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PROGRAM IN GLOBAL SURGERY
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Harvard Medical School



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Essential Surgery and Trauma Care: An Integral Part of Universal Health Coverage

World Health Summit 2020 Webinar Proceedings



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International Standard Book Number

ISBN-13: 978-1-7356526-1-0

Suggested citation: Essential Surgery and Trauma Care: An Integral Part of Universal Health Coverage: World Health Summit 2020 Webinar Proceedings. 2020. Virtual. April 2021

Essential Surgery and Trauma Care: An Integral Part of Universal Health Coverage

World Health Summit 2020 Webinar Proceedings

October 26, 2020

UTC: 03:00 PM – 04:30 PM

Rapporteur

Dr Anna Nicholson, Doxastic

Hosts

AO Alliance Foundation

Program in Global Surgery and Social Change, Harvard Medical School

Chairs

Dr John Meara, Kletjian Professor of Global Surgery, Harvard Medical School, USA

Dr Geoff Ibbotson, Executive Lead, Global Surgery Foundation;
Senior Consultant, United Nations Institute for Training and Research, Switzerland

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Featured Speaker Biographies



Dr Jim Harrison is a Trauma and Orthopaedic surgeon based in the National Health Service at Chester, UK. He is the Africa Regional Director for AO Alliance, and an Honorary Professor of the University of Liverpool. Jim previously worked for 11 years in Malawi with Cure International and the Government Medical College and has also worked in Zimbabwe. He was foundation Medical Director of the Beit Cure International hospital, Blantyre, Malawi. He is a foundation Fellow of the College of Surgeons of East Central and Southern Africa. Jim has supported development of Trauma and Orthopaedics in more than 20 sub-Saharan African countries by partnering with local T&O surgeons and nurses in education and capacity building. Jim believes that research is an important component of capacity building. He is a founder member of the Orthopaedic Research Collaborative for Africa (ORCA). He has published widely on T&O in the Low-income country setting, including pioneering research on the impact of HIV on surgical outcomes. He continues to promote awareness of the huge global health issue of 'Injury', and to research the scale of the problem and the impact of cost-effective interventions. Jim's contribution to T&O development in LICs has been acknowledged by the British Orthopaedic Association Presidential Merit award in 2014, and the World Orthopaedic Concern Arthur Eyre-Brook medal in 2017.

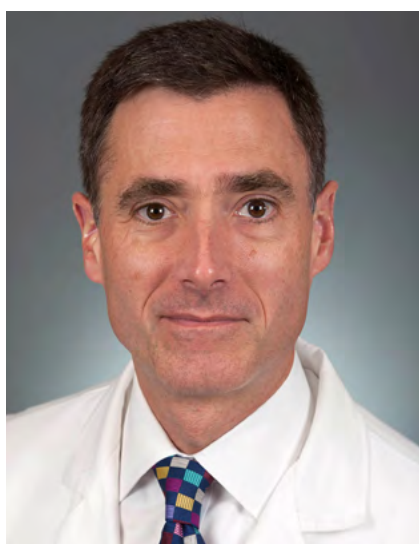


Dr Geoffrey Ibbotson is the executive lead for the Global Surgery Foundation, hosted by the United Nations Institute for Training and Research (UNITAR) and a senior health advisor to the UNITAR Programme in Health and Development. He has more than 25 years of experience in medical humanitarian and disaster relief work during which he has served as a front-line surgeon in multiple countries. He has led disaster response activities, developed strategic programmes and guided organizational and governance reviews and re-structuring. He served as the Director of Trauma Services for the North West of Alberta and was the Chair of the Alberta Provincial Trauma Committee, which coordinated an integrated trauma system for 10 trauma hospitals in Alberta. He attended medical school at the University of Toronto and completed his training as a general surgeon at the University of Calgary in 2000. He is a fellow of both the Royal College of Physicians and Surgeons of Canada and the American College of Surgeons, holding academic appointments at both the University of Calgary and the University of Alberta. Dr. Ibbotson also has a Master of Science Degree from Queen's University and has multiple research publications. He has previously lived overseas in low resource settings with his wife and 3 children, as they worked together with local health care providers to improve access to surgical care in those countries.



Dr Ali Jafarian is the Founding Director of the Liver Transplantation program since 2002 and the head of the division of hepatopancreatobiliary and liver transplantation in Imam Khomeini Hospital Complex, Tehran University of Medical Sciences (TUMS), since 2008. Dr. Jafarian is a member of the Iranian Graduate Medical Council from 2006 to 2017. He is also appointed as a member of national board of General Surgery since 2015. He was an associate member of the Iranian Academy of Medical Sciences from 2013 and was Dean of Medical School in 2008-2009 and Vice Chancellor in 2009-2011.

Dr Jafarian was appointed as the Chancellor of Tehran University of Medical Sciences from September 2013 – 2017. During this time, he was also a member of Supreme council for Science, Research and Technology and National Council of Evaluation of State Education. TUMS membership in M8 Alliance is one the international achievements during his term. After finishing his term as chancellor, he is now a member of Board of Trustees of TUMS. Dr. Jafarian has contributed more than 70 published papers and 5 books mainly focused on three themes: hepatobiliary surgery and liver transplantation, and medical ethics and medical education. He is a member International Liver Transplant Society (ILTS), Middle East Society of Organ Transplantation (MESOT) and Iranian Society of Organ Transplantation (IRSOT).



Dr John G. Meara, MD, DMD, MBA is the Kletjian Professor of Global Surgery, Director of the Program in Global Surgery and Social Change, and Professor of Surgery in the Department of Surgery at Harvard Medical School. Dr Meara serves as the Plastic Surgeon-in-Chief of the Department of Plastic & Oral Surgery at Boston Children's Hospital. He was Co-Chair for the Lancet Commission on Global Surgery and was a commissioner on the Lancet Global Health Commission on High Quality Health Systems in the SDG Era, and the Lancet Oncology Commission. He currently serves as a commissioner on the Lancet Commission on Diagnostics. In 2008 he created the Paul Farmer Global Surgery Fellowship program. He is also interested in value-based health care and implementation science research, including time driven activity-based cost research and outcomes research. Dr Meara has led several ICHOM projects focusing on outcomes reporting and international benchmarking.



Dr Teri Reynolds leads the Clinical Services and Systems Unit in the department of Integrated Health Services at the World Health Organization Headquarters in Geneva. The Clinical Services and Systems Unit brings together for the first time WHO's work on integrated delivery channels – including primary care, emergency care, critical care, surgical care and palliative care – with a new focus on effective organization and people's movement across the health system. Dr Reynolds previously led the emergency and trauma care programmes at WHO and currently coordinates the department efforts on maintaining essential health services during the COVID-19 outbreak. She was previously Professor and Director of Global Health for the Department of Emergency Medicine, University of California, San Francisco, and directed the Emergency Medicine Residency and research programmes at Muhimbili National Hospital in Tanzania for several years.



Dr. Lubna Samad is based at the Indus Health Network (IHN) in Karachi, Pakistan. In addition to her work as a pediatric surgeon, she is committed to improving patient outcomes with a specific focus on LMICs. Her experience in public sector hospitals in Pakistan has informed her understanding of the individual, social and institutional barriers that result in poor access to, and provision of, quality surgical care. As Director of the Center on Essential Surgical & Acute Care (CESAC) at IHN's Global Health Directorate, she leads a team working to improve surgical care delivery platforms and patient outcomes. She has led the National Vision for Surgical Care in collaboration with Pakistan's Ministry of National Health Services, Regulations and Coordination, aimed at incorporating surgical care delivery within the country's health plan. As a member of the G4 Alliance and GICS, she has joined the global momentum to provide care to neglected surgical patients.



Honourable Dr. Ifereimi Waqainabete is Fiji's Minister for Health and Medical Services. He started his political career after he successfully contested the General elections in 2018 under the banner of the Fiji First party. He is a clinician/medical officer by profession since 1998 and rose through the ranks to assume the role of a specialist surgeon from 2006 to 2015. Apart from his degree in Medicine and Surgery, Hon. Dr Ifereimi Waqainabete holds a degree of Masters in Medicine with a specialization in Surgery. He was an Associate Professor in Surgery at the Fiji National University from 2016 to 2018 and to date still maintains the passion and enthusiasm in this field of medical care. Hon. Waqainabete is currently the President of the Pacific Islands Surgeons Association. Among his notable accolades, Hon. Waqainabete was a recipient of the prestigious Rowan Nicks Fellowships & Scholarships whereby he assumed the position of a Senior Registrar, General Surgery at the Palmerston North Hospital in New Zealand in 2004 and 2005. He was also later a General Surgical Fellow at Christchurch Public Hospital.

Abbreviations

DALY	disability-adjusted life years
DCP-3	Disease Control Priorities, Third Edition
DCPN	Disease Control Priorities Network
ECO	emergency, critical, and operative
EWARS	WHO Early Warning, Alert and Response System
HIC	high-income countries
IHN	Indus Health Network
LCoGS	Lancet Commission on Global Surgery
LIC	low-income countries
LMIC	low – and middle-income countries
MoHNSR&C	Ministry of National Health Services, Regulation and Coordination
NCD	non-communicable disease
NSOAP	national surgical, obstetric, and anaesthesia plan
NHV	Pakistan's National Health Vision
NVSC	Pakistan's National Vision for Surgical Care 2025
PHC	primary health care
POMR	perioperative mortality rate
PSOAP	provincial surgical, obstetric and anaesthesia plan
RTI	road traffic incidents
RMNCH	reproductive, maternal, newborn, and child health
SADC	Southern African Development Community
SDG	Sustainable Development Goals
TB	tuberculosis
UHC	Universal Health Coverage
UHC-BP	Universal Health Coverage Benefit Package
UNITAR	United Nations Institute for Training and Research
WHA	World Health Assembly
WHO	World Health Organization

1 Introduction

From October 25-27, 2020, a group of leaders from politics, science and medicine, the private sector, and civil society convened for the 2020 World Health Summit.¹ The webinar panel discussion Essential Surgical and Trauma Care: An Essential Part of Universal Health Coverage (PD 19) was held on October 26, 2020. The panel comprised six presentations followed by a discussion. The panel was moderated by Dr John Meara, workshop co-chair and Professor of Surgery, Harvard Medical School, US, and Dr Geoff Ibbotson, Executive Lead for the Global Surgery Foundation, hosted by the United Nations Institute for Training and Research (UNITAR). Featured speakers were:

- Dr Jim Harrison, AO Alliance Foundation, African Regional Director, Switzerland
- Prof Dr Ali Jafarian, Tehran University of Medical Sciences and Former Chancellor, Iran
- Dr Teri Reynolds, World Health Organization, Clinical Services and Systems – Integrated Health Services, Unit Head
- Dr Lubna Samad, Director of Center for Essential Surgical and Acute Care, Indus Health Network, Pakistan
- His Excellency Dr Ifereimi Waqainabete, Fijian Government, Minister for Health and Medical Services, Republic of Fiji

1.1 THE UNMET GLOBAL BURDEN OF ESSENTIAL SURGICAL AND TRAUMA CARE

Dr John Meara, workshop co-chair and Professor of Surgery, Harvard Medical School, US, welcomed participants to the Essential Surgical and Trauma Care panel and provided an overview of the current state of global surgical care access. Global awareness has greatly expanded and surgery is increasingly recognized as an indivisible, indispensable part of universal health coverage (UHC). However, the challenge remains to translate these advocacy gains into country-level action that will save lives, and only limited progress has been made in recent years to improve surgical care delivery around the world. Surgical conditions are linked to more than five times the mortality of HIV/AIDS, tuberculosis, and malaria combined, yet global funding for surgical care remains inequitably small. This is despite the fact that today, over five billion people remain without access to safe, affordable and timely surgical care. These access limitations result in over 17

million preventable deaths annually. Roughly a third of the global burden of disease is attributable to surgical conditions or requires surgical or anaesthesia expertise. Furthermore, trauma and injury account for 5.8 million deaths and around 50 million permanently disabled persons per year. About 90% of this mortality and morbidity occurs in low and middle-income countries (LMICs). To address this, integrated and holistic approaches are needed to build health systems that include increased emphasis on surgical care delivery, trauma care and emergency care systems, emphases that are currently lacking. The old-fashioned myth that access to emergency and essential surgical care is a luxury item has been debunked. On the contrary, emergency and essential surgical interventions are cost-effective and absolutely essential for UHC.

Meara introduced his co-chair, Dr Geoff Ibbotson, a UNITAR senior health adviser in health and development, a trauma surgeon, and a fellow of both the Royal College of Physicians and Surgeons of Canada and the American College of Surgeons, with 25 years of experience in medi-

¹ Due to the COVID-19 pandemic, the summit took place as a fully digital, interactive conference with cost-free availability of all sessions of the program.

cal, humanitarian and disaster relief. Ibbotson thanked the keynote speakers for their participation before providing an overview of the need for essential surgery and trauma care. Citing a 2008 article² by Dr Paul Farmer and Dr Jim Kim that stated “...surgery may be thought of as the neglected stepchild of global public health,” Ibbotson noted that despite many changes in the 12 years since the article’s publication, the need for providing safe essential surgery and trauma care continues to grow. Thus, this panel discussion was added to the World Health Summit for the first time to highlight the need to focus on surgical and trauma priorities.

