Appendix 1

Background to a programme for training senior midwives in operative emergency obstetric interventions

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Contents

Abbreviations:

AMO	Assistant Medical Officer
BEmOC	Basic Emergency Obstetric Care
CEmOC	Comprehensive Emergency Obstetric Care
CO	Clinical Officer
EESC	Emergency and Essential Surgical Care
EmOC	Emergency Obstetric Care
EmONC	Emergency Obstetric and Neonatal Care
ESO	Emergency Surgical Officer
GHWA	Global Health Workforce Alliance
MOPH	Ministry of Public Health
NPC	Non Physician Clinician
STP	Surgical Training Programme
UNFPA	United Nations Population Find
WHO	World Health Programme

1. Background

This document provides a summary of the current evidence that supports the training of midwives in advanced obstetrics including abdominal surgery. This should provide a much-needed human resource solution to the current workforce crisis with the overall aim to reduce maternal and neonatal mortality in Liberia.

2. Maternal Mortality – The Figures

Sub-Saharan Africa has the highest regional maternal mortality ratio in the world, with women facing a 1 in 38 chance of dying in childbirth, compared to 1 in 3,700 within industrialised countries[i]. Every year, around 500,000 women die from complications of pregnancy and childbirth, most of which can be prevented. More than 99% of these deaths occur in less developed regions[ii]. The World Bank statistics estimated in 2013 that sub-Saharan Africa alone accounts for 62% of global maternal deaths each year[iii]. For every women who dies, approximately 20 more endure injuries, infection and disabilities in pregnancy or childbirth. These means approximately 10 million women a year suffer this type of damage.

Maternal deaths are clustered around labour, delivery, and the immediate postpartum period, with obstetric haemorrhage being the main medical cause of death.[iv] A summary of relevant statistics[v] shows:

- Collectively 20,000 daily deaths due to maternal ill-health, pregnancy complications and poor care at birth
- Four million stillbirths are directly caused by maternal disease and poor delivery care
- Three million neonatal deaths are directly caused by maternal disease and poor delivery care: preterm births (1 million) – asphyxia (1 million) – neonatal infections (1 million)

Reducing maternal mortality as a global health issue has been a key target over the past two decades. It has been recognised in several international summits and conferences, such as the 1995 World Conference for Women and in the fifth *United Nations (UN) Millennium Development Goal (MDG 5: Improving maternal health),* adopted at the *Millennium Summit in 2000*. The international community committed itself to reducing the maternal mortality ratio (MMR) by three quarters. Speaking to the General Assembly[vi] Director-General of WHO, Dr Gro Harlem Brundtland stated: "There is a human rights imperative involved… There are no more excuses for failing at act". In 2010, when addressing the problem of maternal mortality, the UN Secretary-General Ban Ki-moon launched a *Global Strategy for Women's and Children's Health*[vii].

In the last 10 years, maternal deaths have decreased in many parts of the world, with a global decline of 45%. In sub-Saharan Africa, a number of countries have halved their levels of maternal mortality since 1990[viii], however this was far from the decline required to achieve the MDG 5 by 2015. Overall, only 46% of women in sub-Saharan Africa benefit from skilled care during childbirth. A more recent update of maternal mortality can be accessed in the World Health Organisation (WHO) 2013 document[ix].

3. Situation in Liberia

Levels of maternal mortality in the Liberia remain unacceptably high and ranked the 10th highest in Africa, before the 2014 Ebola outbreak. Maternal mortality is estimated at 990 per 1000,000 live births (State of the World's Children 2014 (for 2008-2012) and is higher in rural than in urban areas. Neonatal mortality rates are estimated at 27/1,000 births, placing Liberia 32nd in the global statistics of under-5 mortality ranking[x]. A lack of prompt response to emergencies is a major factor contributing to a continued high mortality rate[xi]. Although the country has not met the required statistics to meet MDG 5, women's access to good quality health care embedded in a human rights framework has prior to Ebola been an important factor in improving the situation. Access to emergency obstetric care and better social status of women are two elements that have been progressing thanks to major contributions by The President and Ministry of Health and Social Welfare (supported by WHO and UNFPA) through their "Road Map for Accelerating the Reduction in Maternal and Neonatal Morbidity and Mortality in Liberia (2011-2015)".

In February 2012, the MOHSW and WHO in Liberia began to develop a new approach to Task Shifting that involved the training of senior midwives in advanced obstetrics, including surgery such as Caesarean section. The rationale was that in Liberia there was a major shortage of doctors partly because of the armed conflict that had ravaged the country from 1999 to 2003 and also because of the loss of doctors trained in Liberia to well-resourced Western countries, in particular the USA. Prior to the Ebola epidemic, according to WHO, there was only 1 doctor per 100,000 of the population of Liberia (4.29 million). More than three quarters of doctors trained in Liberia were practicing in Western countries[xii].

The Ebola epidemic, from May 2014 to May 2015, apart from resulting in the death of some Liberian doctors, also drove many abroad. According to WHO altogether, 375 health workers in Liberia were infected and 189 lost their lives. This reduced even further the number of health workers able to undertake advanced obstetric procedures. Training senior midwives in the skills required for comprehensive emergency obstetric care could represent an additional component and a "way forward".

