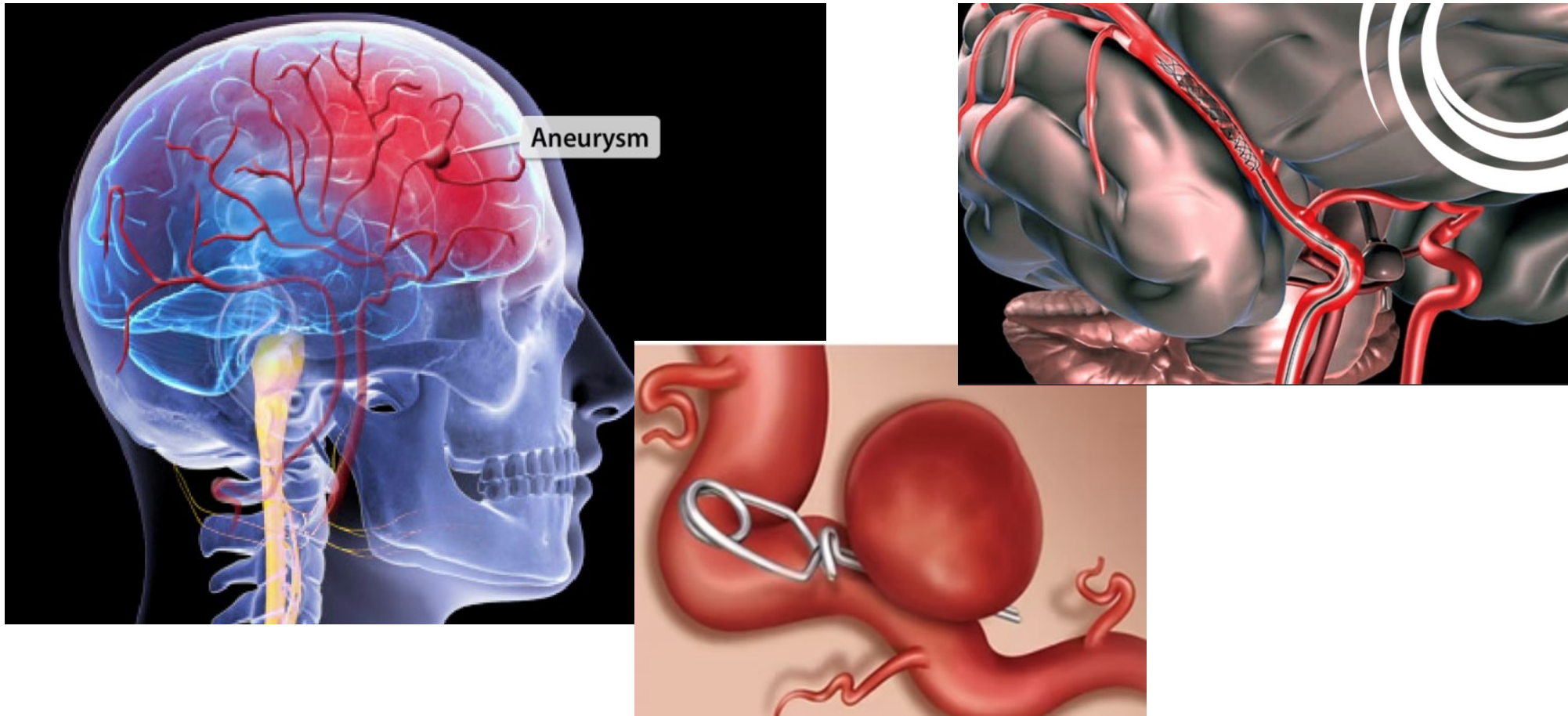
4. Enhanced Surgical Expertise

Continuous focus on a specific area of general surgery allows specialized surgeons to develop advanced skills and stay up-to-date with the latest techniques and technologies, ensuring the highest quality of care for patients.