An estimated 5 billion people do not have access to essential surgical care, which includes safe anaesthesia, obstetric, and trauma care.³ This is despite almost 30% of the global burden of disease requiring a functional surgical care system for appropriate treatment. While the cost of meeting this need is substantial, the cost of not acting will be far greater, with \$12.3 trillion in lost economic output predicted by the year 2030. Further, emerging evidence in recent

years has shown that building capacity in the surgical care system not only saves lives but is affordable and promotes economic growth. Ibbotson added that the COVID-19 pandemic is revealing the importance of countries having strong, resilient health care systems. Surgical care that includes safe anaesthesia can serve as the cornerstone of sustainable health care systems that can withstand emergencies such as the ongoing COVID-19 pandemic.

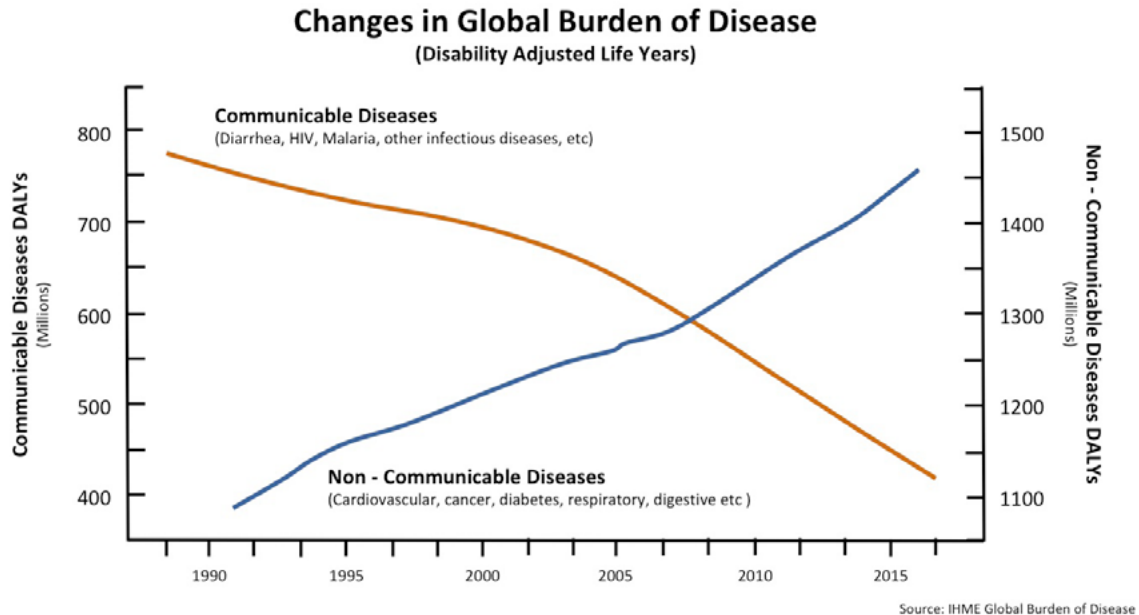
Ibbotson highlighted the significant transition in the global burden of disease in recent decades, from communicable diseases to noncommunicable diseases (see Figure 1-). While this change is broadly recognized, it is less frequently acknowledged that many noncommunicable diseases require surgical care. Each year, the number of surgical-avoidable deaths (17 million) is more than fivefold greater than total deaths due to HIV, tuberculosis (TB) and malaria combined (3 million deaths) and more than double the number of deaths due to traumatic injury (17 million).⁴

² Farmer and Kim 2008

³ Meara et al 2015

⁴ Source: WHO Global Health Estimates, 2016

Figure 1. Changes in the global burden of disease from communicable to noncommunicable diseases (disability-adjusted life years, 1990-2016)



Source: IMHE Global Burden of Disease

1.2 A BANNER YEAR FOR GLOBAL SURGERY IN 2015

Ibbotson noted that momentum for improving essential surgery and trauma care has been building as a result of pivotal events that took place in 2015. One of these was the World Health Assembly (WHA) resolution WHA68.15, Strengthening Emergency and Essential Surgical Care and Anaesthesia as a Component of Universal Health Coverage, which was unanimously adopted by all Member States.⁵ In 2019, WHA72.16, Emergency Care Systems for Universal Health Coverage: Ensuring Timely Care for the Acutely Ill and Injured, was passed, being proposed by the governments of Ethiopia and Eswatini and co-sponsored by more than 30 countries.⁶

Meara highlighted another milestone for global surgery that took place in 2015: the publication of the report from the Lancet Commission

on Global Surgery (LCoGS).⁷ The Commission declared a vision for global surgery: universal access to safe, affordable surgical and anaesthesia care when needed. Further, the LCoGS created five key messages and six indicators for tracking progress in the surgical ecosystem:

1. Two hour access: access to timely essential surgery
2. Surgical volume: procedures done in an operating room per 100,000 population
3. Perioperative mortality rate (POMR): all-cause death prior to patient discharge
4. Specialist surgical workforce (surgeons + obstetrician/gynaecologists + anaesthesiologists) density per 100,000 population
5. Impoverishing expenditure: protection against impoverishing expenditure

⁵ WHA68.15 is available at https://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_R15-en.pdf (accessed November 18, 2020).

⁶ WHA72.16 is available at https://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_R16-en.pdf (accessed November 18, 2020).

⁷ Meara et al 2015

6. Catastrophic expenditure: protection against catastrophic expenditure

The Commission also developed the concept of strategic surgical planning at the national level. Zambian surgeon and diplomat Emmanuel Makasa, an LCoGS commissioner, led Zambia's effort in being the first country to embark on national surgical strategic planning. Zambia's

process, titled "National Surgical Obstetric and Anaesthesia Planning," identified six domains to address in their surgical system: workforce, service delivery, infrastructure, information management, finance, and governance. Goals and targets were determined for each domain. A number of other countries have since embarked on this process, some of which were featured in this panel discussion.⁸

Box 1. Key messages from the Lancet Commission on Global Surgery

In 2015, the LCoGS developed five key messages about the status of surgical care world-wide.

- 5 billion people lack access to safe, affordable surgical and anaesthesia care when needed.
- 143 million additional surgical procedures are needed each year to save lives and prevent disability.
- 81 million individuals face catastrophic health expenditure seeking surgery and anaesthesia each year.
- Investment in surgical and anaesthesia care is affordable, saves lives and promotes economic growth. An investment of \$350 billion would contribute an estimated \$12 trillion in economic growth.
- Surgery is an indivisible, indispensable part of health care.

1.3 WAYS FORWARD IN NATIONAL SURGICAL, OBSTETRIC, AND ANAESTHESIA PLANNING

Meara reviewed the proliferation of countries interested in integrating surgical, obstetric, and anaesthesia (SOA) planning into national health planning priorities since 2015, when LCoGS held its first implementation meeting in Bellagio, Italy. Zambia and Ethiopia began their planning processes in 2017. By 2019, Tanzania, Rwanda, Pakistan, and Nigeria had also begun this work, in addition to regional groups. The Southern African Development Community (SADC) passed a resolution in November 2019 that all SADC countries should work towards having comprehen-

sive surgical strategic planning as part of their national health planning priorities. Additionally, the Pacific Islands have embarked on a process, which Dr Waqainabete details in his presentation. Lastly, the WHO's Western Pacific Regional Office has made surgical strategic planning a priority and passed resolution WPR/RC71.92, Safe and Affordable Surgery, in October 2020.⁹ The resolution requests the regional director to:

1. Provide advocacy and technical support to Member States
2. Facilitate dialogue and exchanges of knowledge, experiences, lessons, and best practices among Member States

⁸ More information on national surgical, obstetric and anaesthesia planning is available at <https://www.pgssc.org/national-surgical-planning> (accessed November 18, 2020)

⁹ WPR/RC71.92 is available at <https://www.who.int/docs/default-source/wpro---documents/regional-committee/session-71/rc71-r2-safe-and-affordable-surgery.pdf> (accessed November 18, 2020).

3. Report periodically on progress in implementing the Action Framework for Safe and Affordable Surgery in the Western Pacific Region (2021-2030)

Meara noted that what started as a concept for integrating surgical systems into national health priorities has expanded to a number of countries and regions. The strengthening of surgical and emergency care systems will involve moving from resolutions to implementation, and is thus a focus of this panel. Meara noted that when the LCoGS report was released in 2015, the narrative revolved around UHC and SDGs. While still appropriate, additional concepts, narratives, and thought processes related to the COVID-19 pandemic are now relevant, such as the role of surgery in the surgi-

cal ecosystem of pandemic preparedness and global health security. The present pandemic has involved anaesthesia, anaesthesiologists, surgical infrastructure, operating rooms, and recovery rooms. Emergency systems and trauma surgery—which are addressed separately via resolutions 68.15 and 72.16 but have substantial overlap—are intersecting areas that should be integrated within and beyond the broader surgical ecosystem. This will require conceptualizing how surgical system strengthening can be integrated with emergency systems and trauma surgery, while also considering the implications this has for pandemic preparedness, planning, and global health security. Timely access is particularly critical in this context and is a major point of contact for integrated advocacy.

2 Surgery and trauma care: essential components of universal health coverage

Dr Jim Harrison, Africa Regional Director for AO Alliance, and trauma and orthopedic surgeon, National Health Service at Chester, UK, referred to injuries as the “neglected epidemic” in low-income countries (LIC). He reviewed the scale of global injury, compared this to noncommunicable and communicable diseases, and highlighted the demographics of those most often impacted by injury. Harrison suggested solutions to improve injury outcomes, including timely and appropriate care and integration into surgical and trauma systems. Although these solutions have been shown to be effective, they are not widely available to the majority of the world’s population. He quoted Dr Tedros Adhanom Ghebreyesus, WHO Director-General, who said at the 2019 WHA, “United Nations and WHO call for urgent action to strengthen emergency and trauma care systems to help advance many Sustainable Development Goals.”

2.1 SCALE OF THE GLOBAL BURDEN OF INJURY

Based on conservative figures, injury kills approximately 4.6 million people worldwide annually.¹⁰ Around 90% of those deaths (4.1 million) occur in low and middle income countries, where death rates due to injury are 3-fold higher than the global average. People aged 18-25 years account for 40% of injury-related deaths (1.6 million) worldwide. Approximately 25% of those deaths (1.2 million) are attributed to road traffic accidents. The scale of disabilities caused by injuries is even larger—10 people are permanently disabled by injury for each injury-related death, and even more people are temporarily disabled. Disability makes it difficult for people to

provide for their families which, in turn, impacts the ability of nations to sustain their economies. As with deaths, LMICs are disproportionately impacted, accounting for 41 of the 46 million people sustaining injury-related disabilities each year. Around 75% of those disabilities (34 million) are musculoskeletal disabilities resulting from trauma to limbs. Harrison stated that the majority of these disabilities could be prevented or reduced with early access to appropriate care.

2.2 INJURY VERSUS OTHER NONCOMMUNICABLE AND COMMUNICABLE DISEASES

Harrison explained that injury is neglected in the UHC agenda. To illustrate, he compared the relative amounts of development assistance for health in terms of USD spent per disability-adjusted life years (DALY) burden (see Figure 2-),¹¹ which reveal that far less funding was dedicated to injury care than for communicable and noncommunicable diseases. Just \$0.04 per DALY burden was spent on injury care, compared to \$4 spent on HIV, \$10 on malaria, \$25 on tuberculosis, and \$45 on mother and child health.¹² Thus, 1,000 times more was invested in mother and child health than in injury care, when adjusting to equal amounts of health need. He emphasized that all of these areas are worthy of funding and support, but the amount of development dollars spent on injury care versus other needs is hugely disproportionate.

Furthermore, injuries comprise 11% of the global burden of disease. Specifically, injuries resulting from road traffic crashes are on the rise. In 2004, road traffic crashes were the 9th highest contributor to global burden

¹⁰ Source: WHO Global Health Observatory 2018

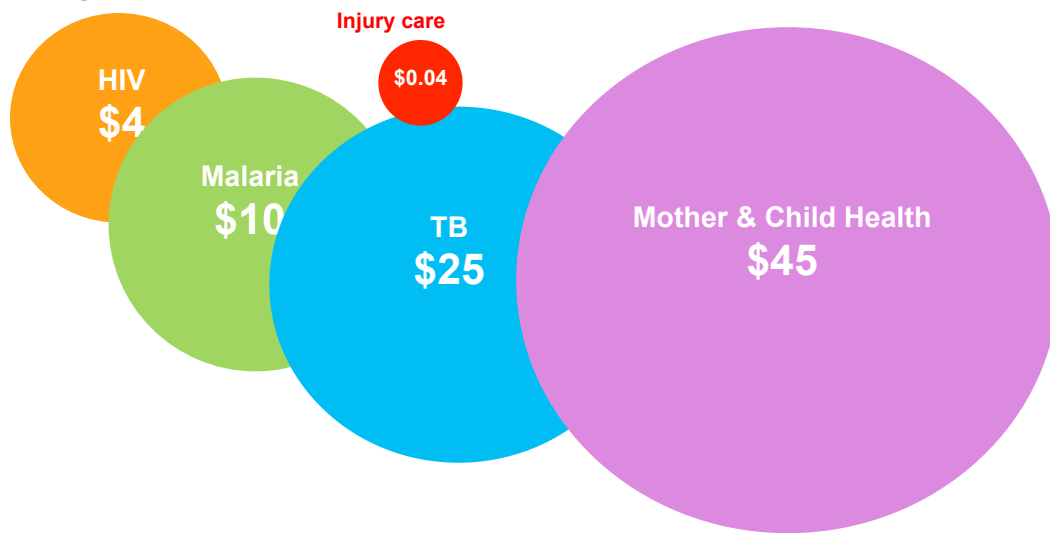
¹¹ DALYs quantify burden of disease by calculating years of life lost to premature mortality and years of healthy life lost to disability.

