

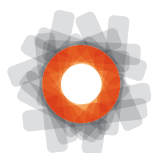


Cesarean Section Safety and Quality in Low-Resource Settings: Report of a Technical Consultation

July 27–28, 2017



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Maternal Health Task Force



**WOMEN AND HEALTH
INITIATIVE**

FISTULA CARE *PLUS* AND MATERNAL HEALTH TASK FORCE



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This report was written by Vandana Tripathi, with contributing material from Lauren Bellhouse and Sarah Hodin. The report was reviewed by Erin Mielke, Lauri Romanzi, Mary Ellen Stanton, and Mary Nell Wegner.

Consultation participants, July 28, 2017



Acronyms and Abbreviations

ANC	antenatal care
DCP-3	Disease Control Priorities
DHS	Demographic and Health Survey
DRC	Democratic Republic of the Congo
EmONC	emergency obstetric and newborn care
FC+	Fistula Care <i>Plus</i>
FCP	Fistula Care Project
FIGO	International Federation of Gynecology and Obstetrics
GDP	gross domestic product
HMIS	health management information system
IECS	Institute for Clinical Effectiveness and Health Policy
LMIC	low- and middle-income country
LSHTM	London School of Hygiene & Tropical Medicine
MCSP	Maternal and Child Survival Program
MHTF	Maternal Health Task Force
ML	medical licentiate
NGO	nongovernmental organization
NTC/VS	nullipara, term, cephalic/vertex, singleton [delivery]
ob-gyn	obstetrician-gynecologist
PGSSC	Program in Global Surgery and Social Change at Harvard Medical School
QA	quality assurance
QED	Quality, Equity, Dignity
QI	quality improvement
SAFOG	South Asian Federation of Obstetricians and Gynecologists
SAO	surgical, anesthesia, and obstetric
SBA	skilled birth attendant
SPA	service provision assessment
VBAC	vaginal birth after cesarean
WHO	World Health Organization

Executive Summary

The Fistula Care *Plus* (FC+) project at EngenderHealth and the Maternal Health Task Force, part of the Women and Health Initiative at the Harvard T.H. Chan School of Public Health, co-convened a technical consultation on July 27–28, 2017, to examine issues affecting the safety and quality of cesarean section services in low-resource settings.

On the first day, presenters summarized current evidence related to the provision of cesarean section, including an assessment of global trends, flashpoints that affect safety and quality, and country-level insights. These presentations demonstrated that cesarean section services are often provided in settings where minimum standards for clinical decision making, surgical safety, and counseling and consent cannot be attained, due to severe resource gaps. Participants from Sub-Saharan Africa and South Asia provided examples of the effects on service delivery of gaps in workforce, infrastructure, and quality assurance (QA). These include clinicians conducting cesarean section completely alone, without any nursing or anesthesia support; obstetrician-gynecologists (ob-gyns) providing an average of six cesarean sections a day at overwhelmed referral hospitals; and operating theaters facing such high client volume that staff cannot follow basic infection control practices between procedures. While the focus of the meeting was not on cesarean section rates, presentations clearly demonstrated that both underuse and overuse are problems with significant implications for maternal and newborn health—and that “too much” and “too little” often coexist in the same country and sometimes even the same facility. The discussion also highlighted important gaps in knowledge, such as the lack of evidence-based guidelines for labor monitoring and intrapartum risk assessment to facilitate appropriate decision making for cesarean section.

On the second day, participants synthesized these findings, developing a consensus action agenda to improve the safety and quality of cesarean deliveries. Key actions in the agenda include:

- Build bridges between the maternal health and safe surgery communities
- Establish criteria and accreditation processes for facilities providing cesarean section
- Promote midwifery-led labor management in all settings
- Invest in expanding the surgical, anesthesia, and obstetric (SAO) workforce
- Support supervision and training for SAO quality improvement (QI)
- Support the transition to academic, accredited curricula for all SAO workers
- Establish evidence-based guidelines for labor management and decision making on cesarean delivery
- Promote QA in emergency obstetric and newborn care (EmONC), especially in contexts of task shifting

- Build evidence for the use of cesarean section QI tools (e.g., checklists)
- Strengthen facilitated EmONC referral, including via information/communication technology
- Increase demand for quality maternity care without overintervention
- Campaign against cesarean section overuse, where appropriate
- Strengthen health management information systems (HMISs) to support cesarean section QA/QI

Participants also identified immediate actions that the maternal health and ob-gyn communities can undertake to collaborate with the safe surgery community and disseminate the recommendations of this consultation to local, regional, and global stakeholders.

I. Meeting Rationale and Objectives

The Fistula Care *Plus* (FC+) project at EngenderHealth and the Maternal Health Task Force (MHTF), part of the Women and Health Initiative at the Harvard T.H. Chan School of Public Health, co-convened a technical consultation on July 27–28, 2017, to examine issues affecting the safety and quality of cesarean section services in low-resource settings.

The volume of cesarean sections in low- and middle-income country (LMIC) settings has increased steadily in recent years (Betrán et al., 2016). While the maternal and newborn health community has mostly focused on urgently needed expansions in access to emergency obstetric and newborn care (EmONC), including lifesaving surgical procedures, there is evidence that many cesarean sections are being performed in settings where minimum standards of safety and quality are not achieved. Program data from the FC+ project and its partners suggest that a substantial and increasing proportion of genital fistula is attributable to surgical errors, specifically during cesarean section and hysterectomy (Fistula Care *Plus*, 2016). Numerous factors, including inadequate surgical infrastructure, insufficient clinician training, and possibly task shifting may be contributing to this problem (Dawson et al., 2014). Recent health services research suggests that inadequate access to and overuse of cesarean section now coexist in the same countries (Kaboré et al, 2016).

“We as a community have been promoting institutional delivery as a means to improving health outcomes. We are now realizing that just providing access to care doesn’t necessarily improve outcomes.”—Ana Langer, Women and Health Initiative

The potential impact of universal access to essential obstetric surgery is enormous: It has been estimated that such access could prevent “37% of the aggregate burden of maternal and perinatal deaths and newborn morbidity” (McCaw-Binns, 2015). Ironically, surgery to prevent and manage maternal and newborn complications may now be contributing to preventable iatrogenic morbidity. It is crucial to identify and prioritize key areas of action to ensure that the processes of cesarean section care provision adhere to a minimum standard of quality. Both the maternal/newborn health and the global safe surgery communities must be involved in this process, yet these two communities often develop strategies, priorities, and targets in parallel rather than in collaboration.

The objectives of this technical consultation were to:

- Understand the context of cesarean section procedures in LMIC settings (facility setting, health care worker cadre, indication, outcomes, etc.)