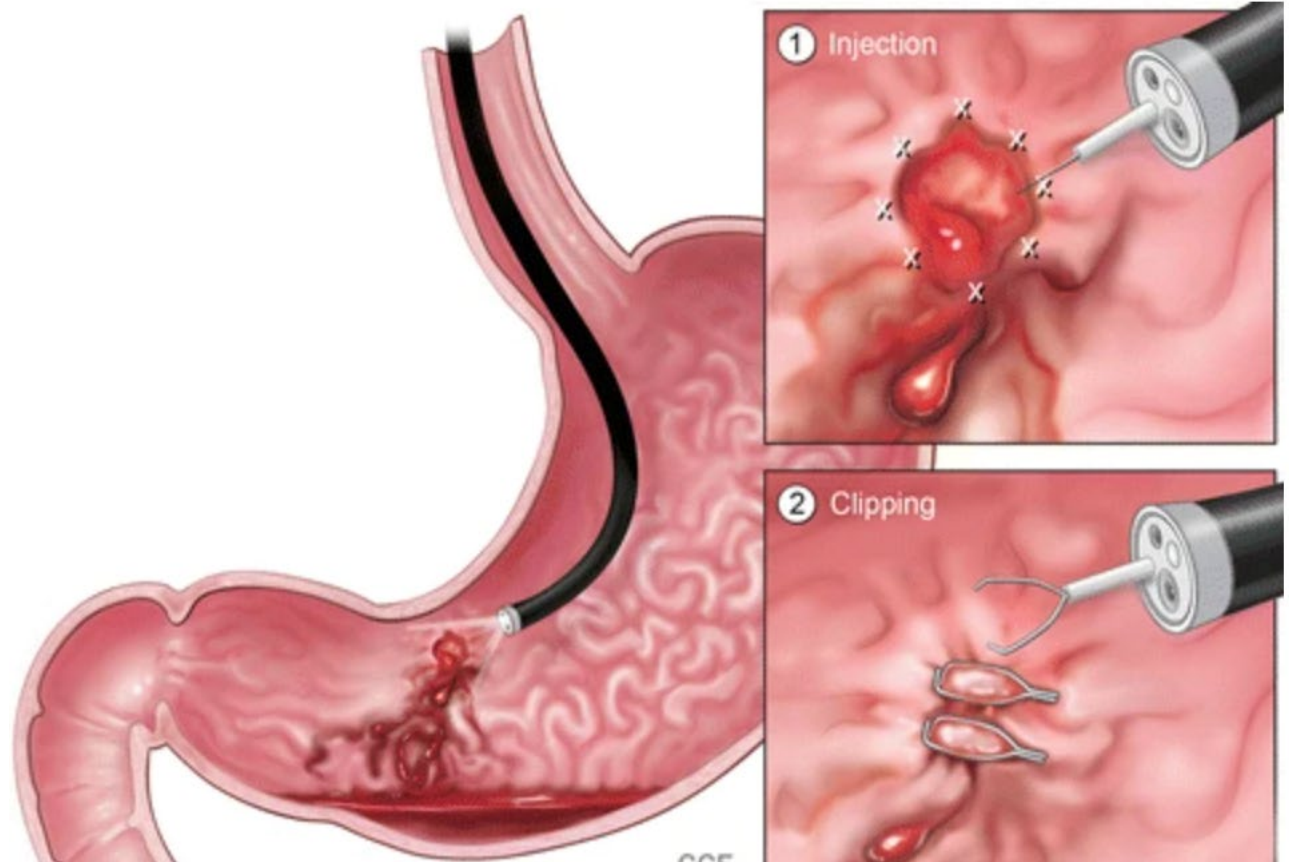
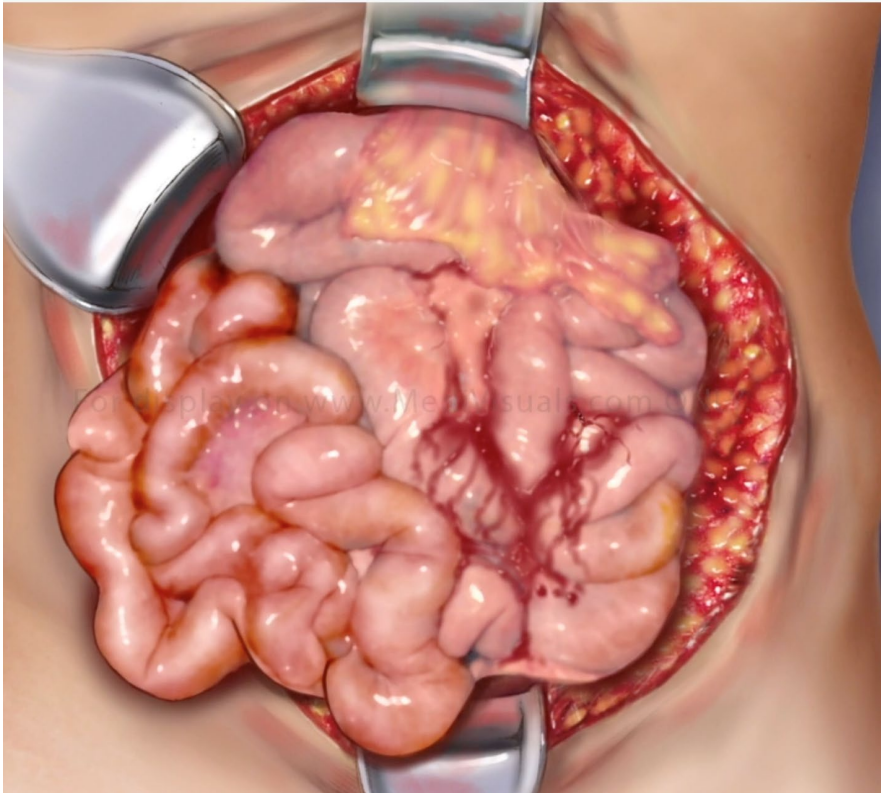
5. Improved Surgical Outcomes