¹² Flows of Global Health Financing Seattle, USA: Institute of Health Metrics and Evaluation [cited 8/12/18]. Available from: <https://vizhub.healthdata.org/fgh> (accessed November 20, 2020).

of disease and by 2030, they are predicted to be the 5th highest. The top four projected contributors to global burden of disease in 2030—ischemic heart disease, cerebrovas-

cular disease, chronic obstructive pulmonary disease, and lower respiratory infections—are noncommunicable diseases, most of which occur in older people and are lifestyle-related.

Figure 2. 2017 development assistance for health in USD spent per burden in disability-adjusted life years



Source: Harrison presentation

2.3 DEMOGRAPHICS OF THE INJURED: BURDEN ON YOUTH

This extent of the burden of injury on the young and most economically active members of society is evident in examining where road injury ranks in cause of death by age group, said Harrison. For people aged 15-29 years, road injury is the leading cause of death. It is the second highest cause of death for children aged 5-14 years and the third highest for those aged 30-44 years. Moreover, 90% of road injury-related deaths occur in LMICs. Harrison noted that within those countries, it is the poorest people who tend to die from road injuries: the majority of these deaths are pedestrians, cyclists, and motorcyclists who cannot afford cars. While car ownership is much greater in high-income countries (HIC)—with about 30 times the number of cars in HICs than in LIC when adjusting for population—the risk of death from road traffic incidents (RTI) is greater in LICs. Per 100,000 population, there

are 9.2 RTI deaths in HIC, compared to 18.4 in middle-income countries and 24.1 in LICs. Thus, the risk of RTI death is three times higher in LICs than in HICs, indicating a sizeable disparity.¹³

2.4 SOLUTIONS TO INCREASE ACCESS TO SURGERY AND TRAUMA CARE

Surgery and trauma care are essential components of UHC for the world's poorest populations. Harrison offered three solutions for increasing access to quality surgery and trauma care: 1) ensuring that care is timely and appropriate; 2) integrating surgical and trauma systems; and 3) developing a trauma care ecosystem.

2.4.1 Ensuring timely and appropriate care

Harrison stated that although injuries can be severe, there is an opportunity to treat them. However, care needs to be timely, appropriate,

¹³ Source: WHO Global Health Observatory 2018

and affordable in order to be effective. Appropriate care is particularly relevant in treating trauma, as there are often a variety of treatment options available at different costs. Timely and appropriate care reduces complications, simplifies treatment, and results in better outcomes with fewer disabilities. Lack of appropriate early care for open injuries—which are common in LICs—can lead to infection, gangrene, amputation, and even death. Care is dependent on access. Access requires infrastructure, availability and training of health workers, as well as decentralization and processes that enable access and affordability.

2.4.2 Integrating surgical and trauma systems

Treatment of injuries and trauma integrates perfectly with the broader need for surgical access, Harrison maintained. The same health workers that provide anaesthesia for a caesarean section or a laparotomy can provide anaesthesia to people with injuries. Many of the skills, equipment, and facilities needed for treating injuries overlap with surgery care. Therefore, integration of surgical and trauma systems is a solution for injury care. Further, Harrison stated that surgery and trauma care are essential components of UHC for the world's poorest populations. He presented a photo of an operating room in the Democratic Republic of Congo, in which 34 caesarean sections were performed in September 2020, as an example of how limited and potentially unsafe these facilities can be in

LICs. He noted the absence of an obvious anaesthetic machine, the limited equipment present, and the improvised surgical lighting facilities.

2.4.3 Developing a trauma care ecosystem

Harrison presented a model of a trauma care ecosystem that includes pre-hospital care, hospital-based trauma care, and rehabilitation (see Figure 3-). He noted that while prevention could be added to this model, it is not possible to eliminate all injuries. Pre-hospital care includes the “golden first hour” that defines outcomes for the injured. Hospital-based care involves health standards, guidelines, and access to essential surgery. Well-organized trauma care systems can reduce deaths by 20%, and pre-hospital and hospital-based care can prevent disability. Rehabilitation-based care can further reduce disability and optimize recovery. AO Alliance focus areas include: 1) education and training to build the capacity of health care workers in fracture care, 2) fellowships enabling AO Alliance faculty to advance fracture care skills, 3) clinical research and national trauma registries, and 4) infrastructure needs such as operating theaters and specialized hospitals and equipment. Harrison added that investment in the trauma care ecosystem is cost efficient, as many national economies lose 5% of gross domestic product to the cost of trauma.

Figure 3. Trauma care ecosystem



Source: Harrison presentation

3 Integrating surgical and anaesthesia care into health system strengthening

Dr Teri Reynolds, head of the Clinical Services and Systems unit of WHO's Department of Integrated Health Services, stated that WHO's ability to connect countries' priorities with people's health needs contributes to higher level UHC agendas. She briefly reviewed relevant WHA resolutions before outlining concepts in linking surgery and anaesthesia care into UHC.

3.1 WORLD HEALTH ASSEMBLY EMERGENCY CARE RESOLUTIONS

Reynolds noted that WHA resolution framing has evolved over time, reflecting shifts in how the issue is approached. In 2007, WHA60.22 was passed.¹⁴ Titled Health Systems: Emergency Care Systems, the resolution focused on injuries and the capacity of health systems and their time-sensitive care components to respond to injury. In 2011, WHA64.10, Strengthening National Health Emergency and Disaster Management Capacities and Resilience of Health Systems addressed the integration of health system strengthening and disaster management capacities to ensure health systems are better able to withstand shocks. Reynolds noted that this concept has emerged “front and center” during the COVID-19 pandemic. A specific focus on surgical care content came in 2015 with WHA68.15,¹⁵ Strengthening Emergency and Essential Surgical Care and Anaesthesia as a Component of Universal Health Coverage. Most recently, WHA72.16, Emergency Care Systems for Universal Health Coverage: Ensuring Timely Care for the Acutely Ill and Injured, passed in

2019,¹⁶ and frames emergency care systems and timely access to care explicitly within UHC. Reynolds provided this timeline as a backdrop for the new, dominant narrative of health priorities expressed in terms of COVID-19. Currently, as countries attempt to plan and act, ministries are having to adapt all health system strengthening activities to the pandemic context and understanding the linkages across the different advocacy frames is more important than ever.

3.2 MAINTAINING ESSENTIAL HEALTH SERVICES

The need to specifically address essential health services amidst emergencies arose from lessons learned over recent years, said Reynolds. For instance, during the Ebola epidemic secondary mortality—ie, deaths occurring due to health system compromise—overtook the number of deaths directly caused by the epidemic. In the context of COVID-19, a focus on continuity of essential services has emerged. For the first time, WHO has created an explicit space within response planning for addressing essential health services and systems with Pillar 9 of the overall Strategic Preparedness and Response Plan (SPRP).¹⁷ The Pillar 9 action steps are outlined in a range of guidance publications, including:

Community-based Health Care, Including Outreach and Campaigns, in the Context of the COVID-19 Pandemic¹⁸ (May 2020)

Maintaining Essential Health Services: Operational Guidance for the COVID-19 Context¹⁹ (June 2020)

¹⁴ WHA60.22 is available at https://apps.who.int/iris/bitstream/handle/10665/22596/A60_R22-en.pdf (accessed November 18, 2020).

¹⁵ WHA68.15 is available at https://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_R15-en.pdf (accessed November 18, 2020).

¹⁶ WHA72.16 is available at https://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_R16-en.pdf (accessed November 18, 2020).

¹⁷ More information about the Pillar 9 is available at <https://covid19partnersplatform.who.int/pillar/9> (accessed November 18, 2020).

¹⁸ This guidance is available at <https://apps.who.int/iris/handle/10665/331975> (accessed November 18, 2020).

¹⁹ This guidance is available at <https://www.who.int/publications/i/item/covid-19-operational-guidance-for-maintaining-essential-health-services-during-an-outbreak> (accessed November 18, 2020).

Reynolds noted that part 1 of Maintaining Essential Health Services: Operational Guidance for the COVID-19 Context is highly relevant to surgery (see Figure 4-). The strategy involves a series of decisions for each country to consider with corresponding shifts to make. Reynolds remarked that each country will approach these decision branch points in a different way, leading to strategic shifts, each of which involves a consequence for surgical care. Thus, the process for countries navigating these shifts accounts for continuity and availability of surgical care.

Reynolds pointed out that early in the COVID-19 pandemic, many elective surgical services were suspended in an effort to limit transmis-

sion of the virus and save lives. While many of these strategic suspensions were necessary and effective, the risk-benefit balance of such choices evolves over time. Even countries that were managing their surgical burden prior to the pandemic now face surgical backlogs, and procedures that were once 'elective' may have become more urgent. For the many nations that were already experiencing substantial backlogs, the pandemic has only compounded the problem. Therefore, as the world moves toward a transition beyond the pandemic, this area requires careful strategic planning.

Figure 4. Operational strategies for maintaining essential health services

1.1 Overview	2
1.2 Context considerations	4
1.3 Adjust governance and coordination mechanisms to support timely action	5
1.4 Prioritize essential health services and adapt to changing contexts and needs	6
1.5 Optimize service delivery settings and platforms	8
1.6 Establish safe and effective patient flow at all levels	10
1.7 Rapidly optimize health workforce capacity	12
1.8 Maintain the availability of essential medications, equipment and supplies	14
1.9 Fund public health and remove financial barriers to access	16
1.10 Strengthen communication strategies to support the appropriate use of essential services	17
1.11 Strengthen the monitoring of essential health services	18
1.12 Use digital platforms to support essential health service delivery	20

Source: <https://www.who.int/publications/i/item/covid-19-operational-guidance-for-maintaining-essential-health-services-during-an-outbreak> (accessed November 18, 2020)

3.3 BENEFITS OF STRENGTHENED EMERGENCY CARE

A strong emergency care system is essential for timely access to surgery and will benefit people with a wide range of conditions, Reynolds contended. WHO's definition of emergency care includes time-sensitive early operative and critical care. These components are often associated with SDG 3.6 (halving the number of global road traffic deaths and injuries by 2020) and SDG 11.5 (significantly reducing the number of deaths

caused by disasters). Yet, with the expansion of post-crash care provision needed to meet SDG 3.6 and with the preparedness and response for resilience required for SDG 11.5, entire systems are strengthened, enabling them to simultaneously address other SDGs. Regardless of the particular goal eliciting investment, benefit is reaped across multiple goals (see Box 2). Thus, concrete investments in mechanisms for improving timely access to surgical and anaesthesia care confer benefits across a wide range of population health needs. Reynolds emphasized

that surgical care is not linked only to specific diseases or disease groups; rather, it is part of a common set of foundational elements necessary for meeting health needs through multiple chan-

nels of care. Such systems put no need at the center nor at the periphery, instead encompassing all needs by integrating services across conditions, and across levels of the health system.

Box 2. Benefits of strengthened emergency care across the Sustainable Development Goals

- SDG 3.1 Maternal mortality: **Treat obstetric emergencies**
- SDG 3.2 Under-five mortality: **Treat acute pediatric diarrhea and pneumonia**
- SDG 3.3 Deaths from malaria and other diseases: **Treat acute infections and sepsis**
- SDG 3.4 Reduce premature mortality from non-communicable diseases (NCD): **Treat acute exacerbations of NCDs**
- SDG 3.5 Strengthen treatment of substance abuse: **Emergency care and harm reduction**
- SDG 3.6 Halve road traffic deaths and injuries by 2020: **Post-crash care**
- SDG 3.8 Achieve UHC: **Emergency care provides timely access**
- SDG 3.9 Deaths and illnesses from hazardous chemicals: **Treat acute exposures**
- SDG 11.5 Deaths caused by disasters: **Preparedness and response for resilience**
- SDG 16.1 Violence-related deaths: **Treatment for victims of violence**

3.4 UHC COMPENDIUM: SUPPORT FOR NATIONAL HEALTH SERVICE PACKAGES

A key mechanism for progress toward UHC is the development of an explicit service package, said Reynolds. Occasionally executed at the subnational level but most often at the national level, countries create packages by identifying a set of priority health services.