- Describe important contributors to an unsafe health system environment for cesarean section
- Identify knowledge gaps related to cesarean section safety and quality that require further data or evidence
- Identify key areas of action to ensure the safety and quality of cesarean sections in LMICs
- Brainstorm ideas to raise the profile of concerns about cesarean section safety and quality and build commitment to enacting a plan of action on this issue

Participants in the consultation included clinicians, researchers, and others engaged in safe surgery and safe motherhood programs in low-resource settings, at global institutions, and in the United States. Appendix A provides the meeting agenda and Appendix B provides a list of meeting participants. Meeting presentations and other materials are available at the FC+ and the MHTF websites.¹

¹ At www.fistulacare.org/resources/program-reports/cesarean-section-technical-consultation/ and at www.mhtf.org/events-mhtf/cesarean-section-safety-and-quality-in-low-resource-settings.

II. Day 1: Current Evidence and Trends

A. Global Context

Inadequate data on cesarean section and related indicators

Vandana Tripathi (FC+ project) presented findings from project data and a special study indicating areas of sharp concern for cesarean safety and quality. A study completed by the predecessor Fistula Care project analyzed records for 2,941 cesarean deliveries from nine facilities in five countries: Bangladesh, Guinea, Mali, Niger, and Uganda (Fistula Care Plus, 2016; Landry et al., 2014). Although substantial proportions of women receiving cesarean sections had been referred to the facilities providing the procedure, few (0–30% in most countries) came with notes and almost none (0–1% at seven of the nine facilities) with a partograph. The time at which the decision for a cesarean delivery was made was noted in 7% or fewer of records at six of nine facilities; the time at which signed surgical consent was obtained was noted in 0–1% of records in six of nine facilities. Clinicians used diverse terminology for common indications (e.g., 11 separate terms for malpresentation). One-third of records in Bangladesh had to be classified as “other/no information” due to inadequate information on indications. Most physicians were aware of various systems for classifying cesarean indications, but no site had a formally documented system in place. No site had reviewed its cesarean indications data prior to the study, and no site conducted routine reviews of maternity data that are reported to management or district health authorities.

Cesarean section as a cause of iatrogenic fistula

A 2014 review supported by Fistula Care/FC+ found that 13% of 5,959 fistula cases seen at treatment sites in 11 countries were iatrogenic (Raassen et al., 2014). A more recent review of FC+ data (Fistula Care Plus, 2016) found that the proportion of cases classified as iatrogenic varied over time and among countries, with the highest proportion in Bangladesh (15–36% per quarter). In a survey of clinicians at 18 FC+-supported fistula treatment sites, one-quarter estimated that 25% or more of their cases were iatrogenic. Respondents also ranked the procedures contributing to iatrogenic fistula, reporting cesarean section as the most important cause. Reviews of surgical fistula repair cases conducted in three countries found that 8.3% in the Democratic Republic of the Congo (DRC), 9.9% in Niger, and 27% in Bangladesh were classified as iatrogenic. In DRC and Niger, cesarean section was the most common causal procedure, whereas in Bangladesh, 75% of iatrogenic fistula cases were related to hysterectomy.

Meeting participants noted similar findings regarding iatrogenic fistula trends at their facilities in Nigeria and Ethiopia. Participants also suggested that the cesarean procedure is more technically challenging and complex when performed on a woman who has experienced obstructed labor; this finding clearly has implications for obstetric surgical education and clinical skills acquisition. Several participants highlighted the importance of having better indicators for and documenting cases of iatrogenic fistula. These data on iatrogenic fistula are part of a body of evidence suggesting that, as maternal mortality declines, some portion of women who avoid death instead experience severe and/or chronic maternal morbidity.

The findings also have significant implications for fistula eradication, which requires both the treatment of existing cases and the prevention of new ones. If iatrogenic fistula related to cesarean section continues to occur at current rates, it is likely that a substantial fistula caseload will persist for years, even if the current backlog is addressed and new fistula from prolonged and obstructed labor are eliminated.

“In settings where the volume of surgery has increased rapidly, there is a risk that iatrogenic fistula will become normalized rather than seen as a ‘never event.’”—Vandana Tripathi, FC+ project

Surgical environment and cesarean section safety

Lauri Romanzi (FC+ project) described the importance of a surgical environment that enables clinicians to focus on the decisions they need to make. This requires essential infrastructure and a high-quality workforce, including staff trained to provide anesthesia. Improving safety includes preventing the need for surgery in the first place, by strengthening the training of skilled birth attendants (SBAs) so that cesarean delivery is not needed, improving the management of obstructed labor, and adopting evidence-based standards and guidelines for credentialing providers of obstetric and gynecologic surgery. When surgery is indicated, it should be made systematically safe, with a framework of minimum acceptable standards of care that are multisectoral—touching on finance, transport, and staffing. The global safe surgery movement has identified three levels of surgical care, three cadres of health workers (surgery, anesthesia, and obstetrics [SAO]), and three bellwether procedures. The maternal health community should be engaged in each element of this safe surgery “trinity.”

“Nobody can work well, no matter how well-trained they are or personally motivated, when they don’t have an environment that works.”—Lauri Romanzi, FC+ Project

Cesarean section trends in global surveys

Researchers from the London School of Hygiene & Tropical Medicine (LSHTM) presented findings from an analysis of Demographic and Health Survey (DHS) and Service Provision Assessment (SPA) data in 44 countries.² Reviewing self-reported DHS data, Lenka Benova (LSHTM) found huge variation in population-level cesarean section rates, from 1.5% in Chad to 34% in the Maldives. The analysis also found dramatic urban-rural disparities, up to a 19-fold difference in Ethiopia, and generally higher cesarean section rates in nonpublic facilities, up to a 3.6 ratio between nonpublic public and public facilities in Namibia. While the validity of self-reported data on provider type is not clear, in 28 of 34 Sub-Saharan African countries, more than 20% of women who had had a cesarean section reported that it had been performed by a “non-doctor SBA.”³ In nearly all Sub-Saharan African countries with data, the percentage of cesareans performed by non-doctor SBAs was higher in public facilities.

² Further details on the LSHTM analysis will be provided in a report to be completed in late 2017.

³ In the DHS survey, the term “doctor” included medical/clinical officers; “non-doctor SBA” refers to cadres such as nurses and midwives.

In a review of maternal risk factors available in the DHS survey, the most “overrepresented” factors when comparing women with cesareans to all women giving birth were previous cesarean section, multiple gestation, and primiparity. Trends among primiparous women may be particularly important, as other research suggests that in high-income settings, rates among nullipara, term, cephalic/vertex, singleton (NTC/VS) deliveries explain much of the total variation in cesarean rates between facilities. NTC/VS rates are also an important influence on future cesarean levels, since these women are more likely to deliver by cesarean section in subsequent pregnancies. Participants noted that country contexts might affect rates, specifically through structural or financial incentives to perform cesareans (e.g., reimbursement levels).

