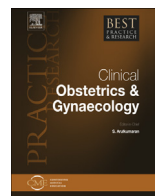




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## Best Practice & Research Clinical Obstetrics and Gynaecology

journal homepage: [www.elsevier.com/locate/bpobgyn](http://www.elsevier.com/locate/bpobgyn)

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# Global Health Ethics: The Case of Maternal and Neonatal Survival

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### Keywords:

Global Health Ethics  
 maternal mortality  
 neonatal mortality  
 Sustainable Development Goals  
 capacity building  
 academic partnerships

Through their Sustainable Development Goals the United Nations recognizes the moral significance of health, stating that the elimination of maternal and early neonatal mortality are health outcomes that should be available to all women in the world. Complete prevention requires addition of a skill set for maternal care teams that is a magnitude greater than what we have today. As universities, individuals, institutions and NGO's engage in initiatives to end preventable maternal and neonatal mortality, an expanded context of ethical imperatives becomes increasingly important. Besides the traditional principles of non-maleficence, beneficence, autonomy, and social justice, imbalances between high and low income countries and cultural relativity give rise to broader ethical imperatives: mutual respect, trust, open communication, accountability, transparency, leadership capacity building and sustainability. The elimination of disparities in other women's issues, HIV, malaria, tuberculosis, chronic non-infectious diseases, can all be more effectively addressed through a lens of ethical global health engagement.

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## The need for Global Health Ethics

Most clinicians are familiar with the traditional view of clinical ethics. As outlined by Beauchamp and Childress [1], clinical interactions should be guided by the principles of beneficence, non-maleficence, justice, and respect for autonomy. Increasingly, physicians around the world are being asked to move beyond a case based approach to ethics and to contribute to global health by engaging with research, policy development and clinical care in low-resource countries where both inequities and disparities in health care are great. Global health was once seen as the realm of public health specialists and missionaries, but the increasingly complex policy, training and clinical aspects of problems in health care require an appropriate response from physician leaders [2]. Whether one is a physician in a high income country seeking to engage in global health projects, or a physician in a low income setting navigating conflicting clinical, educational, research and policy needs, global health issues are increasingly part of the physician's portfolio and provides the opportunity to improve the quality of health systems.

Global health *ethics* is a relatively new area of concern for caregivers and academics, offering a lens and a guide for Obstetrician/Gynecologists who wish to engage globally. In their review of “prominent theories and relevant topics” in global health ethics, Stapleton et al. [3] propose a definition of the field: “global health ethics is a term that is used to conceptualize the process of applying moral value to health issues that are typically characterized by a global level effect or require action coordinated at a global level” [3]. Moving from the general to the specific, they see two ethical considerations as foundational: “1) what is the moral significance of health and 2) what is the moral significance of boundaries?” With regard to the first they note, “health has special moral importance; therefore, health inequalities are also morally significant...Health justice is principally concerned with reducing unfair and avoidable health inequalities...” They then go to examine the moral significance of geopolitical boundaries. The authors distinguish “cosmopolitan” and “anti-cosmopolitan” approaches to this issue. Cosmopolitans claim that “every person is a ‘world citizen’ and thus boundaries have no moral relevance; on the other hand, anti-cosmopolitans argue that “morality is ‘local’ and specific to cultures.”

Benatar and colleagues [4] created a foundation for the field of global health ethics by laying out “a rationale for mutual caring” that described the need and promise of global health ethics. Noting that the “rapidly expanding global economy has failed to reduce poverty and improve health for all”. They suggested that bioethics, as an interdisciplinary field, “could make a contribution toward improving health globally,” by embracing “widely shared and foundational values.” For them global health ethics offers the possibility of improving health by creating an interdisciplinary space that examines the contexts of global health, promotes shared values (including empathy, generosity and solidarity), and promotes transformational approaches to governance. By introducing a normative approach to global health care, asking care workers to be ‘committed and engaged in identifying global wrongs related to health and seeking to have them redressed’ [4], they – wittingly or unwittingly – created the difficult challenge of establishing common values for improving global health.