Referencing Afghanistan's 2019 Integrated Package of Essential Health Services²⁰ as an example, Reynolds described how trauma and emergency services can be built into national packages of health services to ensure their prioritization for health funds. To assist countries in executing this process in a systematic, rigorous, evidence-based way, WHO created a tool called the UHC Compendium.²¹ The UHC Compendium was initially launched in Decem-

²⁰ The package is available at https://www.lshtm.ac.uk/sites/default/files/2019-09/IPHES_2019.pdf (accessed November 18, 2020).

²¹ UHC Compendium is available at <https://www.who.int/universal-health-coverage/compendium> (accessed January 4, 2021).

ber 2020 with a repository of over 300 evidence-based interventions. The UHC Compendium provides systematic architecture for countries to progress through in making explicit decisions about services across disease areas. For each disease area, countries can select from numerous intervention categories, and relevant surgical procedures are included across disease areas. Both medical and surgical interventions are offered for injury, myocardial ischaemia, and numerous other diseases.

3.4.1 Use cases

This process of UHC service package development generates lists of services with powerful use cases, Reynolds noted. These pertain to entitlements, government funding, and service delivery contracted through partners, which is a common practice in the humanitarian setting. Service lists then become the foundation for contracting and service planning. Packages can serve as a foundation for health workforce competencies and training, as well as for material resource planning in terms of equipment, supplies, and medications. Further, service lists often become a mechanism for program reporting on diseases, disease groups, and the life course. For example, surgical services

contribute to the maternal health package, as well as to tuberculosis (TB) and HIV interventions. Thus, in reporting for an HIV, TB, or malaria program, surgical interventions are involved.

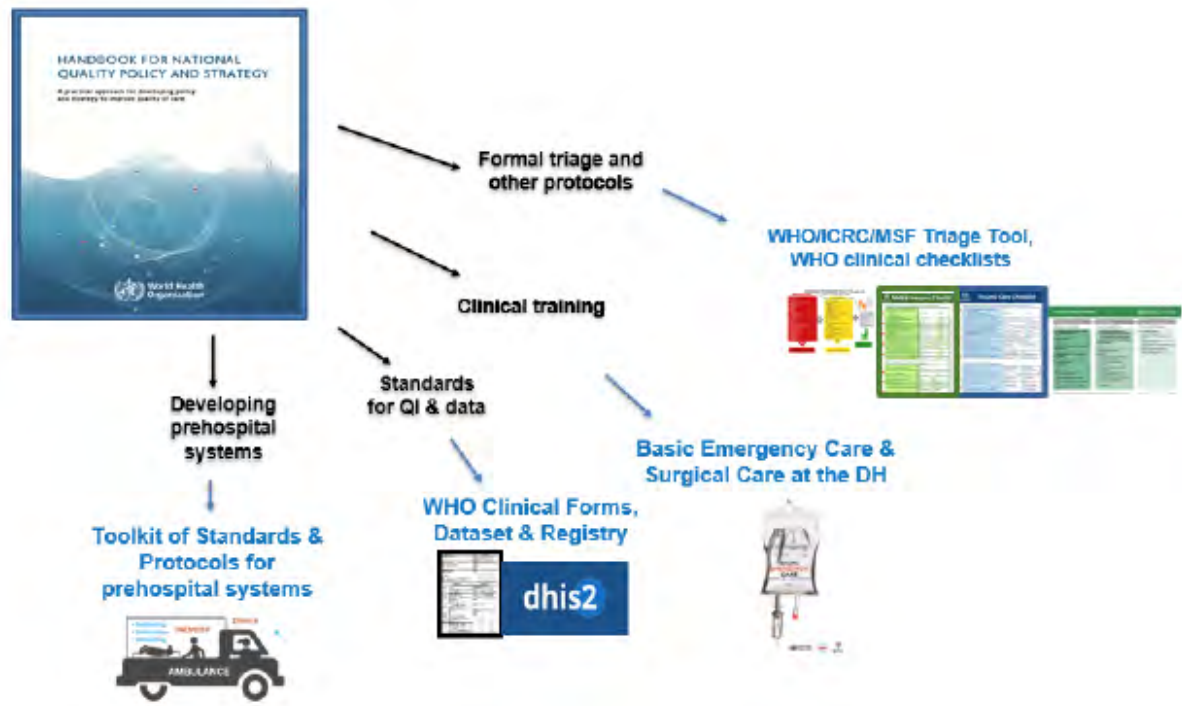
3.5 INCORPORATING SURGERY CARE INTO THE QUALITY AGENDA

In cases where national policies or strategies do not explicitly link to surgery, quality of care can be an entry point for incorporating surgical care, Reynolds explained. UHC is typically formulated as access for everyone to a set of high-quality health services with protection from financial ruin. Good surgical care, emergency care, and trauma care are aspects of high-quality health services. Thus, tools that are designed to improve the quality of care delivery, such as WHO's Trauma Care Checklist²² and Surgical Safety Checklist²³ can be linked to higher-level processes, such as WHO's 2018 Handbook for National Quality Policy and Strategy.²⁴ Indeed, they represent the projection of the principles of quality care onto the service delivery setting (see Figure 5). Reynolds advised that advocates incorporate surgical, emergency, and trauma care into the narrative of quality health care (see Appendix 1 and Appendix 2).

22 The Trauma Care Checklist is available from <https://www.who.int/publications/i/item/trauma-care-checklist> (accessed November 18, 2020).

23 The Surgical Safety Checklist is available from <https://www.who.int/teams/integrated-health-services/patient-safety/research/safe-surgery/tool-and-resources> (accessed November 18, 2020).

24 The handbook is available at https://www.who.int/servicedeliverysafety/areas/qhc/nqps_handbook/en/ (accessed November 18, 2020).

Figure 5. Incorporating surgery care into quality improvement

Source: Reynolds presentation

3.5.1 Quality improvement in data

As part of a quality agenda, data can be utilized to create feedback loops to understand current practices and then take action to create outcomes that are as efficient and effective as possible. After years of instructing countries to improve trauma quality and create registries, WHO developed the International Registry for Trauma and Emergency Care,²⁵ a free, open access platform countries can utilize in building registries. The registry is currently built around injury and includes metrics facility metrics, pre-hospital metrics, facility epidemiology metrics, and facility time metrics. Reynolds noted that the registry allows the translation of data into a feedback loop that improves the quality of care delivered. The registry will soon expand beyond injury to all emergency condi-

tions, encompassing additional time-sensitive surgical conditions. In addition, as part of the recent revision of the Lancet surgical indicators through the Lærdal Foundation Utstein process convened by the World Federation of Societies of Anaesthesiologists, WHO has developed an operative case module for the registry.

Injury is likely evaluated more than other areas within the systematic process of quality examination, said Reynolds. However, the literature base is extremely limited in terms of data that support the impact of interventions considered effective from LMICs. “The Impact of Trauma Care Systems in Low – and Middle-Income Countries” published in the Annual Review of Public Health, reported the lack of studies demonstrating impact in a number of LMICs.²⁶ Thus, much work is needed to improve the quality of data generated in LMICs.

²⁵ The registry is available at <https://www.who.int/publications/m/item/who-international-registry-for-trauma-and-emergency-care> (accessed November 18, 2020).

²⁶ Reynolds et al 2017

3.6 TRAINING AND CAPACITY-BUILDING

Capacity-building is needed to achieve UHC, Reynolds maintained. Policy changes and service shifts ultimately can only be effective when the interaction between a health care provider and a person in need of help is beneficial. While the dissemination of educational resources over digital channels is better than it has ever been, the need for high-quality, open access clinical training materials persist. However, this is an area of decreasing focus. Training documents may be out-of-date or pedagogically ineffective. To address this, the WHO Academy is developing initial course offerings, which include Basic Emergency Care, Mass Casualty Management, and Emergency Response courses. These will be launched at WHA in May 2021. The program's strategic plan is to update clinical resources in an innovative way, addressing topics such as surgical care and anaesthesia care at the district hospital level. Reynolds said that while these topics may seem small in comparison to broad policy determinations, it is the interaction at the service delivery level that will have the most proximal impact. She noted that the AO Alliance has been committed for decades to direct investment in provider skill development.

3.7 MAKING THE INVESTMENT CASE FOR INJURY CARE

Reynolds described strategies to make the case for investing in injury care. Injury care helps avoid the high costs associated with early death, complications, prolonged recovery, and preventable disability, as well as lost wages and productivity for society. Referencing WHO's Global Alliance for Care of the Injured slide deck, which is available online for advocate use,²⁷ Reynolds presented figures indicating that surgical care is cost-effective when compared with other health interventions. Advocacy for investment in injury care can be framed in a number of ways, but she recommended present-

ing large-scale figures together with the smaller figures that indicate relative cost-effectiveness.

3.8 INTEGRATED SERVICE DELIVERY

Reynolds explained that WHO established the Clinical Services and Systems unit as part of the organization's strategic transformation efforts. Integrated service delivery is a key concept within UHC, and the unit has specific goals to that end. For instance, it coordinates WHO's work on integrated channels of service delivery, including primary care, emergency care, surgical care, and critical care, including palliative care content across these areas. This approach allows linkages for national service packages, organization of services, and models of care. Furthermore, it enables examination of care pathways across the health system that are created for individuals via service structure and service organization choices. For example, a pathway for effectively treating a condition such as injury or sepsis would involve early recognition at the primary care level, timely emergency care intervention, and, ultimately, early access to surgical care. Integrating these components of the full arc of how people actually move through the health system enables improved referral guidance, clinical process tools, and innovative revision of clinical guidance.

3.8.1 ECO-system model of integrated services

Reynolds highlighted the distinction between "primary care"—ie, the actual services provided to patients—and "primary health care" (PHC), which is the broader strategy involved in planning and financing a health system with primary care at its center. She emphasized that PHC takes an integrated approach to services across levels of the health system. Soon after the Alma-Ata Declaration of 1978,²⁸ the role of hospital-based care in supporting primary care emerged. Despite this, Reynolds noted that there has been a persistent idea that hospital-based

27 The slide deck is available from <https://www.who.int/publications/m/item/who-international-registry-for-trauma-and-emergency-care> (accessed November 18, 2020).

28 The Alma-Ata Declaration is available at https://www.who.int/publications/almaata_declaration_en.pdf (accessed November 18, 2020).

care somehow undermines primary care, creating a false dichotomy. Doing away with this concept of opposition, Reynolds and colleagues have reframed emergency, critical, and operative care (ECO) services as supportive and necessary components of an effective primary health care approach. As detailed in a recent Bulletin of the World Health Organization editorial,²⁹ this framing utilizes the term “ECO-system” to refer to these key services and the mechanisms that link them to primary care to ensure integrated, people-centered service delivery. ECO services are linked to communities through primary care and by communication, transportation, referral, and counter-referral. Reynolds pointed out

that a person cannot knock on the door of an intensive care unit or operating theatre asking for treatment. Rather, mechanisms are used to link services with the people that need them. The ECO-system is comprised of both services and the mechanisms for accessing them. Thus, longitudinal primary care relationships are at the center of the ECO-system to ensure timely and appropriate access to needed care across the life course. Reynolds concluded by highlighting WHO's Global Emergency and Trauma Care Initiative and thanked the AO Foundation for the support the organization has provided to many activities under that initiative.

²⁹ Reynolds et al 2020

4 Capacity-building for surgery training in Iran

Dr Ali Jafarian, Professor of General Surgery at Tehran University Medical Sciences and member of the Iranian Board of General Surgery, described capacity-building for surgery training in Iran. He opened by referencing the impact of the COVID-19 pandemic on surgical procedures. He noted that surgery is an essential treatment that must be addressed during the crisis. He then reviewed progress made in expanding Iran's medical workforce over the past four decades. The nation has shifted from being a high-middle-income country to a low-middle-income country. In Iran, trauma is the second leading cause of premature death and the third leading cause of total deaths.³⁰

4.1 MEDICAL EDUCATION TRENDS IN IRAN (1979-2015)

Major expansion of the medical workforce has taken place in Iran since 1979, said Jafarian. In that year, the country had nine medical schools and programs with a total of 2,908 faculty members, compared to 72 medical institutions with 13,621 faculty members in 2015.³¹ This fourfold increase in medical faculty includes a significant influx of female faculty members, who comprised 26% of faculty positions in 1979 and 42% in 2015. The number of hospital beds has grown from 50,760 in 1979 to 128,142 four decades later, while the number of teaching hospital beds has expanded from 9,558 to 59,414 during the same time period. Residency programs grew by fivefold over the past four decades. In 1979, 420 residents graduated from all specialties, with no subspecialty graduates. In contrast, 2,237 residents graduated in 2015, 203 with subspecialties.

4.2 PHYSICIANS AND SURGERY RESIDENTS IN IRAN (1979-2018)

Forty years ago, Iran was faced with a severe medical workforce shortage of both physicians and surgeons, said Jafarian. Medical training was often inadequate for provision of optimal care, and rural regions were typically served by physicians from other nations. Dramatic progress has been made in the last four decades. For instance, the number of physicians grew nearly ten-fold, from 12,000 in 1979 to 119,459 in 2015. Accounting for population size, there was one physician per 2,998 people in 1979 compared to one per 657 people in 2015. General surgery training programs have seen substantial expansion. In 1979, a total of six general surgery residency programs enrolled fewer than 50 residents each year; in 2018, there were 26 programs with over 160 residents enrolled. During that time frame, the number of faculty members at general surgery residency programs grew from fewer than 200 to 766.