In presenting case studies using DHS and SPA data from Bangladesh and Tanzania, Francesca Cavallaro (LSHTM) noted that in Bangladesh cesarean sections increased almost 10-fold between 2000 and 2014 (from 2.9% to 24.4%), despite a concurrent decrease in the number of births. The cesarean rate was 54% among the richest quintile, compared with 7% among the poorest. Moreover, rates have increased more rapidly in private than in public facilities—by 2014, only 21% of cesarean sections were performed in public facilities. Most cesareans were performed on weekdays between 9 am and 6 pm, and the mean length of stay following a cesarean section was 6.7 days. One-third of cesareans were performed “for other complications during delivery,” meaning that women could not report a specific indication. In Tanzania, the cesarean section rate increased from 2.3% in 1996 to 7.0% in 2016, with a six-fold difference between urban and rural rates. In 2016, nonpublic facilities had a cesarean rate twice that of public facilities. Only 25% of cesareans in Tanzania were done at facilities meeting three minimum readiness criteria: piped water and consistent electricity, all general anesthesia equipment, and a 24-hour staffing rota for cesarean surgeon and anesthetist. Participants highlighted gaps in SPA questions relevant to cesarean section safety and quality and noted the need to triangulate DHS and SPA data with clinical data sources, such as Maternal Death and Surveillance Response.

“We have a perfect storm of rising facility-based delivery and rising cesarean rate in facilities, so this trend is not likely to slow any time soon.”—Francesca Cavallaro, LSHTM

Opportunities to build on the global safe surgery movement

Lina Roa (Program in Global Surgery and Social Change [PGSSC], Harvard Medical School) shared an update on the global safe surgery movement, highlighting three developments from 2015.

- First, the Lancet Commission on Global Surgery report described the gap in global surgical access: Although 28–32% of the global burden of disease is from surgical conditions, 5 million people lack access to safe surgery, 143 million more procedures are needed at minimum, and 33 million people face catastrophic expenditures each year paying for surgery and anesthesia (Meara et al., 2015). The Lancet Commission adapted the “three delays” model of maternal mortality and selected six indicators of the strength of surgical systems (e.g., SAO workforce density and surgical volume per 100,000 population).

- Second, *Essential Surgery, Disease Control Priorities (DCP-3)* identified 44 essential surgical procedures and demonstrated that these procedures are cost-effective (Debas et al., 2015).
- Finally, the World Health Assembly passed Resolution A 68/15 on strengthening emergency and essential surgical care and anesthesia as a component of universal health care. Progress reports on the resolution document regional and country-level actions—e.g., the work of the College of Surgeons of East, Central, and Southern Africa in regional benchmarking and surgical plans.

“A lot of the frameworks in the global surgery community come from the field of obstetrics, such as the three delays model. But, many of the leaders in global surgery are surgeons; we need to get surgeons, obstetricians, anesthetists, and public health professionals together.”—Lina Roa, PGSSC

B. Flashpoints in Cesarean Section Safety and Quality

Participants discussed seven “flashpoints” in cesarean section provision—i.e., health systems issues implicated in whether these services are provided with adequate safety and quality.

1. **Linkages between safe surgery and maternal health communities.** Yirgu Gebrehiwot (Addis Ababa University) discussed the challenges in making cesarean section accessible, available, and safe. These include gaps in data quality that leave questions about actual volume of surgeries, who is providing them, and adverse outcomes, as well as a lack of surgical standards and monitoring guidelines. A key challenge is the lack of adequate anesthesia support: In many situations, the surgeon provides local or spinal anesthesia, as there is no anesthetist.

“Surgery is not for a single person. However skilled the surgeon is, the team that supports that person must also be skilled.”—Yirgu Gebrehiwot, Addis Ababa University

2. **Human resources/workforce density.** John Varallo (Jhpiego), presenting on behalf of Hannatu Abdullahi, described the workforce for cesarean section, using a high-volume hospital in North West Nigeria as a case study. This hospital performs 20,400 deliveries annually, with a 10.3% cesarean section rate. Free maternity care policies have increased the number of deliveries, with no increase in infrastructure or staffing. There are only two ob-gyns, two anesthesia staff, and two operating theater nurses. Each SBA performs an average of 800 deliveries annually and each ob-gyn does more than 1,000 cesarean sections each year, translating to six daily if done every workday—a volume with potentially drastic effects on quality. These staffing challenges result in delays in surgery, anesthetic complications, postoperative infections, and longer-term consequences, such as fistula, adhesions, and chronic pelvic pain. Participants discussed gaps in planning (e.g., recruitment strategies), training, and supervision that lead to inappropriate human resources distribution. For instance, in Nigeria, federal tertiary hospitals may have much more staffing and lower volume, while state-run secondary hospitals are overwhelmed.

3. **Human resources/task shifting.** Luis Gadama (University of Malawi College of Medicine) described the role of clinical officers in providing cesarean section. Clinical officers, who complete a four-year course (compared with the seven-year medical degree course), provide 90% of cesarean deliveries in Malawi. Despite this expansion of the cesarean workforce through task shifting, Malawi has just a 3–5% cesarean section rate. High levels of maternal and newborn mortality persist, and the health workforce faces gaps in in-service training and a lack of motivation and opportunities for professional advancement. Participants noted that while health indicators remain poor, they might have been far worse without task shifting. Mozambique’s experience with task shifting was also discussed, noting the careful planning and high-quality training of small numbers of nonphysician clinicians. Participants flagged as a challenge the absence of global benchmarks for numbers of and workloads for different SBA cadres.
4. **Clinical decision making and patient selection—protocols and practices.** Fernando Althabe (Institute for Clinical Effectiveness and Health Policy) discussed the Latin American context, where the regional cesarean section rate is 40%. When a public and a private hospital in Argentina are compared using the Robson classification system defining groups of women (Robson et al., 2015), the NTC/VS cesarean rate is nearly twice as high at the private hospital as at the public hospital (18% versus 10%). With private and public hospitals showing extremely low use of vaginal birth after cesarean (a 100% cesarean rate among term cephalic pregnancies with a prior cesarean delivery at the private hospital and a rate of 92% at the public hospital), a key challenge is preventing the first cesarean section if it is not clinically indicated. Research on delivery preferences in Argentina suggests that only 6–12% of women wish to deliver by cesarean section, but that 34% of healthy nulliparous women at public hospitals and 45% at private hospitals end up delivering via cesarean. This suggests that health system factors and care processes move patients toward cesarean more than individual preferences do. Participants also discussed the links between training and clinical decisions to perform cesarean delivery (e.g., ob-gyns in many countries are not being trained in forceps delivery or manual maneuvers). Additionally, destructive delivery for stillbirths is not frequently viewed as an option, although it would avert the need for a cesarean delivery in some cases.
5. **Informed consent and patient rights.** Kathleen Hill (Jhpiego/Maternal and Child Survival Program [MCSP]) contextualized informed consent and rights for cesarean section in the larger respectful maternity care movement. Recent research in Tanzania found that a substantial proportion of clinicians agreed with the statement that “it is safer to withhold information from less-educated women” and with the idea that many women do not agree that clinicians must secure permission before procedures (Sando et al., 2016). In addition to patients’ and providers’ perceptions and expectations, the absence of regulatory frameworks and mechanisms for redress may contribute to a “normalization” of care provided without consent. Professional standards (preservice education, supervision, certification, and enforcement) and job aids (indicators and consent forms) are required to ensure that the minimum elements of informed consent are part of counseling processes for cesarean section. The World Health Organization (WHO) Framework for Quality of Care in Childbirth and the Respectful Maternity Care Charter, as well as new validated tools, such as the Mother’s Autonomy in Decision

Making Index and the Mothers on Respect Index (Vedam et al., 2017; Vedam et al., 2017), may support assessment of the quality of surgical counseling and informed consent.