Specialized general surgeons often have a higher volume of specific procedures, which is associated with better patient outcomes, including reduced mortality rates and shorter hospital stays.

Superspecialization



Upper Gastrointestinal Bleed



What is Driving the Trend?

Professional and Economic Factors

- A path for professional development, recognition and become leaders in their fields.
- Higher wages, hospitals generally benefit as they draw more complex and lucrative cases.
- Subspecialists bill at higher fees than general surgeons performing the same procedures.

Patient Demands / Expectations

- Demand for Personalized Care
- Better informed and want assurance in the form of expert intervention

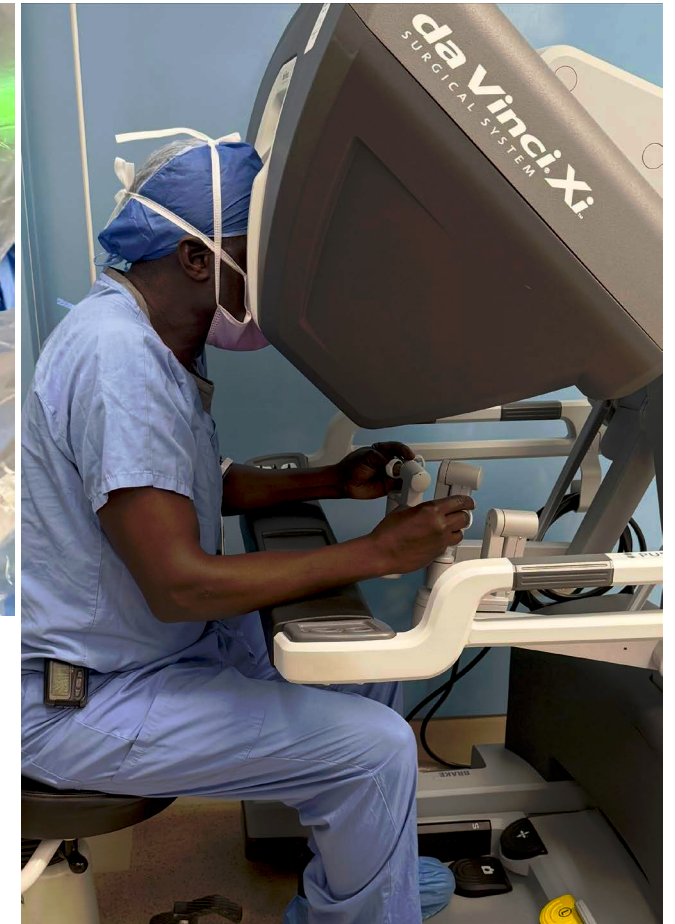
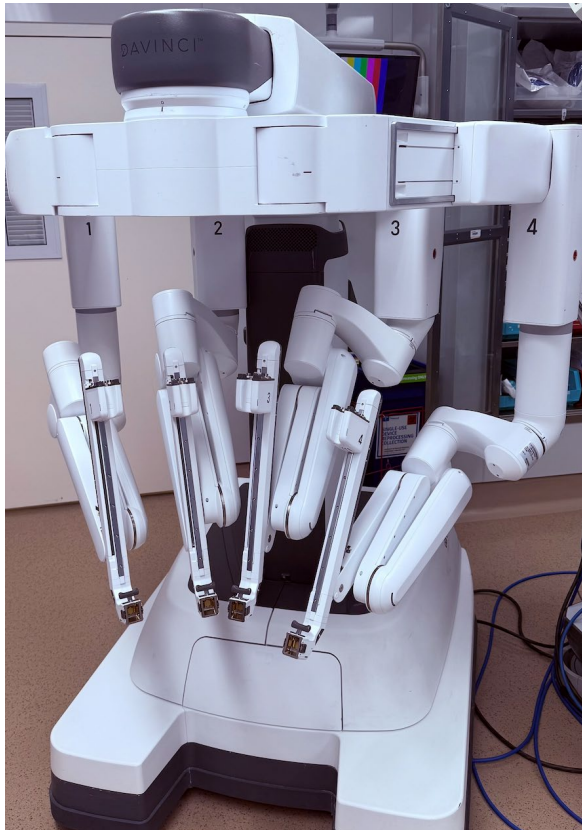
Deeper understanding of disease processes

- Must adapt by fostering subspecialties that can address these complexities effectively.