4.3 WORKFORCE PLANNING FOR THE FUTURE

Over the past two years, the Ministry of Health and Medical Education has conducted several studies in an effort to plan for Iran's future medical workforce. They determined the number of specialists practicing in 2019 and projected the size of the 2025 workforce should no additional interventions be implemented. These figures were then compared with the number of specialists required to meet the nation's estimated care needs in 2025. Jafarian said all aspects of service delivery were accounted for in projecting medical need, including education, community hospitals, and rural areas. Data revealed that most specialties will be adequately staffed. General surgery and orthopedic surgery were in the lower limit of balance. Anaesthesiology, OB/GYN,

³⁰ Vos et al 2020

³¹ Couper 2004

ENT, and ophthalmology specialties were in the upper limit of balance, and there was an estimated surplus of urologists. Neurosurgery was the only specialty predicting a shortage, should no intervention be taken, and Jafarian noted a current shortage of neurosurgeons in Iran.

4.4 ACHIEVEMENTS AND CHALLENGES

Iran has successfully increased the number of medical programs and residencies it offers. Jafarian highlighted that the nation has also achieved a more equitable distribution of surgeons into rural areas. Iran has an obligatory service component for all residency program graduates, requiring them to practice in underserved regions. The length of service depends on factors associated with each area, with shorter requirements in more under-resourced regions. In areas with more resources, length of stay is typically one to three years. This obligatory service, coupled with the availability of small hospitals able to serve rural patients, has resulted in decreased referrals to central cities in the provinces.

While much progress has been made in Iran, workforce challenges persist. Jafarian noted that quality control of the residency programs is a major issue. In the effort to substantially increase the number of residency programs, Jafarian noted that shortcuts in quality have

occasionally been made. Additionally, retaining staff in rural areas is difficult. Often, young surgeons are working in underserved areas, and turnover is high, most notably in trauma and specialty surgeries. When the workforce is increased to meet rural needs but then migrates to central cities, overproduction can come into play. To provide services in all parts of the country, this cycle requires educating and training more professionals each generation than the nation as a whole requires. Lastly, payment methods sometimes have unintended effects. For instance, fee for service may encourage practitioners to induce demand, and reduced payments can lead to referrals to urban facilities.

National financing of trauma care is a financial structure that has proven successful. For the past 20 years, the Ministry of Health and Medical Education has directly covered all costs and charges for trauma patients. Rather than basing care on insurance coverage, facilities send all bills for trauma care directly to the Ministry of Health and Medical Education. Thus, hospitals are fully reimbursed for the services delivered, resulting in providing trauma patients with appropriate care without having to consider whether the associated costs can be recouped. This is an example of how governmental action can improve medical care.

5 Strengthening surgical services: the Pakistan experience

Dr Lubna Samad, Director of Center for Essential Surgical and Acute Care, Indus Health Network, Pakistan, described trends in surgical strengthening using examples from her practical experience working on national SOA planning. Samad tied this work to the need to both better integrate health care and forge a UHC system, a concept she credited to WHO. She stated that this concept is applicable in Pakistan, where the country views strengthening surgical services as part of a health system strengthening exercise that endeavors to integrate all levels of care.

Many factors shape which health system strategies can be adopted in Pakistan, including population structure, population distribution, and governance of the health system. Pakistan is a country in South Asia with a geographical area of 881,913 square kilometers. The country has a population of over 216 million, spread across four provinces and three autonomous territories. Around one-third of the population is aged <15 years, which poses a special set of needs. In 2010, the federal government devolved the health system by moving multiple portfolios—including health—from federal ministries to the provincial governments. At present, the federal government is directly responsible for the health services provision in the Islamabad Capital Territory and some regions in the northern part of Pakistan. In all other situations, the provincial government is responsible for health strategy and implementation for their own jurisdictions.

5.1 PROGRESS TOWARD PAKISTAN'S NATIONAL VISION FOR SURGICAL CARE 2025

Samad described Pakistan's experience with the national surgical, obstetric, and anaesthesia planning (NSOAP) process. She noted that the NSOAP process is highly adaptable, providing a framework that can be customized to the needs

of individual countries and regions. Thus, when a surgical community begins to work on developing a policy for surgical care, the NSOAP framework offers guidelines about how to begin engaging governments by understanding where to start and what needs to be done. Although engaging governments takes much time and effort, Samad emphasized that these collaborative efforts can be highly effective and are the only way to ensure that NSOAPs are sustainable. The experience developing Pakistan's National Vision for Surgical Care 2025 (NVSC) illustrates the importance of continual innovation, flexibility, and tailoring NSOAPs to the local context to meet community needs. She recommended learning from the experiences of teams who have already implemented NSOAPs and to leverage their expertise.

5.1.1 NSOAP process in Pakistan

The NSOAP Process Map (see Figure 6) provided a blueprint for Pakistan's NSOAP efforts. Samad provided a brief overview of each step in the process.

1. Ministry of National Health Services, Regulation and Coordination (MoHNSR&C) engagement
2. Letter of understanding signed between MoHNSR&C and Indus Health Network; notification of National Steering Committee and Technical Working Group
3. National stakeholder' conference with international participation
4. Draft of NVSC
5. Provincial stakeholders' engagement workshops
6. Launch of NVSC and integration into National Health Vision
7. Disease Control Priorities-3 (DCP-3) Pilot: design and implementation

The team used the NSOAP process framework that emerged out of the LCoGS³² to establish the initial series of step, but they made some adaptations along the way. Samad said the team began the process by engaging with the Ministry of National Health Services, Regulation and Coordination (MoNHSR&C) in Islamabad. This resulted in a Letter of Understanding that was signed between the MoNHSR&C and Indus Health Network (IHN). A National Steering Committee and a Technical Working Group (TWG) were notified as well. The TWG included key members from the IHN team as well as members from PGSSC, allowing the Pakistan process to benefit from the PGSSC team's experience in creating NSOAPs in other countries.

The TWG developed a draft of Pakistan's National Vision for Surgical Care 2025 (NVSC), which was well aligned with Pakistan's existing National Health Vision (NHV), with a majority of the domains overlapping. They knew that the development and implementation of these surgical plans would need to be carried out at provincial level, so NVSC 2025 was conceptualized as an umbrella policy commitment made by federal and provincial governments.

In the third step, a stakeholders conference was held in Islamabad in November 2018 with national and international participation. The stakeholders included representatives from the federal government, the provincial governments, donors, and international non-governmental organizations. Stakeholders invited to participate in this conference included:

- provincial health and planning departments;
- representatives from federally administered areas;
- professional societies from the fields of obstetrics and gynaecology, pediatric surgery, adult general surgery, neurosurgery, orthopedics and anaesthesia societies;
- representatives from prominent public – and private-sector facilities;

- international funding and donor agencies, such as United States Agency for International Development, UK Department for International Development, United Nations Children's Fund, and KfW; and
- technical experts representing PGSSC, WHO, World Federation of Societies of Anaesthesiologists and Global Initiative for Children's Surgery.

At the end of this conference, the participants released a consensus statement, which expressed a commitment on the behalf of stakeholders to work together to improve surgical services in the country and gave broad guidelines for the same. Samad discussed the experience of Pakistan's surgeons at this conference. Many expressed fascination when they learned that surgery could be a part of a global health agenda. Prior to the conference, these surgeons saw their roles as limited to the operating room or, at most, their hospital. After the conference, they realized that this initiative provided a platform that they could use to address surgical system challenges across the country and the wider region.

As the fourth step, the team drafted the NVSC document, which built upon the commitment outlined in the consensus statement. For the fifth step, a series of provincial stakeholder engagement workshops were held in March 2019, where the NVSC draft was shared for further input and to gather provincial perspectives. Samad stated that this step was intended to jumpstart the process in each province, given that developing individualized plans and subsequent implementation would take place at the provincial level. At the end of these engagement workshops, the team finalized the NVSC document.

The sixth step has been delayed. The drafted NVSC was submitted to the MoNHSR&C for approval and for signoff by the provinces. Upon approval and signoff, the NVSC was to be integrated into the NHV. However, changes in governments, ministers of health and key people within the Ministry in the past two years

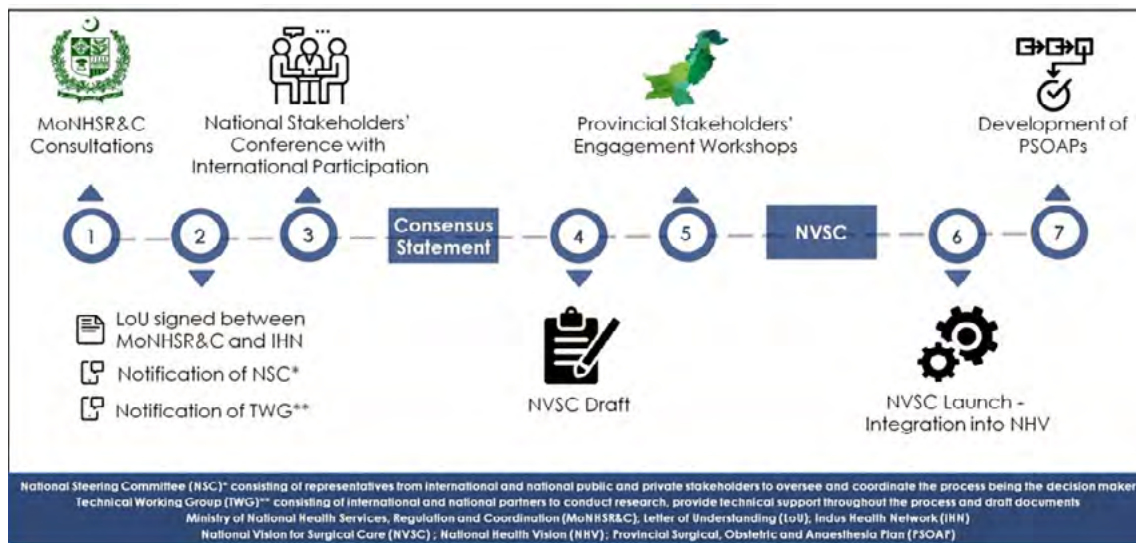
³² Partners in this NSOAP initiative have also included the Program in Global Surgery and Social Change (PGSSC) at the Harvard Medical School (Dr John Meara), WHO (Dr Walter Johnson), the Federal Ministry of Health, and Indus Health Network.

meant having to re-engage with policy makers. Samad said that private partners have no option but to be persistent with new officials and repeatedly push the agenda forward. A further delay was caused by the COVID-19 pandemic, which delayed virtually all initiatives in 2020.

Originally, for the seventh and final step, the team planned to develop Provincial Surgical Obstetric Anaesthesia Plans (PSOAPs), a term coined by their group as a derivative of NSOAPs. These plans were to outline how to work with provincial governments on implementation. Instead, when engaging with the MoNHRS&C the team discovered that a parallel process had already been started in Islamabad, called the Review of Essential Health Services in Pakistan Based on Disease Control Priorities-3 (DCP-3), leading to the development and implementation of Universal Health Coverage Benefit Package (UHC-BP) for Paki-

stan (including community-level, primary care, secondary hospital, tertiary hospital and population-level interventions) and, as the last step, initiating a DCP-3 Pilot in the Islamabad Capital Territory to implement an Essential Package of Health Services at Community and Primary Level. In response to this reality, the team demonstrated yet again that NSOAP is adaptable to dynamic situations. In Pakistan, the DCP-3 Pilot³³ is a process implemented at a national level, with strong government support, in order to create a UHC benefits package. Rather than creating a parallel process to the DCP-3 Pilot by developing PSOAPs, the team replaced the PSOAPs step with a new step: integrating surgical services into the DCP-3 Pilot project framework, for which a national scale up is planned as a priority intervention by the government.

³³ DCP3 = Disease Control Priorities, Third Edition

Figure 6. National surgical, obstetric, and anaesthesia planning process in Pakistan

NSC: National Steering Committee (consisting of representatives from international and national public and private stakeholders to oversee and coordinate the process being the decision-maker); TWG: Technical Working Group (consisting of international and national partners to conduct research, provide technical support throughout the process and draft documents); MoNHSR&C: Ministry of National Health Services, Regulation and Coordination; LOU: Letter of Understanding; IHN: Indus Health Network; NVSC: National Vision for Surgical Care; NHV: National Health Vision; PSOAP: provincial Surgical, Obstetric and Anaesthesia Plan

Source: Samad presentation

5.2 DCP-3 PILOT IN PAKISTAN

Pakistan is the first site for this initiative, said Samad. The initiative was developed by several partners, including the DCP-3 Network, WHO, Pakistan's MoNHSR&C, provincial health departments, London School of Hygiene and Tropical Medicine, and the Health Planning, System Strengthening and Information Analysis Unit at the MoNHSR&C.