6. **Anesthesia care.** Lauri Romanzi (FC+) described workforce and material gaps that hinder the provision of adequate anesthesia care during cesarean section. The anesthesia workforce density is estimated to be 100 times higher in high-income countries than in LMICs (Dubowitz, Detlefs, & McQueen, 2010). A recent survey of referral hospitals in East, Central, and Southern Africa found that no facilities had all of the necessary equipment and staff, and just 7% had adequate anesthesia staff (Epiu et al., 2017). The potential complications of anesthesia are also significant for the “second patient” in cesarean section—the newborn. Participants discussed the possibility of task shifting for anesthesia and examples of settings where clinical officers and midwives have been trained to provide anesthesia services.
7. **Infection prevention and management.** John Varallo (Jhpiego) described factors influencing the occurrence of maternal sepsis, including lack of adherence to infection prevention protocols, out-of-date guidelines, inappropriate antibiotic prophylaxis, improper technique resulting in unnecessary tissue trauma, and deprioritization of postoperative care and monitoring. Intervention “bundles” may promote improved practices. In Tanzania, an example of such a bundle includes: appropriate use of antibiotics 15–60 minutes before skin incision, use of chlorohexidine abdominal skin preparation, iodine vaginal cleansing for 30 seconds before cesarean section, adequate tissue oxygenation, and proper follow-up and sanitization of equipment. Only 20% of surgical site infections are identified before discharge, so monitoring improvements in infection prevention is challenging. “Modified obstetric early warning systems,” such as the UK Red Flag Sepsis Strategy, may be useful in improving early identification and management of sepsis. Participants discussed how surgical volume affects infection prevention: Rapid turnover of operating theaters may leave no time to prepare between surgeries. Additionally, there is little QA for sterilization procedures and equipment.

Research Needs

Through the discussion of global context, participants identified a number of gaps that require further research or improved measures. These include:

- Qualitative and quantitative information on cesarean section safety and quality in settings of widespread task shifting
- Context-specific understanding of cesarean section rates, particularly the influence of financial incentives, health insurance, and other structural factors
- Improved understanding of patient and provider preferences related to cesarean section
- Standardized classification, measures, and reporting of iatrogenic fistula, to understand incidence and trends
- Triangulation of household survey data (e.g., on nondoctor SBAs) with clinical data on outcomes and complications, including from maternal and perinatal mortality and morbidity surveillance
- Quality of care frameworks to guide the assessment of cesarean care—for example, adapted from the Donabedian model or other models more specific to this topic (Donabedian, 1988; Richard et al., 2008)
- An improved evidence base to support advocacy against overuse in LMICs, including messages that would be effective for women, and strategies for integration in SBA training.

C. Country Insights

- United States:** Neel Shah (Ariadne Labs) discussed the drivers behind increasing cesarean section rates in the United States, noting the impact of increased health care capability and complexity on clinical decision making and clinical outcomes. Barring a brief decline after the initial promotion of trial of labor after cesarean delivery in the 1990s, the cesarean rate has steadily increased in the United States, increasing by 500% since the 1970s. Perhaps half of cesarean sections in the United States are unnecessary, bringing increased complication risks and implications for future pregnancies—e.g., a greater risk of placental disorders. Examining facility data shows a huge range (7–70%) in hospital-level cesarean rates. When obstetric teams are underresourced or facing workload constraints (described by Shah as “the Pressure Tank” model), cesarean section can become the easier decision to speed patient flow. Addressing this problem must include improving labor assessments, which are currently unstructured, unreliable, and inconsistent, leading to passive decision making, a lack of accountability, and unintentional errors. In addition to the health impacts, the high rate of cesarean section in the United States brings huge financial costs—0.6% of the U.S. gross domestic product is spent on hospitalizing women for childbirth.

“The number one predictor for [a woman’s] chance of having a cesarean section is what door she walks through.”—Neel Shah, Ariadne Labs

Regional panels examined experiences with cesarean section and safe surgery in Sub-Saharan Africa and South Asia. Among the highlights:

- Malawi:** Luis Gadama (University of Malawi College of Medicine) noted that a national quality management system has been set up but has only two staff, who are required to develop all tools and provide oversight across the health system. While progress has been made in areas such as referral systems, procurement, and adoption of a respectful maternity care package, constraints such as lack of funding, lack of monitoring and evaluation-driven policy, and poor health worker motivation all hinder further progress.
- Zambia:** Bellington Vwalika (University of Zambia School of Medicine) described actions in the context of the national safe surgery and anesthesia plan. Medical licentiates have been used as a form of task shifting, providing routine care and EmONC. While no specific policy explicitly guides task shifting of EmONC and cesarean section to nonphysicians, the Ministry of Health has accepted this idea. The country faces significant urban-rural and public-private disparities in cesarean section availability and access, with very low rates in rural areas. The cesarean rate at private hospitals (38%) is more than twice the rate at public hospitals (16%). These disparities are mirrored in the more limited availability of complete cesarean section equipment and supplies in rural and public facilities, as well as the relative density of the ob-gyn, medical licentiate, and anesthesia workforce in rural vs. urban areas.

Overuse and Underuse—the Challenge of an “Optimal” Cesarean Section Rate

While the focus of this meeting was on the safety and quality of cesarean procedures, rather than on the rates at which the procedure is performed, participants’ concerns about overuse and underuse of cesarean delivery were prominent throughout the presentations and discussion.