Technological Advancements

- Use of emerging tools effectively requires more than general knowledge.

What is Driving the Trend?



Challenges Posed Surgical Superspecialization

Limited Access to Specialized Care

- Sets high standards that may not be readily available.
- Limited access may lead to delay in care.

Geographic Disparities

- Tendency be more concentrated in urban and affluent communities

Increased Costs

- More specialized equipment.
- Specialist bill higher
- Travel costs.

Comprehensive Training Needs

Longer and more intensive (demanding) training programs.

Diminished Expertise

Insufficient cover for emergencies that require a broader surgical knowledge

Shortage of generalists

The backbone hospitals is the general surgeons to perform various surgical procedures including surgical emergencies and trauma

Negative Consequences of Superspecialization

Loss of Holistic Care Perspective

Focusing on a single system or procedure, the broader picture or comorbidities can be missed.

Risk of fragmentation of care with multiple specialists in the care with poor coordination.

- **Reduced Flexibility in Emergency or Rural Settings**

Lack general surgical skills needed in under-resourced or emergency environments.

Limits their ability to adapt when patients present with unexpected conditions.

- **Training Bottlenecks**

Longer training, more expensive, and less accessible.

Medical students and residents may face difficulty in choosing or accessing ultra-niche fields.

- **Healthcare System Imbalance**

Overconcentration in prestigious specialties can cause shortages in general surgery or primary care.

Inequity in care access if super-specialists are mostly found in urban or academic centers.

- **Professional Burnout and Job Insecurity**

Over-reliance on a narrow skillset can lead to stress or career instability if demand shifts or technology evolves (e.g., robotics, AI, or endoscopy replacing traditional skills).

Is this all good for society especially resource limited countries?



- Improved quality of care.
- Improved patient outcomes
- Innovative treatment
- Facilitation of research



Challenges of Healthcare Systems in Resource-Limited Countries

Inadequate Funding and Resource Allocation:

- Minimal percentage of their gross domestic product (GDP) to healthcare.

Lack of Access to Essential Medicines and Technologies

- Financial constraints
- Substandard and counterfeit medications
- Limited access to modern medical technologies

Workforce Shortages:

- Insufficient educational opportunities & training facilities
- Exacerbated by the exodus of trained providers to higher-income countries

Infrastructure Deficiencies

- Inadequate infrastructure
- Poorly maintained and outdated equipment,
- Lack of necessary technologies.

Data Deficiency and Health Information Systems

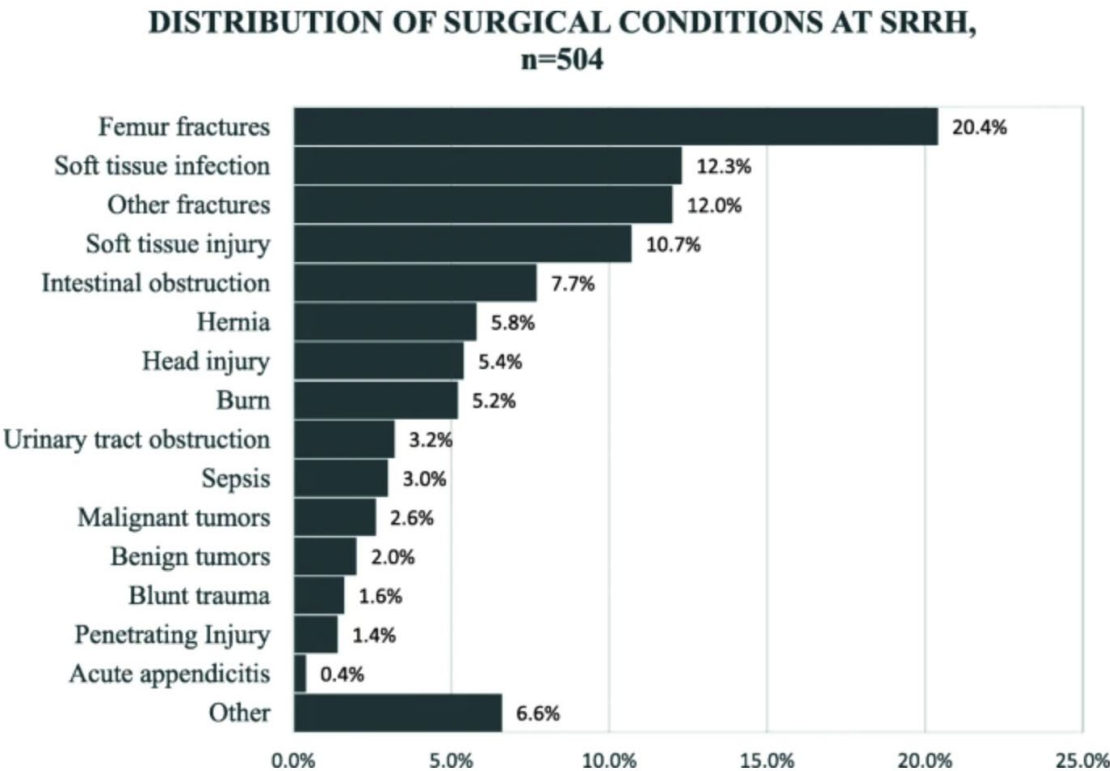
- Inadequate data collection and health information systems hinders effective decision-making and health planning are severely Political and Governance Issues