The DCP-3 Pilot has reviewed and prioritized essential health services based on DCP-3 evidence and recommendations, resulting in a proposal for a UHC benefits package for Pakistan. Five steps were planned for this review process: 1) a burden of disease assessment; 2) a series of consultative workshops (2018-2019); 3) Costing (2019-2020); 4) UHC-Benefit Package Discourse (Feb 2020); and 5) Pilot of Primary Health Care Package. In 2019 and 2020, Samad's team was working with both

the NVSC process and the prioritization exercise for developing the Essential UHC Benefits Package. The planning for the pilot implementation of the Essential UHC Package in Islamabad Capital Territory started in the latter half of 2020. Samad's team is working in parallel with stakeholders to explore implementation at two additional sites in Pakistan, in the provinces of Sindh and Punjab, with the hopes of demonstrating the feasibility of this process in practice. Samad stated that the packages will need to be adapted throughout implementation, again highlighting the dynamic nature of this process and that things are not "set in stone."

Samad discussed the benefits of starting the NSOAP process by raising awareness about their group with Pakistan's federal government. When they began engaging the government about NSOAPs, the Federal Ministry of Health realized that DCP-3 Pilot did not include any surgeons

as advisers on their National Advisory Council, despite including 46 surgical procedures. At this juncture, Samad's team offered to serve in an advisory capacity, which served as their entry point into the DCP-3 Pilot planning process.

5.3 SURGICAL COMPONENTS OF DCP IN PAKISTAN

Under the DCP-3 framework, the 46 essential surgical procedures can be divided three ways, by care levels, cluster allocations, or age groups. For the three care levels, there are 10 primary, 27 first level and 9 tertiary, which highlights the importance of surgery at the primary level. Although primary level facilities can perform some surgical interventions, they are expected to identify, stabilize, and transfer all high-priority surgical conditions. The PHC system plays an important role in early identification, correct recognition, and appropriate transfer—for example in patients with trauma or gastrointestinal perforation. Samad stated that given this situation, secondary and tertiary levels cannot be the only components of the surgical package.

The package includes 42 procedures for adults and 4 for children. The latter include cleft lip and palate, Hirschsprung's disease, colorectal malformations, and anorectal malformations. Of the 42 adult procedures, Samad's team identified 19 that are needed by children as well, and can be provided with special add-ons, necessitating specialized pediatric expertise and resources. For example, when performing a

neonatal laparotomy, a neonatal intensive care unit is required and thus the surgery cannot be performed at a first-level hospital, whereas an adult laparotomy or appendectomy can be. Given these procedure-specific requirements, the team created addenda for these conditions for pediatric populations. Cluster allocations include health services (33), reproductive, maternal, newborn, and child health (RMNCH) (8), and non-communicable disease (NCD) and injury prevention (5). It is important to remember that surgery is not a silo, but cuts across clusters, including the RMNCH cluster and the NCD and injury prevention cluster. For example, caesarean sections, which are included in the RMNCH cluster, are the most common surgical procedure in Pakistan. Additionally, the team is working to improve oncological procedures by engaging with cancer services.

The procedures are also broken down by specialty, which affects how services are delivered at the first level. Because it is not possible to have a general surgeon, an orthopedic surgeon, an obstetrician, an anaesthetist, and a pediatric surgeon available at the first level, Samad's team has been looking at clusters of surgeries that need to be done at the first level and considering the creation of a position equivalent to India's "rural surgeon," a surgical equivalent of a family physician who can perform a broad, less specialized set of surgical procedures. If delivered at the first level using a new position like this, there will be a better utilization of human resources.

6 National surgical, obstetric, and anaesthesia planning in the Pacific Islands

The Hon Dr Ifereimi Waqainabete, Fiji's Minister for Health and Medical Services, described the national surgical planning process in Fiji and other Pacific Islands. He opened with an update on the COVID-19 pandemic situation in Fiji as of October 21, 2020. At the time, Fiji had 33 total cases, of which 30 had recovered, 2 had died, and 1 was an active new case. It had been 3 days since the last border quarantine case, 186 days since the last case was detected outside border quarantine facilities, and 216 days since the first case. WHO had classified transmission in Fiji as sporadic, with one or more cases either imported or detected locally. Prior to July 6, all cases were associated with international travel or epidemiologically linked to the contact of someone who had travelled internationally. After July 6, all new cases were associated with international travel and detected during a mandatory 14-day quarantine in government designated international border quarantine facilities in Nadi.

He also provided an update on COVID laboratory testing. Fiji's total COVID tests conducted had reached 12,125, or 13.7 per 1000 population, with a 7-day rolling test average of 76 and a 2-week rolling test average of 537.5. Test positivity was at 0.3%, with 364.5 total tests per confirmed case.³⁴ Of the 33 positive tests, 16 were in Nadi, 6 in Lautoka, 1 in Ba, 4 in Suva, and 6 in Labasa. He presented data on number of cases by age group and gender: 0-19 years (3 cases), 20-29 years (9), 30-39 years (9), 40-49 years (3), 50-59 years (5), 60-69 years (4), female (17), and males (16).

6.1 APPLYING LESSONS LEARNED FROM COVID-19 TO FIJI'S SURGICAL SYSTEM STRENGTHENING

Waqainabete presented lessons from COVID as extrapolated and applied to Fiji's surgical strengthening initiatives. He stated, "The important thing that we've learned so far is there is an internal threat and there is an external threat."

To deal with internal threats, he listed seven lessons, related to: 1) disease surveillance systems, 2) stationary fever clinics, 3) operational lab testing sites, 4) safe work guidelines, 5) economic recovery framework, 6) digital support, and 7) purchase of equipment and supplies. For disease surveillance, Fiji implemented the WHO's Early Warning, Alert and Response System (EWARS).³⁵ Fiji has stationary fever clinics operational at 38 sites, which have seen 49,147 patients to date. This is in addition to 97 percent of Fiji's population (850,000 individuals) being screened in the community for fevers between March 2020 and April 2020, a time when COVID-19 was known to be spreading within Fiji's communities. They have established an operational laboratory testing site at the Fiji Center for Disease Control. Fiji developed COVID-19-specific safe work guidelines, which are practiced in all institutions, businesses, manufacturing facilities, and schools. Fiji also developed a COVID-19-specific framework for economic recovery, which is supervised by the COVID-19 Risk Mitigation Taskforce. For digital support, Fiji has the careFIJI app and the Surveillance Outbreak Response Management and Analysis System.³⁶ In term of Fiji's next steps, they are ensuring that early warning systems are in place for

³⁴ Data source: Fiji Centre for Disease Control.

³⁵ EWARS is designed to improve disease outbreak detection in emergency settings. It is a simple and cost-effective way to rapidly set up a disease surveillance system.

³⁶ An open source mobile eHealth System that processes disease control and outbreak management procedures in addition to surveillance and early detection of outbreaks through real-time digital surveillance including peripheral health care facilities and laboratories.

communicable diseases by expanding EWARS sites. Fiji is also increasing lab testing capacity at fixed and mobile sites with WHO support.

Waqainabete discussed how Fiji is addressing external threats. First, Fiji has implemented border health protection measures, including pre-testing, supplementary arrival cards, and symptoms checks on arrival. Second, Fiji has implemented quarantine protocols, which include pretests, 14-day compulsory quarantine at government designated facilities, and posttests before discharge. Third, Republic of Fiji Military Forces and health teams have been conducting Blue Lane quarantine surveillance and related protocols. Fourth, staff from the Ministry of Health and Medical Services have been providing care for positive cases in isolation facilities and in intensive care units. Fifth, Fiji is replicating quarantine at alternative sites.

As next steps, Fiji is strengthening its Border Health Unit in all divisions, as an extension of the Health Protection Unit, and repurposing the Incident Management Team to deal with economic recovery efforts. Waqainabete shared two surgical successes. One team recently went into the highlands to provide essential surgery for a week—primarily elective surgeries—and another team based on a hospital ship was at work in the islands.³⁷

6.2 STATUS OF SAFE AND AFFORDABLE SURGERY, OBSTETRICS AND ANAESTHESIA CARE IN FIJI

Waqainabete emphasized the need to understand the major challenges in global surgery and reiterated the key messages from the LCoGS.³⁸ There are five billion people who lack access to safe, affordable surgical and anaesthesia care when needed. 143 million additional procedures are needed yearly to fill unmet need. 33 million people face catastrophic expense after surgical care each year. Investment in surgical and anaesthesia care saves lives, is affordable, and promotes economic growth. Surgery is an indivisible, indispensable part of health care.

Waqainabete mentioned that when the WHO Western Pacific Regional Committee meets, he continues to champion the cause of putting safe and affordable SOA care into the regional committee meeting, given its enormous public health importance. In addition to all other Pacific Health Ministers and the Committee's Executive Board Member to WHO, Tonga strongly supports the NSOAP agenda. He underscored the importance of communicating to the public health community and the global health community that the lack of safe and affordable SOA care should be considered a public health crisis.

Waqainabete presented an update on the status of safe and affordable SOA care in Fiji with respect to the global surgery indicators and targets (see Figure 7-). He also described Fiji's progress and challenges encountered thus far. The first indicator is timely access to essential surgery. Around 67% of Fiji's population has access to a bellwether capable hospital within 2 hours; the 2030 target is 80% coverage. In Fiji, there are only 5 bellwether hospitals, and geography is not conducive to quick travel—inter-island transport is costly. The second indicator is density of specialist surgical workforce. In Fiji, there are 5.8 surgical, anaesthetic, and obstetric physicians per 100,000 people. To meet 2030 target of 20 per 100,000, Fiji needs 132 additional SOA physicians. Training opportunities have been affected by the pandemic, and Fiji continues to lose SAO physicians, who either move abroad or join the private sector. Nevertheless, training is expected to resume in 2021, as with other surgical programs worldwide that have been suspended due to the pandemic. This training will have a greater emphasis on COVID-19 and infection control measures, coupled with a focus on the need to train the "New Normal Pacific Surgeon," he said. Attrition has reduced remarkably due to substantial salary increases for doctors in Fiji, making surgeons and their trainees among Fiji's highest paid professionals, he added.

The third indicator is surgical volume. Fiji performed 1490 procedures per 100,000 people.

³⁷ Fiji has about 300 Islands of which 100 are inhabited.
³⁸ Meara et al 2015

To meet the 2030 target of 5,000 procedures per 100,000, Fiji will need climate-resilient surgical facilities. The fourth indicator is perioperative mortality. Fiji had a perioperative mortality rate of 0.83%, which is in range for the Pacific Region but requires improved data collection and analysis. The fifth indicator is protection against impoverishing expenditure. About 24% of the population is at risk of impoverishment from out-of-pocket payments for surgical and anaesthetic care. To reach the 2030 target of 100% protection, Fiji needs to sustain the downward trend in out-of-pocket spending. The sixth indicator is protection against catastrophic expenditure. In Fiji, 21% of the population is not protected. To reach 100% protection by 2030, the

country needs improved information systems for collecting data on surgical care spending.

Waqainabete discussed progress made by countries globally on their NSOAPs. NSOAP countries are classified as interested/committed, launched, or in progress (see Appendix 3). Many countries are now in the planning stage, which he credited to advocacy for this cause on the global stage. This type of strong, high-level push is needed to ensure that SOA is included as an essential part of UHC. He encouraged the group to never shy away from this goal.

Figure 7. Progress toward global surgery indicators and targets in Fiji

Indicators	Target	Fiji	Challenges
1. Access to timely essential surgery	A minimum of 80% coverage of essential surgical and anaesthesia services per country by 2030	67% of pop within 2 hrs. access	<ul style="list-style-type: none"> - 5 Bellwether hospitals - geography not conducive to quick travel, costly inter-island transport
2. Specialist surgical workforce density	100% of countries with at least 20 surgical, anaesthetic, and obstetric physicians per 100 000 population by 2030	5.8 per 100,000 pop	<ul style="list-style-type: none"> - Need additional 132 SAO - Training opportunities affected by pandemic - Loss to overseas and private sector
3. Surgical volume	80% of countries by 2020 100% of countries by 2030 tracking surgical volume; A minimum of 5000	1490 per 100,000	<ul style="list-style-type: none"> - Need for climate-resilient surgical facilities
Indicators	Target	Fiji	Challenges
4. Perioperative mortality	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	0.83%	<ul style="list-style-type: none"> - Within range for Pacific region - Require improved data collection and analysis
5. Protection against impoverishing expenditure	100% protection against impoverishment from out-of-pocket payments for surgical and anaesthesia care by 2030	24%	<ul style="list-style-type: none"> - Need to sustain decreasing trend in out-of-pocket spending
6. Protection against catastrophic expenditure	100% protection against catastrophic expenditure from out-of-pocket payments for surgical and anaesthesia care by 2030	21%	<ul style="list-style-type: none"> - Need for improved information system to collect data on spending for surgical care

Source: Waqainabete presentation

6.3 PROGRESS IN THE WESTERN PACIFIC

In 2017, the Royal Australasian College of Surgeons and the Pacific Island Association worked together to collect information on the global surgery indicators in the Pacific. At the 2019 WHA, there was a side event on Surgery in Small Island Developing States. The same year, the Pacific Island Health Ministers held their annual meeting, where they made a commitment to NSOAPs. Until 2020, Waqainabete served as the executive board member of WHO from the Western Pacific Region, a seat that is allocated to the Western Pacific. Fiji's term was completed last year and succeeded by Tonga. The Health Ministers agreed that whoever was to serve on the executive board would continue to advocate on the topic of safe and affordable

surgery. Waqainabete stated that these efforts underscore the Pacific Region's commitment to this cause, as seen in every meeting of the executive board, at the WHA, and at the regional committee meeting of WHO, where Pacific Island nations continue to champion the progress towards safe and affordable surgery and essential surgery. In 2020, the WPRO committee adopted the regional action framework.³⁹ In 2019, the Pacific Heads of Health also held their meeting. As of 2020, 5 Pacific countries had adopted NSOAPs: Fiji, Vanuatu, Tonga, Cook Islands, and Palau (see Figure 8). These countries have had support from the Harvard Medical School and the Royal Australasian College of Surgeons. Waqainabete was hopeful that in the coming years, this cause will be placed on the standing agenda at the WHA.