Overuse: the “cesarean pandemic”

Increasing rates across many settings were a particular point of concern, described as a “pandemic” at one point. Especially in urban LMIC settings, cesarean section rates have climbed quickly; the population-level rate in one Indian state, Telangana, is now 58%. Such rates bring concern for population-level health impacts—for instance, increased risk for placental disorders and consequent life-threatening hemorrhage in future pregnancies. Overuse can also directly affect the safety of procedures—for instance, if unnecessary cesareans contribute to overwhelming volume in facilities lacking adequate infrastructure, SAO staffing, or infection control capacity. Overuse that is driven by poor clinical decision making certainly reflects poor quality of care; the 15-fold variation in the NTC/VS cesarean rate among United States hospitals suggests decision making based on factors apart from medical indication. Concerns about overuse in private hospitals also reflect these facilities’ broader segregation from national oversight, accreditation, QA, and health information systems. Finally, overuse is a profound concern when it occurs in tandem with a lack of counseling and informed consent and with a disregard for women’s preferences, expectations, or autonomy.

Underuse, especially among rural and poor women

However, in many settings, population-level cesarean rates remain very low. Presenters described concerns about overuse and underuse in the same countries: Data from public facilities in Pakistan documented a 3% urban cesarean section rate in Balochistan, compared to a rate of 33% in Islamabad. Similarly, in Bangladesh, more than half of births among the richest quintile of women are cesarean deliveries, compared with just 7% among the poorest. These variations within the same country flag an essential concern for those addressing maternal and newborn mortality and morbidity: How can we improve access to essential care without encouraging unnecessary cesarean deliveries?

Is there an optimal cesarean section rate?

A challenge is that there is no evidence-based “optimal” cesarean rate. Guidance, including the recent WHO statement on cesarean section, has noted no decrease in mortality above a 10% population cesarean rate (WHO, 2015); however, this observation does not take into account maternal and newborn morbidity, which may continue to decline at higher rates. While overuse may be driven by factors that the SAO academic/professional/nongovernmental organization (NGO) communities can tackle, underuse is likely to be affected by larger structural and economic factors, including transportation, general infrastructure, and poverty, which require a different set of actors to address.

“The rates of cesarean section in some hospitals in Bangladesh, India, and Zambia are showing that if you use the Robson classification, you will see striking figures that are not consistent with evidence-based care. The issue is what we can do to increase access to institutional births with an emphasis on safety, without overuse.”—Fernando Althabe, IECS.

- Tanzania:** John Varallo (Jhpiego) described work in Tanzania to build on Safe Surgery 2020 investments through the Safer Cesarean Births Project. Jhpiego and other partners are supporting the creation of a national surgical, obstetrics, and anesthesia plan; the project aims to reduce cesarean section–related infection and maternal mortality and build clinical skills and leadership, including through a safer cesarean birth course.
- Pakistan:** Rubina Sohail (South Asian Federation of Obstetricians and Gynecologists [SAFOG]) noted that the public-sector cesarean section rate in Pakistan is 28%. However, this excludes information from private facilities, many of which are in urban areas, where rates are higher. In contrast, some rural provinces have extremely low cesarean section rates (e.g., Balochistan, where the rural rate is 1%). In urban settings and at private hospitals, increasing use may be driven by factors such as changing preferences among women and providers’ exposure to litigation, particularly for clinicians in individual private practice. A lack of support for trial of labor after cesarean delivery and inappropriate induction and augmentation practices may also contribute to unsafe or unnecessary procedures. On the other hand, poor referral systems and delays in care for women coming from smaller facilities that are unable to provide cesarean deliveries may also lead to unsafe care and adverse outcomes.
- India:** Manju Chhugani (Rufaida College of Nursing) identified an array of contributors to an unsafe surgical ecosystem in India, including late referrals, lack of infection prevention practices, poor availability of drugs and supplies, and poor QA/supervision of inadequately trained health workers. The relatively low numbers of SBAs at public facilities prevents them from providing normal delivery services around the clock. Factors that may lead to earlier decisions to conduct cesarean sections include lack of 24-hour access to anesthesia, neonatology, or blood banks, as well as solo practice, which leads to more intervention. Differential payments for cesarean deliveries may create financial incentives; health insurance is a “risk factor” for cesarean section in India. Patient preferences (e.g., seeking auspicious birth dates, fearing labor pain, or having other reasons for cesarean delivery on maternal request) may also contribute to growing cesarean delivery rates in urban settings. Overall, the cesarean section rate has risen by nearly 17% each year in India over the past decade, with a population rate of 58% in one southern state, Telengana. Corrective actions may include promoting minimum standards for cesarean section, strengthening the role of midwives, preparing women better for labor and delivery, and training health care staff on assisted vaginal delivery as an alternative to cesarean section.

III. Day 2: Recommendations and Action Agenda

A. Key Implications and Guiding Principles

Mary Nell Wegner (MHTF) summarized key implications and guiding principles emerging from discussion of evidence and trends:

- Although the evidence base varies in strength, the safety, quality, and rates of cesarean section are of concern across low- and high-resource settings.
- It is time to bridge the great divide between the ob-gyn and surgical communities. The safe surgery community offers hope and real commitment to making essential surgery part of universal health care.
- Workforce density issues are staggering; it is impossible to ensure safety and quality in settings where individual clinicians are doing more than 1,000 cesarean sections a year and performing these procedures alone, and/or with no anesthesia staff support. We must take a new, more intentional approach to recruiting, training, and deploying personnel.
- Health service clinicians must understand what women want, share unbiased information with them, and use reliable, standardized, evidence-based means to determine who gets cesarean sections.
- The environment of care must protect patient rights, provide them with adequate counseling, and obtain informed consent from them. There are demonstrated ways to change mindsets among clinicians, empower women, and make counseling and consent part of routine care.
- Infection prevention and management are solvable issues. Unlike with some challenges, we know what to do here, and we need to focus our efforts on supplies, training, and practice.
- We are struggling to work within the complexity we created in obstetric care, but some tools, such as prioritization logic, will help find a way through this situation.

B. Action Agenda

Participants identified and prioritized actions to improve the safety and quality of cesarean sections in low-resource settings. Together, the meeting group selected a set of 13 actions that form an agenda for ensuring that this essential surgery is delivered in a way that optimizes outcomes for women, newborns, and clinicians. The agenda addresses the cesarean section care pathway, targeting factors ranging from health service infrastructure to clinician training to case selection to anesthesia to postoperative care and monitoring. As such, the action agenda reflects a health systems approach, cutting across key building blocks, including service delivery, the health workforce, and health information systems (WHO, 2010).