Social Determinants of Health

- Poverty, poor education, and environment factors

The societal cost and economic impact of surgical care on patients' households in rural Uganda; a mixed method study

Obieze Nwanna–Nzewunwa¹, Rasheedat Oke², Esther Agwang³, Mary-Margaret Ajiko³, Christopher Yoon⁴, Melissa Carvalho², Fred Kirya³, Elliot Marseille⁵ and Rochelle A. Dicker^{2*}



Access to pediatric surgery delivered by general surgeons and anesthesia providers in Uganda: Results from 2 rural regional hospitals

David F. Grabski, MD^a, Margaret Ajiko, MBChB^b, Peter Kayima, MBChB^c, Nensi Ruzgar, BHSc^d, David Nyeko, MBChB^c, Tamara N. Fitzgerald, MD, PhD^e, Monica Langer, MD, MSc^f, Maija Cheung, MD^d, Bruno Cigliano, MD^{g,h}, Sergio D'Agostino, MD^{g,i}, Robert Baird, MD^j, Damian Duffy, MSc^j, Janat Tumukunde, MBChB^k, Mary Nabukenya, MBChB^k, Martin Ogwang, MBChB^c, Phyllis Kisa, MBChB^l, John Sekabira, MBChB^l, Nasser Kakembo, MBChB^l, Doruk Ozgediz, MD^{m,*}

Surgery 170 (2021) 1397–1404

The majority of cases were standard general surgery cases: hernia, intussusception, surgical infections and trauma.



Distribution of most frequently presenting surgical pathology and associated overall in-hospital mortality at Soroti and Lacor Regional Referral Hospitals