The high rates of maternal and early neonatal mortality are a persistent global wrong. When maternal mortality was first identified as a neglected epidemic in 1985 [5], the global health community responded in myriad ways that have significantly reduced but have not yet “solved” the problem. The first WHO estimates of maternal mortality in 1990, suggested that more than 500,000 maternal deaths were occurring globally every year [6]. An unacceptable high global maternal mortality ratio of 395 per 100,000 live births was dwarfed by the ratio in sub Saharan Africa of 987/100,000. The most recent estimates from 2015 demonstrate a maternal mortality ratio of 216 and in sub-Saharan Africa a ratio of 546 [6]. Ratios within a country, however, vary widely when stratified by socioeconomic status [6]. Although all pregnancies are at risk, access to care is better for women in higher socioeconomic brackets. Infant mortality has decreased during this time. As infant mortality decreases, the proportion of infant deaths from early neonatal causes increases [7]. Perinatal mortality rates in women with preeclampsia are exceedingly high [8].

Global estimates of maternal mortality levels and associated perinatal mortality are not granular, relying heavily on survey data with large confidence intervals [6]. Community-based investigations of

maternal mortality consistently identify maternal deaths that have gone unrecognized by the health system. In Ghana the reproductive age mortality surveys have determined that maternal mortality is underestimated by up to 50% [9,10]. Compared with high income countries where preventable maternal and early neonatal mortality have been virtually eliminated, these persistent inequities present a global health ethical dilemma that has yet to be solved.

Efforts to address this ethical challenge face a number of predictable problems. In *Global Health Ethics: Key Issues*, the World Health Organization describes three ethical challenges that are central to the work of global health: access, cultural relativity, and research [11]. The authors of the report point out that “health in low-resource countries is often compromised by social determinants, such as poverty, malnutrition, poor education, unhealthy living conditions, and lack of access,” a problem exacerbated by a “brain drain” that creates a shortage of health professionals in resource-poor countries. They go on to explain the challenge of cultural relativity: Are ethical standards universal? Or are they rooted in local culture, a product of values unique to each society? While the protection of human rights is a noble goal, the danger of ethical imperialism is ever present [12]. International research presents the third ethical challenge of global health. Low and middle income countries (LMICs) are increasingly attractive sites for clinical research because costs are low and the population offers “naïve bodies,” that is, persons who are not already taking drugs for depression, hypertension, cholesterol control and the like [13]. The coming of the drug industry may be a boon to local economies, but this type of research presents special problems, including the difficulty of obtaining truly informed consent and lack of post-trial access to the medications and therapies being tested [13].

The first step in responding to problems of access and research must be finding ways to address the *central* challenge of cultural relativity: finding common values for international and interdisciplinary teams working to improve health. The Elmina Declaration on Human Resources for Health outlines a practical way to approach this challenge [14]. The Elmina Declaration provides a moral foundation for local or global partnerships that seek to improve access to clinical care and to design appropriate research while addressing the cultural context. The Declaration consists of a Charter for Collaboration that lays out concepts and principles for guiding the development of partnerships that respects the interests and perspectives of all partners (see Table 1). The Charter was created to guide human capacity partnership projects between the government and universities in Ghana and the University of Michigan, and serves as a model for the ethical conduct of academic global health projects in both high income low/middle income countries (LMICs) [14]. The process used to guide and assist global health academic partnerships stemmed from a prior on-going collaboration that has produced over 140 OBGYNs trained in Ghana who stayed in Ghana to practice [15–18].

The Sustainable Development Goal (SDG) framework has made the elimination of maternal and early neonatal by 2030 a priority [19,20], establishing the elimination as morally significant, without regard for political boundaries, adopting a “cosmopolitan” approach while still demanding

**Table 1**

Modified from the Elmina Declaration on Human Resources for Health [14].

1. Share the experiences in medical education, research, innovative technology, and leadership among all partners
2. Develop and share technological and other educational resources efficiently and effectively
3. Develop resources to optimize and fully utilize education, training, and deployment of HRH
4. Improve the infrastructure for electronic communication, skills training, and clinical care
5. Expand the scope of research and translate research results into policy and educational initiatives
6. Recognize, identify, and involve appropriate HRH workers in the process
7. Expand and decentralize education and training into peripheral health facilities, district, public, and private
8. Develop a national government research infrastructure to fund national health research
9. Articulate principles that guide partnerships to lead to sustainable, mutually beneficial collaboration, namely:

Trust

Mutual Respect

Communication

Accountability

Transparency

Leadership

Sustainability

interventions that are culturally appropriate. It is important to remember, however, that maternal and early neonatal mortality are among a long list of topics related to human reproduction that demand a response from those concerned with global health, including:

- The elimination of in-utero exposures to elevated glucose levels, teratogens and toxins;
- The provision of health care and education to young girls;
- The provision of sex education to adolescent boys and girls;
- Access to family planning and abortion and post abortion services;
- Provision of resources for the prevention, diagnosis and treatment of sexually transmitted diseases;
- Early diagnosis of pregnancy, and prompt diagnosis and resolution of pregnancy complications in all trimesters of pregnancy and postpartum;
- The prevention of obstetric fistula, and repair of both obstetric and iatrogenic fistula;
- The development of a comprehensive approach to major women's health issues such as infertility, cancer prevention and treatment, management of menopause and pelvic organ prolapse.

Because all of these issues are subject to cultural, religious, political influences, careful and ethically informed deliberation is a necessary part of the creation of policy and decision making regarding the just allocation of resources.

In each of these areas of reproductive health, a global health ethics lens calls our attention to the fact that care as usual is insufficient, intervention is necessary, and interventions must be done with a finely tuned sensitivity to local understandings of the moral dimensions of health and health care. Interventions are needed, but these interventions must be locally situated – organizationally and culturally. The challenge is to intervene in a respectful way, to honor local culture and to be aware that any intervention brings with it its own set of cultural assumptions. Our focus here is on the ethical issues associated with the current SDG to eliminate preventable maternal and neonatal mortality in LMICs, but what we learn in this one area provides a template for responding the other pressing needs in reproductive care.

The challenge of designing respectful interventions for responding to the problem of maternal and neonatal mortality is nicely illustrated in the tensions identified by Miller et al. [21] in their contrast between maternity care systems that offer “too little too late” (TLTL – a problem of LMICs) and those that offer ‘too much too soon’ (TMTS – a problem of high income countries). The solution to TLTL is not TMTS. Recognizing problems on both ends of this continuum is the first step toward collaborative interventions, where the strengths and weaknesses of all parties are acknowledged and respected, while at the same time, obtaining the levels of health outcomes that everyone in the world has a right to expect, a variation on the classic imperative of medical ethics: *primum non nocere*.

### What has been the global response thus far?

Attempts to reduce maternal mortality have been broad and comprehensive and cannot be adequately covered in this discussion. However, the response can be described in broad strokes with reference to past and current interventions and the gaps that remain. Early in the Safe Motherhood initiative, attempts to solve the problem assumed incorrectly that prenatal care and traditional birth attendant training could reduce maternal mortality [22]. It was soon realized that this was insufficient for responding to at-risk pregnancies, and that only through the provision of skilled emergency obstetric care could maternal deaths be averted. The millennium development goal framework initiated prior to 2000 provided clear priorities for the reduction of maternal and neonatal and child mortality. Effective efforts within this framework focused on basic and comprehensive emergency obstetric and neonatal care, and training midwives and other health workers [23]. The components of basic emergency obstetric care include the provision of 1) antibiotics to prevent puerperal infection; 2) anti-convulsants for treatment of eclampsia and preeclampsia; 3) uterotonic drugs (e.g., oxytocics, misoprostol) administered for postpartum hemorrhage; 4) manual removal of the placenta; 5) assisted or instrumental vaginal delivery; 6) removal of retained products of conception; and 7) neonatal resuscitation. Comprehensive emergency obstetric and newborn care also includes blood transfusions,

surgery (e.g., cesarean section), neonatal intubation and advanced resuscitation (intubation and respirator available). Using a cost analysis model to study effectiveness and cost effectiveness of obstetric surgical procedures, it has recently been shown that cesarean delivery and probably also obstetric forceps-assisted vaginal delivery are associated with increased years life saved (YLS) and reduced disability adjusted life years (DALY'S) [24,25].

Task sharing or shifting was introduced as an alternative to physician provided care, especially in the case of providing cesarean sections for obstructed labor as well as training in other singular complications. A recent meta-analysis compared controlled, nonrandomized trials of outcomes from cesarean deliveries determined that there were no differences in maternal and perinatal deaths, but clinical officers had a higher incidence of wound dehiscence and wound infections [26]. The non-randomization in these trials makes the conclusions difficult to evaluate.