Action Agenda for Improving Cesarean Section Safety and Quality

1. Encourage the maternal health and safe surgery communities to jointly fill gaps, improve training curricula, provide guidance, and achieve higher efficiency.
2. Establish standardized minimum SAO criteria that all facilities offering cesarean section must meet; conduct standardized national assessments of EmONC facilities to gauge facility readiness, service organization, and service outputs and quality; and establish a platform for accreditation.
3. Ensure women's access to high-quality midwifery care throughout pregnancy, including antenatal care, birth preparation, delivery care, and postnatal care; and advocate for midwife-led labor management.
4. Invest in the surgical and obstetric workforce, determining and meeting detailed SAO and SBA workforce density needs, addressing rural and urban disparities, and employing appropriate recruitment and retention strategies.
5. Support the SAO/SBA workforce for QI through mentoring, supervision, and on-the-job training.
6. Support transition to an academic, accredited curriculum for all SAO workers, including professional development for those providing task-shifted surgical care.
7. Produce and disseminate evidence-based, user-centered guidelines for safe, high-quality labor management, decision making, and cesarean section services, keeping in mind the "two patients" and adaptability for low- and high-resource settings.
8. Promote improved quality assessment and QA for EmONC services, especially in contexts of widespread task shifting, including the efficient use of clinical process and outcome indicators.
9. Review and build evidence for QI tools and strategies for surgical obstetric care (e.g., surgical safety checklists).
10. Strengthen use of facilitated referrals among sites providing different levels of routine and emergency obstetric care (e.g., through use of information/communication technologies).
11. Increase demand among women for higher quality maternity care without overintervention, including through community-level normative change efforts and counseling during reproductive health/antenatal care.
12. Campaign against cesarean section overuse where appropriate, raising awareness about individual-level and public health impacts of rising cesarean rates and targeting both the general population and the clinical community.
13. Strengthen local health information systems and processes to collect and use standardized data for accountability, QI, and research across both public and private facilities.

Appendix C provides further illustrative details for the key actions in the consensus agenda. These draft elements require further collaborative development and finalization by global and country-level stakeholders.

C. Immediate Steps for the Maternal Health and Ob-Gyn Communities

As most consultation participants were members of the maternal health or obstetric and gynecologic communities, they identified immediate steps that these groups can undertake to disseminate key meeting findings and promote the action agenda. These included:

- Share the action agenda from this consultation, including concerns regarding potential maternal morbidity and mortality related to cesarean section, with:
 - Global and regional professional and advocacy associations (e.g., WHO, FIGO, SAFOG, the White Ribbon Alliance)
 - Professional associations and academic medical/nursing/midwifery communities at the country level, including ob-gyn society conferences and national EmONC working groups
 - Global health forums targeting relevant issues (e.g., WHO Human Resources for Health Symposium, Institute for Healthcare Improvement Africa Forum on Quality and Safety in Healthcare, Global Symposium on Health Systems Research)
- Bring the maternal/ob-gyn perspective to global safe surgery events and forums, such as the COSESCA Annual Conference and Biennial Meeting of the WHO Global Initiative for Emergency and Essential Surgical Care in Mozambique in December 2017
- Advocate for midwife-led delivery care through national and regional professional associations and academic institutions in settings where this model is marginalized or not yet started
- Share with partners in low-resource settings lessons learned from U.S. and Latin American analyses of cesarean section decision making (e.g., the need to standardize labor assessment and to make risk consideration more precise).
- Share experiences with task shifting and professionalizing surgical roles of nonphysician clinicians with the surgery community initiatives to strengthen the SAO workforce.
- Encourage dialogue regarding indicators and measurement between the maternal health and safe surgery communities, so that any promoted measures are aligned (e.g., through the WHO Quality, Equity, Dignity [QED] Framework).
- Consider how ongoing initiatives regarding maternal morbidity (e.g., WHO's Maternal Morbidity Measurement Working Group) can incorporate and systematize efforts to measure outcomes and morbidity related to cesarean section.
- Share gaps in clinical and health systems research and guidelines identified through the meeting (e.g., the lack of benchmarks for the SBA workforce) with key entities that set the agenda for such work, such as the WHO Executive Group.
- Ensure that projects working to strengthen EmONC and cesarean section services incorporate neglected domains of safety and quality, particularly infection control and anesthesia care.
- Ensure that preservice training curricula for SBA and EmONC clinicians incorporate alternatives to cesarean section so that these skills do not languish and disappear.

IV. Conclusion

Cesarean section rates in many parts of the world have been known to be high and rising for decades, and increasing inequity between rich and poor is becoming more apparent. Cesarean section is essential surgery that can save mothers' and babies' lives and reduce morbidity. However, cesarean section, even when medically indicated, can put women at risk in environments with inadequate systems to support appropriate quality of care. Possible adverse outcomes include infection, anesthesia complications, and even iatrogenic fistula. Cesarean section can also increase future risks, such as placental abnormalities that may lead to hemorrhage in subsequent pregnancies. Yet, clinical decision-making protocols and guidance for cesarean section that are clear, practical, and evidence-based do not seem to exist anywhere. Now is the time to act to improve the quality of care so that any woman undergoing cesarean section is assured safe surgical care to enhance the chance of healthy survival for both her and her newborn. If these issues are not tackled now, they will snowball, given the numbers of primiparous women currently having cesarean sections.

A broad array of gaps affect cesarean safety and quality. Workforce issues are particularly challenging: There are not enough clinicians able to do safe cesarean sections in many places, and there are concerns about the adequacy of obstetric training to ensure that the decision to undertake a cesarean is appropriate. Although task shifting is widespread, there is no clear evidence yet of its impact on cesarean safety. Anesthesia support is an especially critical gap in the global South. Respect for women's voices and choices in obstetric care is also a critical component of a safe environment, yet cesarean counseling and consent processes are not well structured or supported in many settings. Critical research, program, and policy issues such as these must guide the way forward.

The participants in this consultation have developed a consensus agenda—areas of targeted action that address challenges related to cesarean section safety and quality. However, no single set of actors can make the recommended changes; they must be undertaken in partnership. There is an urgent need for the surgery, anesthesia, obstetric, and neonatal communities to come together, to reach a shared understanding of the situation and to take collaborative, effective action.

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Appendix A: Meeting Agenda

THURSDAY, JULY 27, 2017

Time	Session	Speaker(s)
8:30 am	• Breakfast and registration	
9:00 am	<ul style="list-style-type: none"> • Welcome to participants • Review of meeting objectives and agenda • Review of key meeting logistics 	Ana Langer Lauri Romanzi Mary Nell Wegner
9:30 am	• Participant introductions	All
9:45 am	<ul style="list-style-type: none"> • Fistula Care <i>Plus</i> (FC+) background and program findings • Overview of proposed “flashpoints” in cesarean section safety: Concerns and opportunities 	Vandana Tripathi Lauri Romanzi
10:15 am	• The landscape of cesarean sections in low-resource settings: Who, where, why?	Lenka Benova Francesca Cavallaro
11:00 am	• Tea/coffee break	
11:15 am	• Safe surgery: An emerging global movement	Lina Roa
11:45 am	<ul style="list-style-type: none"> • Flashpoint 1: Linkages between safe surgery and maternal health communities • Flashpoint 2: Human resources—Workforce density • Flashpoint 3: Human resources—Task shifting 	Yirgu Gebrehiwot Hannatu Abdullahi Luis Gadama
12:30 pm	• Lunch	
1:30 pm	Flashpoint 4: Clinical decision making and patient selection—protocols and practice Flashpoint 5: Informed consent and patient rights Flashpoint 6: Anesthesia care Flashpoint 7: Infection prevention and management	Fernando Althabe Kathleen Hill Lauri Romanzi John Varallo
2:30 pm	Cesarean section safety and quality: A U.S. perspective	Neel Shah
3:00 pm	Tea/coffee break	
3:15 pm	The place of cesarean section in safe surgery plans: Malawi, Tanzania, and Zambia	Luis Gadama John Varallo Bellington Vwalika
4:00 pm	Cesarean section safety and quality: The South Asian context	Rubina Sohail Manju Chhugani
4:30 pm	Preview of Day 2 agenda (break by 5:00 pm)	Vandana Tripathi
5:30 pm	Cocktail reception—Kresge 110	