Surgical pathology	Soroti		Lacor		Total		P values
	Total patients (% total)	Overall mortality	Total patients (% total)	Overall mortality	Total patients (% total)	Overall mortality	Pathology
General surgical pathology	226 (24.6%)	6 (2.7%)	219 (29.8%)	0 (0%)	444 (26.9%)	6 (1.4%)	<.0001
Inguinal hernias	133 (14.5%)	0 (0%)	84 (11.5%)	0 (0%)	217 (13.2%)	0 (0%)	
Hydrocele	7 (0.7%)	0 (0%)	60 (8.2%)	0 (0%)	67 (4%)	0 (0%)	
Umbilical hernias	22 (2.4%)	0 (0%)	11 (1.5%)	0 (0%)	33 (2%)	0 (0%)	
Intussusception	17 (1.9%)	4 (23.5%)	16 (2.2%)	0 (0%)	33 (2%)	4 (12.1%)	
Postsurgical complications	7 (0.7%)	0 (0%)	11 (1.5%)	0 (0%)	18 (1.1%)	0 (0%)	
Small bowel obstruction	12 (1.3%)	1 (8.3%)	5 (0.7%)	0 (0%)	17 (1%)	1 (5.8%)	
Pyloric stenosis	4 (0.4%)	1 (25%)	6 (0.8%)	0 (0%)	10 (0.6%)	1 (10%)	<.0001
Infection	291 (31.8%)	2 (0.7%)	101 (13.8%)	0 (0%)	392 (23.8%)	2 (0.5%)	
Abscess/cellulitis	230 (25.1%)	1 (0.3%)	72 (9.8%)	0 (0%)	302 (18.3%)	1 (0.3%)	
Wound infection	53 (5.8%)	0 (0%)	11 (1.5%)	0 (0%)	64 (3.9%)	0 (0%)	
Appendicitis	1 (0.2%)	0 (0%)	8 (1.1%)	0 (0%)	9 (0.6%)	0 (0%)	
Trauma/burns	196 (21.4%)	5 (2.6%)	127 (17.3%)	0 (0%)	323 (19.6%)	5 (1.5%)	<.0001
Orthopedic trauma	57 (6.3%)	0 (0%)	46 (6.3%)	0 (0%)	103 (6.3%)	0 (0%)	
Laceration/soft tissue injury	41 (4.5%)	1 (2.4%)	9 (1.2%)	0 (0%)	50 (3%)	1 (2%)	
Burns/burn complication	19 (2%)	1 (5.2%)	31 (4.2%)	0 (0%)	50 (3%)	1 (2%)	
Blunt abdominal trauma	24 (2.6%)	1 (4.1%)	10 (1.4%)	0 (0%)	34 (2.1%)	1 (2.9%)	
Trauma NOS	16 (1.7%)	1 (6.3%)	16 (2.2%)	0 (0%)	32 (1.9%)	1 (3.1%)	
Head injury	16 (1.7%)	1 (6.3%)	6 (0.8%)	0 (0%)	22 (1.3%)	1 (4.5%)	
Congenital anomaly	117 (12.7%)	9 (7.7%)	124 (16.9%)	7 (5.6%)	251 (15.2%)	16 (6.3%)	.0003
Anorectal malformation	43 (4.7%)	3 (6.9%)	43 (5.9%)	1 (2.3%)	86 (5.2%)	4 (4.6%)	
Hirschsprung's disease	50 (5.4%)	4 (8%)	24 (3.3%)	0 (0%)	74 (4.5%)	4 (5.4%)	
Hypospadias	5 (0.6%)	0 (0%)	20 (2.7%)	0 (0%)	25 (1.5%)	0 (0%)	
Undescended testis	10 (1.1%)	0 (0%)	14 (1.9%)	0 (0%)	24 (1.4%)	0 (0%)	
Gastroschisis	4 (0.4%)	2 (50%)	4 (0.5%)	4 (100%)	8 (0.5%)	6 (75%)	
Oncology/masses	21 (2.3%)	0 (0%)	43 (5.9%)	0 (0%)	64 (3.9%)	0 (0%)	.0026
Cystic hygroma, lymphatic malformation	2 (0.2%)	0 (0%)	15 (2%)	0 (0%)	17 (1%)	0 (0%)	
Soft tissue mass NOS	4 (0.4%)	0 (0%)	12 (1.6%)	0 (0%)	16 (1%)	0 (0%)	
Abdominal malignancy	4 (0.4%)	0 (0%)	4 (0.5%)	0 (0%)	8 (0.5%)	0 (0%)	
Subspecialty	65 (7.1%)	0 (0%)	119 (16.2%)	0 (0%)	184 (11.2%)	0 (0%)	<.0001
Urology	34 (3.7%)	0 (0%)	70 (9.5%)	0 (0%)	104 (6.3%)	0 (0%)	
ENT	6 (0.6%)	0 (0%)	32 (4.4%)	0 (0%)	38 (2.3%)	0 (0%)	
Orthopedic surgery	19 (2.1%)	0 (0%)	15 (2%)	0 (0%)	34 (2.1%)	0 (0%)	
Neurosurgery	6 (0.6%)	0 (0%)	2 (0.3%)	0 (0%)	8 (0.5%)	0 (0%)	
Total	916 (100%)	22 (2.4%)	733 (100%)	7 (1%)	1649 (100%)	29 (1.7%)	<.0001

General Surgery

- General surgical problems: wide range, (48.1% of admits) in one study).
- Hernias: Including inguinal hernias.
- Surgical infections: abscesses and wound infections.
- Acute intra-abdominal: intestinal obstruction, peritonitis, and appendicitis.
- Cholelithiasis (gallstones): A common reason for elective surgery.
- Gastroduodenal perforation: A frequent indication for emergency surgery.

Trauma:

- About 32.2% of surgical admissions
- Road traffic accidents
- Traumatic brain injury (TBI): The most common indication for admission
- Fractures: Both femur fractures and non-femur fractures are common.

Oncology (cancer): A notable percentage of surgical admissions.

Congenital anomalies: In pediatric surgical admissions.

Uganda's Healthcare Landscape

- **Inadequate Funding and Resource Allocation:**
 - Minimal percentage of the gross domestic product (GDP) to healthcare.
 - The average per capita GDP of \$676
- **Workforce Shortages:**
 - 83 surgical, anesthetic, and obstetric (SAO) physicians at the sampled hospitals,
 - = workforce density of 0.34 SAOs per 100,000 population
 - 93.8% had medical officers performing surgeries
- **Data Deficiency and Health Information Systems**
 - Inadequate data collection and health information systems hinders effective decision-making and health planning are severely Political and Governance Issues
- **Lack of Access to Essential Medicines and Technologies**
 - Limited access to standard medical technologies
- **Infrastructure Deficiencies**
 - 0.2 OR / 100,000 people. .
 - Surgical, anesthetic, and obstetrician physician: 0.3 per 100,000 people.
 -
- **Social Determinants of Health**
 - Poverty, poor education, and environment factors

Uganda's Healthcare Landscape

- A density of 0.34 surgeons per 100,000 is very low, indicates a significant shortage of surgeons overall.
- South Africa is an upper middle-income country : 10.5 per 100,000 population in 2019
- This would make it difficult to support any degree of superspecialization, as there are not enough general surgeons to cover the basic surgical needs of the population.