A great emphasis has been placed on midwifery skills. The recent Lancet series presented the importance of midwifery in the reduction of maternal and neonatal mortality. One important conclusion is that application of the evidence would indicate that midwives could avert more than 80% of maternal and newborn deaths, including stillbirths [27]. Midwifery therefore has a pivotal, yet widely neglected, part to play in accelerating progress to end preventable mortality of women and children.

### **Is it possible to not only end preventable maternal and early neonatal mortality but improve intact survival around the world and in all settings?**

The global health and policy making community have rightly adopted as a goal the end to preventable maternal and early neonatal mortality by 2030. Specifically, a global maternal mortality ratio target of 70 and a country ratio 140 [28]. These goals are laudable, will be difficult to attain, and they do not represent the **elimination** of preventable maternal mortality. Preventable maternal mortality has not been eliminated in the United States. Postpartum hemorrhage has been identified as a major cause of preventable maternal mortality in California, and intensive efforts are in place to reduce maternal death from hemorrhage [29,30]. The lowest maternal mortality ratios can be found in Scandinavian countries where maternal mortality ratios are less than 2 per 100,000 live births [6]. Preventability encompasses a broad range of problems while “non-preventable” maternal mortality must also be defined. Truly non-preventable maternal mortality may come from obstetric realities such as amniotic fluid embolism, a ruptured aneurysm or ventricular fibrillation from dilated cardiomyopathy and do not reflect health system deficiencies. Maternal mortality from postpartum hemorrhage is almost always preventable with a fully functioning health care team that includes obstetricians and anesthesiologists, a well-equipped and stocked blood bank, and a team of supporting health care workers.

If we subscribe to the ethical mandate that health should know no borders, the definition of *preventable maternal mortality* should be the same regardless of geographic borders, socioeconomic status, ethnicity, and religion. Preventing early neonatal mortality is intimately linked to maternal care and requires a wide range of interventions that start during the intrapartum period. Fetal assessment technologies can identify a fetus at risk and guide the obstetrician to action before the fetus becomes compromised. In the antepartum period, assessing fetal growth and amniotic fluid volumes, as well as umbilical and other fetal artery blood flow can identify a fetus at high risk of intrapartum asphyxia and intrauterine demise. Action taken before an infant becomes compromised is critical to reduce the risk of neonatal mortality. Additionally, effective fetal assessment in labor with swift action for fetal distress will eliminate unexpected stillbirths in the labor ward, and may reduce low APGAR scores and neonatal intensive care admission [31]. **True prevention of both maternal and early neonatal mortality requires a skill set in addition to the maternal care teams that is a magnitude greater than what we have today.**

### **What is the difference between relief and development from a global health ethics perspective?**

The global response to maternal and neonatal mortality reduction could be described as a combination of long-term development and immediate relief efforts. Interventions for maternal and neonatal mortality that solely address single clinical problems such as postpartum hemorrhage, obstructed labor and neonatal resuscitation after birth should be classified as relief efforts when delivered in isolation.

Larger development responses and quality of care improvements have also been implemented, but in the absence of a national context to absorb, integrate and sustain these interventions, the most complex pilot or training program must still be considered a relief effort. Furthermore, interventions focusing on single components of modern obstetric care as vertical programs may have unintended consequences. Consider, for example, antenatal corticosteroids. Antenatal corticosteroids have been shown to be effective in reducing neonatal mortality in the US and other high income countries when administered as part of the obstetric management of preterm labor, premature rupture of the membranes, and for maternal/fetal indications for early delivery. Antenatal corticosteroids are underutilized in LMICs. The Antenatal Corticosteroids (ACS) Trial took place in seven study sites in LMIC (Argentina, Guatemala, Kenya, Zambia, Pakistan and India [2 sites]) to study the effects of ACS use in health centers outside of major tertiary centers [32]. Health workers were trained to administer dexamethasone to women at high risk of preterm delivery with gestations between 24-36 weeks with one of the following conditions—preterm contractions, premature rupture of the membranes, hypertension/severe headache and vaginal bleeding. The study included 48 219 pregnant women and 47 394 live births. Neonatal mortality did **not** decrease in the ACS group, but in fact increased in the population overall. For every 1000 women exposed to ACS, “an excess of 3·5 neonatal deaths occurred, and the risk of maternal infection seems to have been increased” [32]. Analysis of the causes of these deaths was hampered by estimates of gestational age, and the multiple diagnoses amongst the women who participated, among other things. More infants died in women with hypertension, suggesting that obstetric management components beyond corticosteroids could have improved outcomes [32]. A secondary analysis of the data suggests that where “higher level” care is given, steroids are associated with improved outcomes in some groups [33]. Although further research is needed to determine the causes for increased mortality, it is clear that antenatal corticosteroids should be used only in the context of modern comprehensive obstetric care which offers the opportunity for full obstetric assessment and follow up.