FRIDAY, JULY 28, 2017

Time	Session	Facilitator(s)
8:30 am	• Breakfast	
9:00 am	• Review of flashpoints and discussion from Day 1	Mary Nell Wegner
9:30 am	• Small groups: Discuss priority actions required to improve cesarean section safety and quality	Small groups
11:00 am	• Report back on small-group discussions	Small group rapporteurs
11:45 am	• Lunch	
12:45 pm	• Ranking priority actions to develop a consensus agenda	Vandana Tripathi
1:45 pm	• Small groups: What does it take to achieve this agenda? Barriers and enablers	Small groups
3:00 pm	• Report back on small-group discussions	Small group rapporteurs
3:45 pm	• Acting on the agenda: Immediate next steps	Ana Langer
4:15 pm	• Close	Mary Ellen Stanton

APPENDIX B: LIST OF PARTICIPANTS

Hannatu Abdullahi*	Senior FP/RH Advisor, Jhpiego
Fernando Althabe	Director, Department of Mother and Child Health Research, Institute for Clinical Effectiveness and Health Policy (IECS)
Lauren Bellhouse	Program Associate, Fistula Care <i>Plus</i> Project, EngenderHealth
Lenka Benova	London School of Hygiene & Tropical Medicine
Neelam Bhardwaj	Senior Maternal Health Advisor and Coordinator of Maternal Health Thematic Fund at UNFPA
Francesca Cavallaro	Research Fellow, London School of Hygiene & Tropical Medicine
Manju Chhugani	Dean, Rufaida College of Nursing, Jamia Hamdard
Claudia Conlon	Senior Maternal and Newborn Health Advisor, USAID; USG Lead, Saving Mothers Giving Life
Luc de Bernis	Independent International Consultant
Michael Ezeanochie	Consultant Obstetrician-Gynecologist, University of Benin Teaching Hospital, Nigeria
Luis Gadama	University of Malawi, College of Medicine
Yirgu Gebrehiwot	Associate Professor and Consultant Ob-Gyn, Addis Ababa University
Kathleen Hill	Maternal Health Team Lead, McSP/Jhpiego
Sarah Hodin	Project Coordinator, Maternal Health Task Force, Women and Health Initiative, Harvard T.H. Chan School of Public Health
Ana Langer	Director, Women and Health Initiative, Harvard T.H. Chan School of Public Health
Affette McCaw-Binns	Professor of Reproductive Health & Epidemiology, Department of Community Health & Psychiatry, Faculty of Medical Sciences, University of the West Indies, Mona
Erin Mielke	Reproductive Health Senior Advisor, USAID
Lina Roa	Paul Farmer Global Surgery Fellow, Program in Global Surgery and Social Change, Harvard Medical School
Lauri Romanzi	Project Director, Fistula Care <i>Plus</i> Project, EngenderHealth
Neel Shah	Director of Delivery Decisions Initiative, Ariadne Labs, Assistant Professor of Obstetrics and Gynecology Harvard Medical School
Rubina Sohail	Professor of Obstetrics & Gynaecology Services Institute of Medical Sciences; President, South Asian Federation of Obstetrics & Gynaecology
Mary Ellen Stanton	Senior Maternal Health Advisor, USAID
Vandana Tripathi	Deputy Director, Fistula Care <i>Plus</i> Project, EngenderHealth
John E. Varallo	Senior Maternal Health Technical Advisor, MCSP/Jhpiego
Bellington Vwalika	Senior Consultant and Professor of Obstetrics and Gynaecology, University Teaching Hospital/University of Zambia School of Medicine
Mary Nell Wegner	Executive Director, Maternal Health Task Force, Harvard T.H. Chan School of Public Health
Willibald Zeck	Head of Maternal, Newborn and Adolescent Health Program, United Nations Children's Fund

*Unable to attend in person.

APPENDIX C: ACTION AGENDA—ILLUSTRATIVE ELEMENTS

Action item	Sample indicator(s)	Sample advocacy message	Key actors/influencers	Barriers	Enablers
Encourage the maternal health and safe surgery communities to join together to fill gaps, improve training curricula, provide guidance, and achieve higher efficiency	<ul style="list-style-type: none"> No. of countries in which SAO work together 	<ul style="list-style-type: none"> SAO together = stronger surgical systems. 	<ul style="list-style-type: none"> Professional associations (global and national) Ministries of Health Policymakers Existing networks (e.g., WHO QED Network) 	<ul style="list-style-type: none"> Lack of communication with parliamentarians History of these communities working separately 	<ul style="list-style-type: none"> Pressure Champions Good timing Donors
Establish standardized minimum SAO criteria that all facilities offering cesarean section must meet; conduct standardized national assessments of EmONC facilities to gauge facility readiness, service organization, and service outputs and quality; and establish a platform for accreditation	<ul style="list-style-type: none"> No. of hospitals accredited using criteria % of facilities that meet standards of readiness 	<ul style="list-style-type: none"> We need accreditation so that all facilities are held to the same standards to improve equitable access to quality care, and transparency for accountability (public and private). Standardization is necessary for efficiency, cost-effectiveness, and reliability. 	<ul style="list-style-type: none"> National governments International and regional NGOs Private sector Parliamentarians UN agencies Health insurance companies 	<ul style="list-style-type: none"> Work is needed to define women-centered model of care before assessment. Limited capacity for monitoring 	<ul style="list-style-type: none"> Extensive existing criteria that can be used/adapted
Ensure women's access to high-quality midwifery care throughout pregnancy, including antenatal care (ANC), birth preparation, delivery care, and postnatal care; and advocate for midwife-led labor management	<ul style="list-style-type: none"> Presence of midwifery model of care 	<ul style="list-style-type: none"> The midwifery care model is an evidence-based, woman-centered model of care that promotes normal delivery while improving quality and outcomes that can be implemented in all countries. 	<ul style="list-style-type: none"> Regulatory bodies Ministries of Health Professional associations Media 	<ul style="list-style-type: none"> Cultural barriers to acceptance of midwifery Nonmidwifery models are status quo. Quality of midwifery education and training Human resource management Health system support Regulatory bodies Financial barriers for women 	<ul style="list-style-type: none"> Community demand for midwives (existing or to be generated) Recruitment of midwives from communities Strategic use of information technology Media

Action agenda—illustrative elements (cont.)