“We want the same chance of the best care, best outcomes to and stay healthy—just like everyone else”

- Attempts to replicate Western models of superspecialization can be detrimental in resource-limited settings
- Exacerbation of healthcare inequities: the emergence of highly specialized practitioners may inadvertently widen the gap between those who can access specialized care and the broader population who cannot

Abuja Declaration (2001)

The **Abuja Declaration of 2001** was a commitment made by **African Union (AU) countries** in **Abuja, Nigeria**, in **April 2001**.

Goal: to **strengthen health systems** and **expand access to essential services**, particularly to tackle major diseases like **HIV/AIDS, malaria, and tuberculosis**.

African governments pledged to allocate at least 15% of their annual national budgets to the health sector.

Only 2 of the 55 AU member countries met this target in 2021: Cabo Verde (15.75 %) and South Africa (15.29)

Average health care expenditure of AU countries was 7.35 % of their national budgets.

Solutions

1. Increase Health Financing

- i. Fulfill Abuja Declaration
- ii. Innovative financing: taxes (e.g., alcohol), international aid must not be the plan.

2. Strengthen the Health Workforce

- i. Train more health professionals, especially surgeons, anesthesiologists, and nurses.
- ii. Provide incentives to retain health workers in rural and underserved areas.
- iii. Support task-shifting where appropriate to expand service delivery.

3. Improve Infrastructure

4. Strengthen Health Data Systems

5. Regional and Global Partnerships

- i. COSECSA
- ii. American College of Surgeons

6. Political Commitment & Governance

- i. Embed surgery and anesthesia in national health policies and plans.
- ii. Hold governments accountable for health targets and transparency in spending

American Board of Surgery: The certified general surgeon demonstrates broad knowledge

- Alimentary Tract
- Abdomen and its Contents
- Breast, Skin and Soft Tissue
- Endocrine System

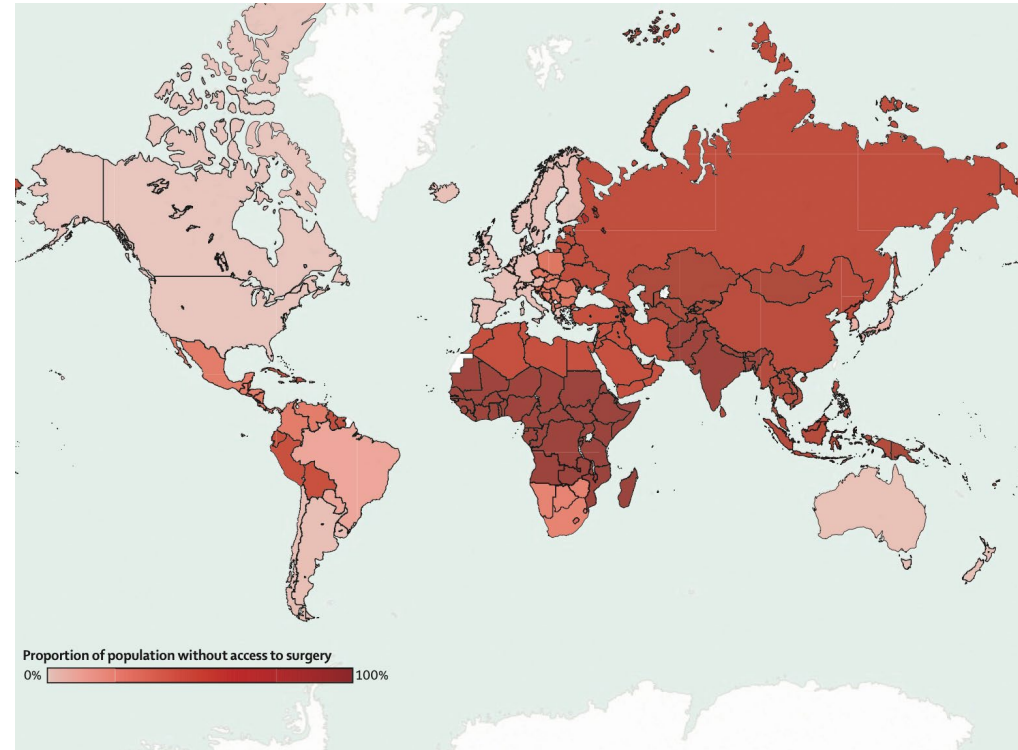
In additional broad knowledge & experience:

- Surgical Critical Care
- Surgical Oncology
- Trauma

In some circumstances, provides care in the areas of vascular surgery, pediatric surgery, thoracic surgery, burns, and solid organ transplantation.