Figure 8. NSOAPs in the Pacific



Source: Waqainabete presentation

³⁹ The NSOAP Framework involves 8 steps: 1) ministry support, 2) situational analysis and baseline assessment, 3) stakeholder engagement and priority setting, 4) drafting and validation, 5) monitoring and evaluation, 6) costing, 7) governance, and 8) implementation.

6.3.1 Status of global surgical indicators in the Western Pacific Region

Waqainabete reported on the progress toward global surgical indicators and targets in the Western Pacific.⁴⁰ The team collected data on 14 countries across the 6 surgical indicators.

The first indicator is access to timely essential surgery, with a target of at least 80% of the population within 2 hours of laparotomy, caesarean delivery, and open fracture repair. Nauru, Australia, and New Zealand had the highest coverage. Cook Islands, Tonga, and Mongolia were also above 80% and able to reach bellwether capacity. Samoa, Fiji, Kiribati, Tuvalu, Vanuatu, and the Solomon Islands were below 80%. Waqainabete noted that some of larger countries with numerous islands have difficulty meeting this target, such as the Solomon Islands (~20%), and Vanuatu (~45%), and Fiji (67%).

The second indicator is density of SOAs, which has a target of 20 SOA providers per 100,000 people. For this indicator, 13 countries reported data.⁴¹ The highest reporting countries were Australia (63.9), New Zealand (43), and French Polynesia (33). The lowest reporting countries were Fiji (5), Vanuatu (3), Papua New Guinea (2.3), and Solomon Islands (3). Waqainabete commented that the indicator numbers are larger on small islands with small populations. Conversely, the indicator numbers are smaller on large islands and countries with numerous islands, as seen on Papua New Guinea, Solomon Islands, Vanuatu, and Fiji. He compared the values for this indicator globally, showing the Pacific experience is similar to other undeveloped nations, where densities are largely under 14.99 per 100,000 people.⁴²

For the third indicator, volume of surgical procedures, 14 countries reported data for this indicator (which has a target of 5,000 procedures per 100,000 population). Here, highest reporting countries were Australia (10,156), Nauru

(7,130), Cook Islands (6,758), New Zealand (5,308), and Tonga (5,061).⁴³ The lowest reporting countries were Papua New Guinea (1264), Solomon Islands (868), and Timor-Leste (433). Waqainabete observed that, in the Pacific, many countries have difficulty crossing the target threshold. He compared the Pacific nations to countries with similar gross domestic product per capita, which have fewer than 2,999 procedures per 100,000 people.

The fourth indicator is perioperative mortality. 14 countries reported data for this indicator, which has a target of 100% tracking by 2030.⁴⁴ For this indicator, the highest reporting countries were Tuvalu (1), Fiji (0.83), and American Samoa (0.82). The lowest reporting countries were Kiribati (0.11), Cook Islands (0.11), Australia (0.19), Nauru (0.24), and Tonga (0.24). Waqainabete supported the effort to track this indicator, stating that when countries collect data on mortality rates, it helps illustrate where work needs to be done. After reflecting on this data, he expressed his reaffirmed interest in continuing to advocate for this topic.

The fifth and sixth indicators are risk of impoverishing expenditures and risk of catastrophic expenditures. 12 countries reported data for these indicators, which has a target of 0% risk.⁴⁵ Globally, 47% of people are at risk of catastrophic expenditures and 44% are at risk of impoverishing expenditures. In Fiji, 24% are at risk of impoverishing expenditures, and 21% are at risk of catastrophic expenditures. Waqainabete stated that many countries in the Pacific are well above these figures due to the challenges facing Pacific nations. Waqainabete presented a summary of the data collected on the Lancet Global Surgery Indicators for 14 Pacific countries (see Figure 9). He stated that the data illustrate the extensive challenges facing the Pacific. He attributed these challenges partially to geography, as countries with many islands have difficult issues with access.

40 Guest et al 2017

41 Guest et al 2017

42 Holmer et al 2019

43 Guest et al 2017

44 Guest et al 2017

45 Guest et al 2017

Figure 9. Global surgical indicators in the Western Pacific (October 2015–April 2016)

Country	Population	Indicator 1 (%)	Indicator 2 SAO/100 000	Indicator 3 Case/100 000	Indicator 4 (%)
		Access <2 hours	SAO density	Surgical volume	POMR
Nauru	10 084	100	30	7130	0.24
Tuvalu	10 837	56	18.5	3417	1.0
Cook Islands	13 229	88	22	6758	0.11
Micronesia	102 109	Not available	7	Not available	Not available
Tonga	103 000	85	14	5061	0.24
Kiribati	110 000	65	8.2	1718	0.11
Samoa	187 000	68	1.6	1552	0.82
Vanuatu	260 815	44	3.2	1277	0.28
Solomon Islands	602 000	20	2.5	868	0.46
Fiji	933 000	67	5.8	1490	0.83
Timor Leste	1 300 000	50	0.9	433	0.84
Papua New Guinea	7 500 000	20	2.3	1264	0.5
New Zealand	4 452 300	90	43	5308	0.43
Australia	23 946 300	98.85	63.9	10 156	0.19

Country	Population	% Risk of catastrophic expenditure* (direct OOP costs)	% Risk of impoverishment <US\$1.25 per day (direct OOP costs)
Nauru	10084	Not available	Not available
Tuvalu	10837	0	17
Cook Islands	13229	Not available	Not available
Micronesia	102109	31	51
Tonga	103000	8	16
Kiribati	110000	0	34
Samoa	187000	5	18
Vanuatu	260815	14	37
Solomon Islands	602000	5	57
Fiji	933000	21	24
Timor Leste	1 300 000	16	72
Papua New Guinea	7 500 000	29	56
New Zealand	4 452 300	8	2
Australia	23 946 300	5	1
Worldwide	7.1 billion	44	47

Source: Guest et al 2017

6.4 MOVING FORWARD IN THE PACIFIC

Waqainabete summarized the opportunities and challenges facing the Pacific Region. Opportunities include 1) regional collaboration, 2) alignment with three wider agendas (ie, UHC, SDGs, and NCDs), and 3) overlap with disaster and pandemic preparedness. First, regard-

ing regional cooperation, he praised the Pacific Region for its history of collaboration and stated that the Pacific has united strongly on this topic. Going forward, the region will be working with development partners and the South Pacific Commission to plan and provide mutual support. As an example of mutual support, there are many examples of surgeons from one Pacific nation sharing human resource capacity with

other Pacific nations, such as Fiji and Papua New Guinea. Other than surgeons, Pacific countries are also beginning to share other surgery-related personnel, such as nurses and anaesthesia biomedical technicians from Fiji and Papua New Guinea. The second opportunity for progress comes from aligning with wider agendas. Pacific countries are seeking alignment with UHC, SDG, and NCD. He stated that NCDs are one of the biggest challenges the Pacific faces, and the opportunity for alignment arises because many NCDs require surgery, such as diabetes. In the Pacific, treatment of diabetic sepsis is a challenge. The third opportunity he presented was the potential overlap with disaster and pandemic preparedness. The Pacific Region is disaster-prone, and the region recognizes the importance of ensuring disaster preparedness for both natural disasters and pandemic disease. Fiji has become the first small island developing state to have a WHO certified emergency medical team (and the 9th such country in the world). Waqainabete stated that this work is essential to all Pacific Island nations and that Fiji can provide expertise as they explore certifying their emergency medical technicians (EMT).

Waqainabete stated that the main challenges included geographical isolation, small populations, limited specialization of the workforce, and limited access to markets. Fiji has lost workers to Australia, New Zealand, the United States, Europe, and other locations. Fiji can have difficulty accessing consumables and equipment because its small size limits economies of scale. For example, in facing the COVID pandemic, Fiji explored stockpiling as a strategy for preparedness, to better manage resources.

6.5 WAYS FORWARD IN FIJI

Waqainabete discussed the current and future actions Fiji is taking in governance, workforce development and retention, health system strengthening, and capacity development (see Table 6-1^{Error! Reference source not found.}).

In governance, Fiji has developed its NSOAP with support from Harvard Global Health Division. The country has released an expression of interest to appoint a National Coordinator for

Safe and Affordable Surgery, Obstetrics, and Anaesthesia. The country has also established a National Health Strategic Plan 2020-2025, to provide for development and improvement of infrastructure, information systems, patient safety, and safeguards against environmental threats. Third, they have aligned the NSOAP to the Ministry's Annual Operational Plan for 2020-2021 and plan to align to the Regional Framework on Safe and Affordable Surgery, as agreed on by the regional committee of WHO.

In workforce development and retention, the government supports ongoing professional training, formal training, and continuous professional development. They allow surgeons, obstetricians, anaesthetists, and other specialists, upon completion of their postgraduate training, to gain further exposure in Australia, New Zealand, and other countries, which is a path Waqainabete took himself. The government has also provided a significant salary increase for doctors and health staff, with specific continuous professional development funding. This raise has resulted in some doctors doubling their salary. As a result, attrition rates for doctors and specialists who have had significant training both locally and abroad have declined.

In health system strengthening, the government has endorsed and started to implement a remodeling of health services, in an effort to accelerate UHC, across 210 facilities. These facilities are a point of contact for surgical care, but not necessarily sites for surgical operations. Second, the government began remodeling its procurement supply chain for medicines and consumables, given limited economies of scale. As part of this effort, Fiji joined six other island countries to make batch purchases. Third, Fiji's Emergency Medical Assistance Team is providing support for emergency responses using the country's WHO certified EMT team. This team has led surgical outreach programs throughout the country. Fourth, Fiji acquired a hospital ship in 2018, the MV Veivueti, which increases capacity for surgical outreach to rural and maritime communities. The ship has two theaters and 10 beds, with capacity for 50 staff.

In capacity development, Fiji has begun to collaborate with external partners. These partners include Royal Australasian College of Surgeons, Harvard's Global Health Division, WHO, and G4 Alliance. Waqainabete expressed a desire to continue collaborations, aspiring to be the first WHO Collaborating Centre for Safe and Affordable Surgery.

Waqainabete reiterated that small island developing states cannot do this work alone and that undeveloped and developing countries cannot either. These countries need support from development partners. These countries can continue pushing these issues on the global agenda, but development partners are needed for support and expertise in order to accelerate the growth of essential and safe surgery in small countries.

Table 6-1. Fiji update: current and future actions

Area	Actions
Governance	Development of NSOAP with support from Harvard Global Health Division
	Appointment of National Coordinator for Safe and Affordable Surgery, Obstetrics, and Anaesthesia
	National Health Strategic Plan 2020 – 2025 provide for development and improvement of infrastructure, Information System, patient safety, and safeguards against environmental threats
	Alignment to Ministry's Annual Operational Plan 2020-2021
	Alignment to Regional Framework on Safe and Affordable Surgery
Workforce Development & Retention	Support for ongoing professional training – formal training and Continuous Professional Development (CPD)
	Significant salary increase for doctors and health staff with specific CPD funding
Health System Strengthening	Remodeling of Health Service Provision Framework endorsed and implemented
	Remodeling of Procurement and Supply Chain for Medicines and Consumables under way
	Fiji's Emergency Medical Assistance Team (FEMAT) providing support for emergency response
	Hospital Ship MV Veivueti adding capacity for outreach to rural and maritime communities
Capacity Development	Collaboration with external partners – Royal Australasian College of Surgeons (RACS), Harvard's Global Health division, WHO, G4 Alliance,
	Collaboration on Collaborating Centre for Safe and Affordable Surgery

Notes: NSOAP=national surgical, obstetric, and anaesthesia plan.

Source: Waqainabete presentation

7 Final discussion

Meara moderated the panel discussion that followed the presentations. Given the AO Alliance Foundation's support of education, research, fellowships, and infrastructure, Meara asked whether the organization could support countries like Fiji and Pakistan in their emerging processes of surgical system strategic planning, adding that this should include trauma, surgery, and emergency systems. Harrison highlighted the AO Foundation, which focuses on high and middle-income countries, and the AO Alliance Foundation, which works with low-income and lower-middle-income countries. Both organizations have capacity and interest in supporting countries working to develop national trauma plans that are integrated with national strategies on surgical, obstetric, and anaesthetic care. Harrison noted the AO Alliance Foundation has worked with Myanmar in creating a national trauma plan, with Malawi on fracture care initiatives, and has supported Ethiopia and Ghana in improving existing trauma plans.