Action item	Sample indicator(s)	Sample advocacy message	Key actors/influencers	Barriers	Enablers
Invest in the surgical and obstetric workforce, determining and meeting detailed SAO and SBA workforce density needs, addressing rural and urban disparities, and employing appropriate recruitment and retention strategies	<ul style="list-style-type: none"> Retention of trained health care personnel in a five-year period. No. of cesarean procedures/surgeon/month Global surgery benchmarks/indicators, with adaptation for obstetric procedures 	<ul style="list-style-type: none"> Potential clients want to know that a caring, competent provider will be available. Happy health care worker, happy patients 	<ul style="list-style-type: none"> National governments Ministries of Health International and regional NGOs Private sector Parliamentarians UN agencies Health insurance companies 	<ul style="list-style-type: none"> Inadequate training and education Lack of human resource benchmarks for midwifery 	<ul style="list-style-type: none"> Task shifting in certain contexts Existing resources (including nonskilled providers)
Support the SAO/SBA workforce for quality improvement (QI) through mentoring, supervision, and on-the-job training			<ul style="list-style-type: none"> Training institutions and universities Professional associations Donors Bilateral and multilateral agencies Ministries of Health 	<ul style="list-style-type: none"> Funding Competing responsibilities Weak existing curricula Literacy level and communication 	<ul style="list-style-type: none"> Existing training workforce Cross-disciplinary training and mentorship
Support transition to an academic, accredited curriculum for all SAO workers, including professional development for those providing task-shifted surgical care	<ul style="list-style-type: none"> No. of institutions that adopt integrated education programs 	<ul style="list-style-type: none"> Education is the key to service sustainability. 	<ul style="list-style-type: none"> Ministries of Health NGOs Training institutions and universities Professional associations International Federation of Gynecology and Obstetrics (FIGO) Existing accrediting agencies International Joint Commission 	<ul style="list-style-type: none"> Professional territoriality Developing standards for new categories of staff (e.g., task-shifted scope of work) Difficulty in changing preservice education 	<ul style="list-style-type: none"> Existing organizations Existing tools, experiences, and performance-based curricula Enabling global policy environment Developing standards for interdisciplinary training in obstetric-gynecologic surgery for DMOs Support for performance-based education, standards, and accountability

Action agenda—illustrative elements (cont.)

Action item	Sample indicator(s)	Sample advocacy message	Key actors/influencers	Barriers	Enablers
Produce and disseminate evidence-based, user-centered guidelines for safe and high-quality labor management, decision making, and cesarean section services, keeping in mind the “two patients” and adaptability for low- and high-resource settings			<ul style="list-style-type: none"> Professional associations District health teams Health care providers Private sector health facilities Researchers Tech companies Government Ministries of Health Donors Patient advocacy groups International professional associations (e.g., FIGO, International Confederation of Midwives) Multilateral agencies Global Financing Facility 	<ul style="list-style-type: none"> Willingness of private sector to collaborate Legal framework Resistance to behavior change 	<ul style="list-style-type: none"> Simplification of existing guidelines WHO intrapartum care guidelines User-friendly technology
Promote improved quality assessment and QA for EmONC services, especially in contexts of widespread task shifting, including the efficient use of clinical process and outcome indicators	<ul style="list-style-type: none"> Complication rate Anesthesia category (% local vs. general) Cesarean delivery rate Decision to incision time % of surgical procedures with an anesthesia provider and functioning equipment 		<ul style="list-style-type: none"> Local QA committees SAO community 	<ul style="list-style-type: none"> Lack of collaboration between SAO communities Competition between midwifery and obstetrics Authoritarian hierarchies 	<ul style="list-style-type: none"> Endorsing WHO’s Maternal Death Surveillance and Response Development or selection of quality indicators and tracking QI training Incentives and accountability

Action agenda—illustrative elements (cont.)

Action item	Sample indicator(s)	Sample advocacy message	Key actors/influencers	Barriers	Enablers
Review and build evidence for QI tools and strategies for surgical obstetric care (e.g., surgical safety checklists).					
Strengthen use of facilitated referrals among sites providing different levels of routine and emergency obstetric care (e.g., through use of information/communication technologies).	<ul style="list-style-type: none"> • % of referred EmONC clients arriving with notes • % of referred EmONC clients for whom referral facility was notified in advance 	<ul style="list-style-type: none"> • We spend a lot of time thinking about sending patients—not enough about what happens when they get there. 			
Increase demand among women for higher quality maternity care without over-intervention, including through community-level normative change efforts and counseling during reproductive health/ANC care.	<ul style="list-style-type: none"> • Cesarean rate by parity/Robson group • Rates of vaginal birth after cesarean • % of births with supportive partner present • No. of ANC visits • % of patients with handheld record/card • % of patients with predelivery informed consent 				

Action agenda—illustrative elements (cont.)

Action item	Sample indicator(s)	Sample advocacy message	Key actors/influencers	Barriers	Enablers
Campaign against cesarean section overuse where appropriate, raising awareness about individual-level and public health impacts of rising cesarean rates, targeting both the population and clinical community.	<ul style="list-style-type: none"> No. of countries and global institutions adopting advocacy messages 		<ul style="list-style-type: none"> Professional associations Governments Donors/research funding agencies UN agencies Academic sector Safe motherhood champions Male involvement leaders 	<ul style="list-style-type: none"> Lack of enforceable standards Financial pressure on providers Clinician convenience Unrealistic patient expectations Lack of facility readiness Scarce skilled providers Threat of unintended consequences Complex messaging High cost action Lack of evidence on effectiveness 	<ul style="list-style-type: none"> Community midwifery Functioning transport system Counseling at ANC
Strengthen local health information systems and processes to use standardized data for accountability, QI, and research across public and private facilities.	<ul style="list-style-type: none"> A defined and prioritized menu of HMIS indicators for use by managers and facility teams to monitor and improve quality of cesarean section services 		<ul style="list-style-type: none"> WHO QED platform (global metrics working group, country level roadmap authors) MONITOR 100 WHO indicators EPMM indicators Institute for Health Metrics and Evaluation Safe surgery actors National MOH M&E Directorate Professional associations Department heads of teaching hospitals 	<ul style="list-style-type: none"> Lack of time/human resources to conduct appropriate landscape analysis/synthesis Nonregulated/nonaligned private sector Inadequate HMIS/M&E workforce 	<ul style="list-style-type: none"> Professional associations Department heads of teaching hospitals



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