### What are the opportunity costs from singular interventions?

There are opportunity costs in a focus on single complication interventions. Current development models frequently provide short term funding to improve specific outcomes for single complications. In essence, these programs import expertise in one particular complication for a defined time period. This model works for vaccinations, and simple interventions such as oral rehydration solution. But obstetric complications are complex and require a higher level of education in midwifery and obstetrics to resolve. There are no immunizations to prevent PPH and puerperal sepsis. In fact, a human “OS” (operating system) must be present to recognize and resolve the complication. Providing relief for complications in the short term incorrectly assumes that a comprehensive obstetric care system exists in which the singular intervention can be integrated. Seen in this light, single programs that address only one complication are best seen as relief, rather than development, responses.

Besides the risk of unintended consequences, singular interventions that address one complication are, by definition, not comprehensive enough respond to several possible causes of that complication. For example, postpartum hemorrhage is a significant yet singular cause of obstetric hemorrhage and mortality. Prevention of postpartum hemorrhage from uterine atony is addressed through implementation of active management of the third stage of labor (AMTSL). As uterine atony is a significant cause of obstetric hemorrhage, every health care provider should be trained in the process. However, to end preventable maternal mortality from hemorrhage, prevention activities must be embedded in the ability to comprehensively manage all causes and consequences of obstetric hemorrhage. Diagnoses that lead to maternal mortality from obstetric hemorrhage extend from ruptured ectopic pregnancy, to placenta previa and abruptio, to cervical laceration, to placenta *percreta* and *accreta*, to ruptured uterus, or may be a secondary consequence of severe preeclampsia and maternal infection. Comprehensive management of postpartum hemorrhage remains a major challenge in the US where the leading cause of preventable maternal mortality is from obstetric hemorrhage [29].

In order to end preventable mortality from obstetric hemorrhage, a skill set and facility capacity must extend beyond just preventive techniques and the availability of a blood bank and special surgical skills. Ending mortality from obstetric hemorrhage requires more than a simple protocol: what is



needed is an obstetrician trained in the management of massive hemorrhage, along with a facility able to react to a “massive transfusion” request with the requisite medical and surgical management. “Bundles” are being introduced in the US, and they need to be studied in LMIC to determine their applicability and efficacy [30].

Seen from an ethics based global health lens, the development of policies and interventions needed to attain SDG maternal and neonatal goals must rely on more than the implementation of single focus vertical programs. Even if these programs are informative for policy, implementation on the ground will require a far larger development effort that would include expert capacity in many realms to integrate them into practice. Human capacity at *multiple levels* is critical for implementation [34]. Foremost, it would require the training and integration of the maternal care team including an adequate number health workers, non-physician providers, general doctors, midwives and obstetrician specialists [34].

### **Who will be providing the level of care that will end preventable maternal and early neonatal mortality and how can this be achieved?**

An approach to maternal and early neonatal mortality reduction must include the provision of modern obstetric care provided by an obstetrician/gynecologist in the maternal care team. The level of care needed to **end** preventable maternal and early neonatal mortality can only be provided by highly trained obstetricians, who have also established the enabling environment in their facility to deliver this level of care. Highly trained obstetricians can only be produced by other highly trained obstetricians. This level of care is rare in areas of high maternal and neonatal mortality. The American Board of Obstetrics and Gynecology has defined an obstetrician/gynecologist:

“Obstetricians and Gynecologists are physicians who, by virtue of satisfactory completion of an accredited program of graduate medical education, possess special knowledge, skills and professional capability in the medical and surgical care of women related to pregnancy and disorders of the female reproductive system. Obstetricians and Gynecologists provide primary and preventive care for women and serve as consultants to other health care professionals.” [35].