Meara asked Jafarian how Iran was able to increase its medical workforce so rapidly. Jafarian explained that the major thrust came with the integration of medical education into the Ministry of Health three decades ago. Every hospital and medical university in Iran is affiliated with the Ministry of Health, which oversees all medical services including dentistry, pharmacy, nursing, and midwifery. This integration of services and education enabled the Ministry of Health to rapidly expand education infrastructure, demonstrated in the sixfold increase in teaching beds that took place over 30 years. Jafarian noted there have been some consequences from such rapid expansion, but it has increased capacity.

In reference to integrated UHC packages, Meara asked Reynolds how these packages are different from the 44 surgical procedures identified in *Essential Surgery: Disease Control Priorities, Third Edition (DCP-3)*.⁴⁶ Meara asked whether these frameworks can be simultaneously utilized

by countries such as Pakistan that are already working with DCP-3. Reynolds clarified that WHO does not offer a health service package. Rather, WHO works closely with countries around the world who are undertaking the processes of developing national service packages. In this work, WHO also collaborates with the Diseases Control Priorities Network (DCPN). Reynolds noted that there is a high-quality source of interventions that a country can use in determining services to include in its national package. The UHC Compendium is a suite of tools that includes a database and a service selection interface. The database provides the systematic architecture for a national package, leading countries through all possible service categories so that no categories are overlooked. The service selection interface enables countries to click on the services they opt for and assign them to a given level of the health service. Reynolds said the numerous reasons for assigning services to levels include assigning referral-based, time-sensitive surgical procedures to a higher level, thus increasing the likelihood of prompt care. While DCP-3 is a collection of possible interventions, and DCPN has done much translational work in a content-to-policy approach, neither DCPN nor WHO are developing national packages. Rather, they have made tools available to support countries in developing their own national packages. Reynolds noted a key aspect of these tools is the criteria included, with effectiveness, cost, and cost effectiveness chief among these. Many other considerations, including ethical considerations, are also included. Countries choose their criteria, and DCP-3 and the UHC Compendium are tools to support their process of selecting services.

Meara noted that the NSOAP process Pakistan embarked upon is more of a thought process than a package. He asked Samad whether it was difficult to incorporate DCP-3 packages into Pakistan's NSOAP process. Samad replied that NSOAP is a policy process that defines

⁴⁶ *Essential Surgery: Disease Control Priorities, Third Edition* is available at <https://www.ncbi.nlm.nih.gov/books/NBK333511/> (accessed November 22, 2020).

an engagement method. As many surgeons are not familiar with policy work, it provides them with an approach to navigating bureaucracy and governments. However, NSOAP in no way defines or delineates a set agenda for regions to follow. Furthermore, countries within a region may opt for different approaches. Samad stated that while approaches may vary, they all must involve stakeholder engagement, baseline data, and governance methodology. The steps may be arranged in various orders, but they should all be present. Additionally, the NSOAP process in no way dictates what surgical procedures to include. Samad emphasized that programs must be locally adapted and customized in order to succeed, requiring flexibility in the approach utilized. Making a cooking analogy, Samad said these approaches are not a set menu, but rather the ingredients to cook with.

Noting that Waqainabete cited five Pacific countries embarking on the NSOAP process, Meara congratulated him on his efforts in galvanizing that region. He asked Waqainabete what his next step is for promoting surgery efforts. Waqainabete replied that every discussion

around health—whether it be regarding COVID-19, immunization, or any other health topic—must be utilized as an opportunity to incorporate surgical efforts. In this way, the importance of essential surgery can be kept at the forefront. Waqainabete pointed out that he and other key political figures involved in Fiji's health policy have backgrounds in medical practice. He is a surgeon, the acting Permanent Secretary for Health and Medical Services (Dr James Fong) is an obstetrician, and the Chief Medical Adviser of the Ministry of Health and Medical Services (Dr Jemesa Tudravu) is an orthopedic surgeon. They do not come from the public health space, yet they realized the need to enter it. Waqainabete advised surgeons to follow the example of their public health colleagues, who utilize every platform to raise awareness of the issues they are passionate about. In contrast, surgeons typically talk with one another instead of entering the global space. Instead, Waqainabete said that surgeons must find opportunities in every discussion around health, regardless of the region, to incorporate the importance of essential surgery into the dialogue.

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9 Appendices

Appendix 1. WHO Trauma Care Checklist



Trauma Care Checklist

Immediately after primary & secondary surveys:

IS FURTHER AIRWAY INTERVENTION NEEDED? May be needed if: • GCS 8 or below • Hypoxaemia or hypercarbia • Face, neck, chest or any severe trauma	<input type="checkbox"/> YES, DONE <input type="checkbox"/> NO
IS THERE A <i>TENSION</i> PNEUMO-HAEMOTHORAX?	<input type="checkbox"/> YES, CHEST DRAIN PLACED <input type="checkbox"/> NO
IS THE PULSE OXIMETER PLACED AND FUNCTIONING?	<input type="checkbox"/> YES <input type="checkbox"/> NOT AVAILABLE
LARGE-BORE IV PLACED AND FLUIDS STARTED?	<input type="checkbox"/> YES <input type="checkbox"/> NOT INDICATED <input type="checkbox"/> NOT AVAILABLE
FULL SURVEY FOR (AND CONTROL OF) EXTERNAL BLEEDING, INCLUDING:	<input type="checkbox"/> SCALP <input type="checkbox"/> PERINEUM <input type="checkbox"/> BACK
ASSESSED FOR PELVIC FRACTURE BY:	<input type="checkbox"/> EXAM <input type="checkbox"/> X-RAY <input type="checkbox"/> CT
ASSESSED FOR INTERNAL BLEEDING BY:	<input type="checkbox"/> EXAM <input type="checkbox"/> ULTRASOUND <input type="checkbox"/> CT <input type="checkbox"/> DIAGNOSTIC PERITONEAL LAVAGE
IS SPINAL IMMOBILIZATION NEEDED?	<input type="checkbox"/> YES, DONE <input type="checkbox"/> NOT INDICATED
NEUROVASCULAR STATUS OF ALL 4 LIMBS CHECKED?	<input type="checkbox"/> YES
IS THE PATIENT HYPOTHERMIC?	<input type="checkbox"/> YES, WARMING <input type="checkbox"/> NO
DOES THE PATIENT NEED (IF NO CONTRAINDICATION):	<input type="checkbox"/> URINARY CATHETER <input type="checkbox"/> NASOGASTRIC TUBE <input type="checkbox"/> CHEST DRAIN <input type="checkbox"/> NONE INDICATED

Before team leaves patient:

HAS THE PATIENT BEEN GIVEN:	<input type="checkbox"/> TETANUS VACCINE <input type="checkbox"/> ANALGESICS <input type="checkbox"/> ANTIBIOTICS <input type="checkbox"/> NONE INDICATED
HAVE ALL TESTS AND IMAGING BEEN REVIEWED?	<input type="checkbox"/> YES <input type="checkbox"/> NO, FOLLOW-UP PLAN IN PLACE
WHICH SERIAL EXAMINATIONS ARE NEEDED?	<input type="checkbox"/> NEUROLOGICAL <input type="checkbox"/> ABDOMINAL <input type="checkbox"/> VASCULAR <input type="checkbox"/> NONE
PLAN OF CARE DISCUSSED WITH:	<input type="checkbox"/> PATIENT/FAMILY <input type="checkbox"/> RECEIVING UNIT <input type="checkbox"/> PRIMARY TEAM <input type="checkbox"/> OTHER SPECIALISTS
RELEVANT TRAUMA CHART OR FORM COMPLETED?	<input type="checkbox"/> YES <input type="checkbox"/> NOT AVAILABLE

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Source: <https://www.who.int/publications/i/item/trauma-care-checklist> (accessed November 18, 2020)

Appendix 2. WHO Surgical Safety Checklist

Surgical Safety Checklist		World Health Organization	Patient Safety A World Alliance for Safer Health Care
Before induction of anaesthesia (with at least nurse and anaesthetist)	Has the patient confirmed his/her identity, site, procedure, and consent? <input type="checkbox"/> Yes <input type="checkbox"/> No	Before skin incision (with nurse, anaesthetist and surgeon)	Before patient leaves operating room (with nurse, anaesthetist and surgeon)
Is the site marked? <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable	Is the anaesthesia machine and medication check complete? <input type="checkbox"/> Yes <input type="checkbox"/> No	Confirm all team members have introduced themselves by name and role, and where the incision will be made. <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable	Nurse Verbally Confirms: <input type="checkbox"/> The name of the procedure <input type="checkbox"/> Completion of instrument, sponge and needle counts <input type="checkbox"/> Specimen labelling (read specimen labels aloud, including patient name) <input type="checkbox"/> Whether there are any equipment problems to be addressed
Is the pulse oximeter on the patient and functioning? <input type="checkbox"/> Yes <input type="checkbox"/> No	Does the patient have a: Known allergy? <input type="checkbox"/> No <input type="checkbox"/> Yes Difficult airway or aspiration risk? <input type="checkbox"/> No <input type="checkbox"/> Yes, and equipment/assistance available Risk of >500ml blood loss (7ml/kg in children)? <input type="checkbox"/> No <input type="checkbox"/> Yes, and two IVs/central access and fluids planned	Has antibiotic prophylaxis been given within the last 60 minutes? <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable	To Surgeon, Anaesthetist and Nurse: <input type="checkbox"/> What are the key concerns for recovery and management of this patient?
Anticipated Critical Events To Surgeon: <input type="checkbox"/> What are the critical or non-routine steps? <input type="checkbox"/> How long will the case take? <input type="checkbox"/> What is the anticipated blood loss? To Anaesthetist: <input type="checkbox"/> Are there any patient-specific concerns? To Nursing Team: <input type="checkbox"/> Has sterility (including indicator results) been confirmed? <input type="checkbox"/> Are there equipment issues or any concerns?	Is essential imaging displayed? <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable		

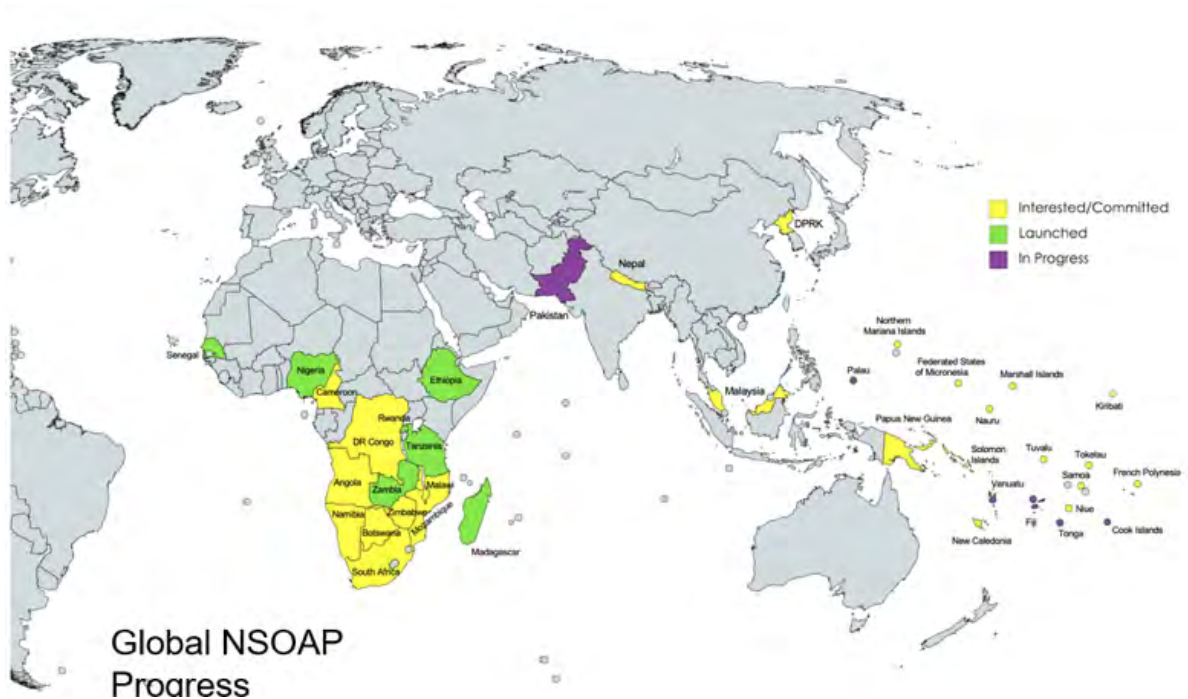
This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

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Source: <https://www.who.int/teams/integrated-health-services/patient-safety/research/safe-surgery/tool-and-resources> (accessed November 18, 2020)

Appendix 3. Global progress in national surgical, obstetric, and anaesthesia planning (October 2020)



Source: Waqainabete presentation