Global Healthcare

- 5 billion people worldwide lack access to safe, affordable, and timely surgical and anesthesia care
- 90% people in low-income and lower-middle income countries (LMICs) cannot access basic surgical care



Proportion of the population without access to safe, affordable surgery and anaesthesia
Institute for Health Metrics and Evaluation region

The Lancet, 386 (9993),569–624, 2015. DOI10.1016/S0140-6736(15)60160-X

Global Surgery 2030: Evidence and Solutions for Achieving Health, Welfare, and Economic Development

- The Lancet Group works with academic partners and leading experts to identify the most pressing issues in science, medicine, and global health, with the aim of providing recommendations that change health policy or improve practice
- The provision of safe and affordable surgical and anesthesia care when needed not only reduces premature death and disability, also boosts welfare, economic productivity, capacity, and freedoms, contributing to long-term development.

Global Surgery 2030

Core indicators for monitoring of universal access to safe, affordable surgical and anaesthesia care when needed

	Definition	Target
Access to timely essential surgery	Proportion of the population that can access, within 2 h, a facility that can do caesarean delivery, laparotomy, and treatment of open fracture (the Bellwether Procedures)	A minimum of 80% coverage of essential surgical and anaesthesia services per country by 2030
Specialist surgical workforce density	Number of specialist surgical, anaesthetic, and obstetric physicians who are working, per 100 000 population	100% of countries with at least 20 surgical, anaesthetic, and obstetric physicians per 100 000 population by 2030
Surgical volume	Procedures done in an operating theatre, per 100 000 population per year	80% of countries by 2020 and 100% of countries by 2030 tracking surgical volume; a minimum of 5000 procedures per 100 000 population by 2030
Perioperative mortality	All-cause death rate before discharge in patients who have undergone a procedure in an operating theatre, divided by the total number of procedures, presented as a percentage	80% of countries by 2020 and 100% of countries by 2030 tracking perioperative mortality; in 2020, assess global data and set national targets for 2030
Protection against impoverishing expenditure	Proportion of households protected against impoverishment from direct out-of-pocket payments for surgical and anaesthesia care	100% protection against impoverishment from out-of-pocket payments for surgical and anaesthesia care by 2030
Protection against catastrophic expenditure	Proportion of households protected against catastrophic expenditure from direct out-of-pocket payments for surgical and anaesthesia care	100% protection against catastrophic expenditure from out-of-pocket payments for surgical and anaesthesia care by 2030
These indicators provide the most information when used and interpreted together; no single indicator provides an adequate representation of surgical and anaesthesia care when analysed independently.		

Solutions

- **Promote regional hubs for specialized care**
Establish specialized care centers in strategic locations to serve broader populations, reducing the need for long-distance travel and ensuring accessibility.
- **Invest in telemedicine and digital health solutions**
Leverage technology to provide remote consultation, diagnosis, and treatment, especially for communities with limited access to in-person specialized care.
- **Implement task-sharing and task-shifting strategies**
Train and empower primary care providers and community health workers to handle certain specialized procedures, expanding the reach of specialized care.
- **Address healthcare workforce shortages**
Incentivize specialized medical professionals to practice in underserved areas through scholarships, loan forgiveness programs, and improved working conditions.
- **Ensure equitable healthcare financing**
Develop sustainable financing models, such as universal health coverage or risk-pooling mechanisms, to make specialized care affordable and accessible to all.

Costs

- Disability- Adjusted Life Year (DALY) is a metric used to quantify the overall burden of disease and health issues within a population.
- It measures the number of healthy years lost due to premature death and years lived with a disability.
- Years of Life Lost (YLL): This represents the years of potential life lost due to premature mortality from a specific disease or condition.
- Years Lived with Disability (YLD): This measures the loss of quality of life due to illness or injury, considering the severity and duration

Solutions

- In conclusion, surgical superspecialization plays a crucial role in enhancing patient outcomes but poses challenges in accessibility and costs that need ongoing attention.
- There are clear benefits but comes with distinct challenges. Continued research and training investments are essential for optimizing global healthcare
- leading to increasingly organ-specific and procedure-specific scopes of practice.
- The field acute care surgery (ACS) was created.