Having such a definition assumes that a program of graduate medical education in obstetrics and gynecology exists, and that an accreditation body exists to provide the definition and certification. Brain drain of physicians and nurses and specialists has been a particular problem in LMIC [15–18].

### **What about midwives?**

Midwifery care has been practiced since the ancient world, and has been the purview of women since time began. The development of anesthesia in 1800s introduced an option for women that equated pain relief with the employment of physician care, as physicians were solely authorized to administer agents. As a result, the provision of maternal care split and evolved into two perspectives—one more medical, and one more natural [36]. A gender split in the providers also occurred, as physician training for women was not available due to discriminatory practices. As the general field of medicine evolved, male physicians who obtained training in Obstetrics could also provide physician level care to women with complications and emergencies. Improvements in public health, education, and nutrition, along with increased medical knowledge regarding infection and improved surgical techniques have led to a great reduction in maternal and early neonatal mortality in all but the most neglected or unusual cases in high income countries(36). In LMICs, however, women did not have access to education or the support of trained midwives and physicians, and were often cared for by traditional birth attendants. Traditional birth attendant training was a mainstay of the early safe mother hood movement, but had almost no effect [22]. More recent emphasis on midwifery care is transforming the maternal care environment for many countries in sub-Saharan Africa [27]. The development of professional, high quality and independent midwives and midwifery care is critical for all countries as they create new infrastructure and institutions to improve maternal and early neonatal care. In some countries, obstetrics and midwifery exist in uncomfortable relation to each other as parallel systems. In other countries, or health systems within countries, the integration of obstetrics and midwifery has been successful. Midwifery care is critical to the long term sustainability of maternal

care programs. The skill set, training components, and care perspectives of midwives allow them to provide primary care for every pregnant women and make them a critical component in realizing a just system of maternity care.

### **How can University departments of Obstetrics and Gynecology provide the inputs to increase capacity?**

Although a formal study of global modern Obstetrics capacity has not been conducted, availability of high level obstetrics level care provided by a physician specialist is largely unavailable in most low income countries. Two recent international meetings to discuss Obstetrics and Gynecology capacity clearly demonstrated a lack of capacity to adequately train physicians to become obstetricians while providing other key functions [37–39]. There are no major funded development interventions whose goal it is to train a new generation of obstetricians to assist in the elimination of maternal and early neonatal mortality. As it takes an obstetrician to train another obstetrician, establishing this level of expertise in a country will require inputs that span a broad range of educational capacity, clinical capacity, and institutional development [39].

The Ghana postgraduate obstetrics and gynecology collaborative residency training program started in 1989 in response to the low repatriation rate of Ghanaian physicians sent to Great Britain for training [15]. The Ghana Ministry of Health, the University of Ghana, the Kwame Nkrumah University of Science and Technology, ACOG and RCOG and university departments of Obstetrics and Gynecology in the U.S. and Great Britain teamed together to strengthen the Ghanaian university-based training programs in obstetrics and gynecology. The postgraduate program was 5 years in length, utilizing a comprehensive curriculum that included a 3-month rotation in the USA or Great Britain, a 6-month rotation in a district medical facility, and a 3-month rotation in a business management program. As of November 2012, 141 physicians — very nearly all of those who participated — have been trained and certified as obstetricians and gynecologists and *remain in country* [16–18]. There, graduates practice in both urban and rural areas, and some graduates are now leading obstetrics and gynecology departments at the two new medical schools as the country's health infrastructure grows.

The program was made possible through academic and professional partnerships that built the context and expertise for training physicians to become OBGYN specialists. This program has a great impact as the obstetricians deliver high-impact interventions with better outcomes, more expert and standardized management, and more organized and efficient clinical case management [18]. There were also notable increases in the number of other health care personnel in response to the presence of the obstetrician, improved teaching, and increased availability of technologies. Patients were found to have a higher confidence in the healthcare system, to report to the hospital earlier, and to feel confident about delivering at a hospital when an obstetrician is present [18].

The traditional development model is unable to train a physician to become an obstetrician/gynecologist. Mobilization of the obstetric community would be required to replicate expertise in low income countries. Obstetrics and gynecology training programs typically follow a 3 to 5 year curriculum, and require a certification to be in place and sanction to practice the specialty. Without in-country expertise present to deliver the curricular elements and provide the evaluations, these programs are nearly impossible to initiate *de novo*. In the absence of adequate in country expertise, external inputs will be required to establish obstetrics and gynecology training programs, and the creation of institutions for certification and ongoing certification until LMICs have the local expertise to sustain the profession and its institutions. The creation of the Ghana College of Physicians and Surgeons is a critical institution that creates a professional context that leads to retention of physician experts [18,40].

Human capacity development and integration cannot occur in a vacuum, and cannot occur as a vertical program intervention. National roll out, ongoing implementation and quality maintenance and assurance would require strengthening or creating national institutions to ensure provider competence through certification programs, maintenance of certification, and accreditation of facilities to ensure compliance. National and local clinical leadership would need to be developed to ensure ongoing monitoring of clinical practice and implementation of new, evidence based interventions. These deep infrastructure components are critical considerations of a sustainable and effective development agenda to sustain promising high impact interventions in a national context care.



## Summary

Global health ethics dictate that optimal states of health be available to all women regardless of and despite geographical borders. The moral significance of health as articulated through the UN SDG framework states that the elimination of maternal and early neonatal mortality are health outcomes that should be available to all women in the world. Although great progress has been made in reducing the number of maternal deaths, the geographic distribution of improvements has not been equal. Compared with high income countries, the risks of pregnancy for both the mother and fetus remain high and inequities are large. The major strategy and primary intervention – to provide basic and comprehensive emergency obstetric care to as many women as possible however is incomplete. Midwives, general physicians, health workers, and “non-physician” surgeons have been identified as key personnel to deliver basic and comprehensive emergency obstetric care. However, in order to reduce maternal and early neonatal mortality to SDG goal levels, and *improve intact survival*, the development of modern, integrated comprehensive obstetric care will be required. Beyond programming for the emergencies, modern obstetric care supports midwifery care by providing the ability to diagnose and act upon obstetric complications before they become emergencies, adapt known technologies to identify fetuses at risk, and care for the complicated emergencies. Integrating Obstetrician/Gynecologists, medical officers, midwives, skilled birth attendants, and community health workers to the maternal care team requires a commitment from funders to support initiation of training and governments to sustain the training and professional institutions and government policies to deploy graduates and ensure quality. Because it takes an Obstetrician/Gynecologist to train another, and integration into midwifery and community based care is critical, a concerted and coordinated effort must be initiated to ensure that comprehensive high quality training programs for physicians to become Obstetricians/Gynecologists exist in every country. The development of maternal care teams to include provision of the complete scope of evidence based modern obstetric care presents substantial ethical challenges surrounding health equity, social justice, attention to national and individual autonomy, non-maleficence, beneficence, mutual benefit and economic transparency. In addition special global health ethical imperatives must be attended to: mutual respect (and benefit), trust, open communication, accountability, transparency, development of servant leadership characteristics, and sustainability, all in a bilateral fashion. These challenges can be met by the Obstetrics and Gynecology community to not only end preventable maternal and infant mortality, but improve women’s health globally.

## Conflicts of interest

Dr Anderson: none.

Dr Johnson: The Department of Gynecology and Obstetrics and Gynecology at the University of Michigan receives funding for its Center for International Reproductive Health Training (CIRHT) in Ethiopia from an anonymous foundation.

Dr DeVries: none.

### Practice Points

1. Maternal and early neonatal mortality are health indicators with a great disparity between high income countries, and low/middle income countries which represent an ethical dilemma highlighted by the Sustainable Development Goals.
2. Applying global health ethics to end preventable maternal and neonatal mortality requires considerations beyond the traditional concepts of non-maleficence, beneficence and autonomy to trust, mutual respect, open communication, accountability, transparency, leadership capacity building, integration and sustainability.
3. From this ethical perspective, interventions to reduce maternal and early neonatal mortality must be integrated into capacity building programs that create in country capacity and leadership to build the policies and institutions that allow for the integrated delivery of comprehensive obstetric care to the entire population.

### Research Agenda

1. Global Health Ethics influence on Global Development programs to accurately measure the elimination of preventable maternal and early neonatal mortality
2. Implementation research of adaptation of known technologies to low resource setting in comprehensive and integrated way
3. Policy research to measure effects of broad based human capacity interventions to comprehensively address the elimination of preventable maternal and neonatal mortality.

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