Now Liberia has been declared Ebola-free, maternal health care has been identified as one of the priorities. Anita Varney, Assistant Secretary of the *Liberian Midwives Association* (LMA) stated: "In Liberia too many health workers contracted the virus and died, resulting in the closure of health facilities"[xiii]. The State of the World's Midwifery Report 2014 highlighted Liberia as one of three countries most hit by Ebola that were lacking human resources for health and access to midwifery care[xiv]. The Ministry of Health also was forced temporarily to close major health facilities within Monrovia as they could no longer contain the situation, resulting in pregnant women being turned away with nowhere to go[xv]. When the Ebola outbreak started, the small number of doctors available in the country (60 for 4.2 million people) continued to do what they could, even moving out of their homes to diminish the risk of infecting their wives and children. Even as some of the world's most qualified public health experts and logisticians were dispatched to Monrovia, the Liberian doctors remained on the front lines.

The country is continuing to struggle to train more doctors and midwives. The Dogliotti Medical School, two midwifery training schools and all nurse-training institutions in the country were temporarily closed during the outbreak.

The UNFPA[xvi] has responded to appeals from the overwhelmed facilities, helping to re-build a well-trained and well-supported midwifery workforce within this low resource setting. The UNFPA calls for $56 Million to provide services in the Ebola-affected areas to avoid a maternal mortality rate that mirrors the *Maternal Death Toll* within the Civil War years[xvii].

4. A Workforce Crisis – Sub-Saharan Africa

4.1. Statistics

The world is facing a shortage of qualified health care workers, with an estimated global shortage of 350,000 midwives[xviii]. At least a third of this requirement is needed in resource-limited countries. Currently, fifty-seven countries, most of them in Africa and Asia, have faced a severe health workforce crisis for the last 8 years[xix]. It is estimated that more than 2000 million people in the world lack access to even basic surgical care[xx]. The WHO estimates that at least 2 360 00 health service providers and 1 890 000 management support workers, or total of 4 250 000 health workers, are needed to fill this gap[xxi]. All 25 of the African countries employing Non Physician Clinicians (NPCs) ranked among 36 African countries that are recognised by WHO to have a critical shortage of health workers[xxii].

4.2. Main Causes

A lack of training, poor salary and limited resources are the main causes for the deterioration in numbers of qualified physicians and a shortage of health care workers. The neglect of training institutions and limited budget allocated to health is common in most African governments; sub-Saharan African governments have contributed to the crisis by failing to allocate money to train, absorb and retain health workers[xxiii]. This has resulted in health workers feeling the need to relocate to richer countries[xxiv], extending the 'in and out country brain drain' of physicians and other valuable health personnel.[xxv] On the positive side, capacity-building of academic institutions has been successful in retaining national health care workers in some countries[xxvi]. The shortage of health workers is unanimously accepted as one of the key constraints causing countries in sub-Saharan Africa failing to reach the health-related *Millennium Development Goals*. Sub-Saharan Africa faces the greatest challenges. While it has 11 percent of the world's population and 24 percent of the global burden of disease, it has only 3 percent of the world's health workers; without prompt action, the shortage will worsen[xxvii].

In many parts of sub-Saharan Africa, access to essential surgical services is limited, with available surgical care concentrated in urban centres. *The World Health Report 2008* states; that surgical care is an integral component of the continuum of primary care[xxviii]. In addition, the delivery of anaesthesia, an essential component of surgical services, is limited by a lack of human resources, equipment availability and system capacity[xxix]. Numerous assessments of surgical interventions in low and middle-income countries identified inadequacies in infrastructure and human resources, skills and functioning equipment. One assessment in 26 countries revealed a 53% lack of skills and 43% of non-functioning equipment[xxx].

5. The possible solutions

5.1. Task Shifting

Task shifting is a low-cost solution to tackling the serious health care workforce gap. It is the process of delegation, previously called substitution[xxxi], where tasks are rationally re-distributed among health workforce teams. Specific tasks are moved to health workers who have fewer qualifications, to make more efficient use of human resources[xxxii]. In 2006, WHO made the world aware that sub-Saharan African countries were experiencing chronic health worker shortage[xxxiii]. Task shifting was then accepted as a global solution to expanding access to health services, especially in maternal health. WHO later described task shifting as *"the vanguard for the renaissance of primary health care"*[xxxiv], and included a task shifting case study within their *2013 World Health report* – supporting the approach as an intervention to improve child survival[xxxv]. Countdown2015 also supported task shifting in their 2014 Report: *Fulfilling the Health Agenda for Women and Children*[xxxvi]. Due to the lack of trained healthcare professionals in countries such as Liberia, this approach is thought to make the most of the resources in struggling resource-poor countries.

5.2. Non Physician Clinicians (NPCs)

The task shifting approach allows NPC - community health workers, nurses and midwives and other trained health professionals - to safely and effectively undertake a range of medical interventions and clinical services usually carried out by a doctor. The training of NPCs in advanced comprehensive emergency obstetric care (CEmOC) has been supported by a number of organisations and leading authorities in the world of health as a feasible solution[xxxvii] to tackle the combination of high mortality rate and a serious workforce crisis., Achu Lordfred, Senior Reproductive and Maternal Health Advisor with the UNFPA in East Africa stated; [xxxviii] *"The severe shortage of skilled health personnel with obstetric and midwifery skills means that most women have their babies delivered by traditional birth attendants. But when complications arise, these women either die or develop debilitating conditions, such as obstetric fistula, or lose their babies".*

The effectiveness of NPC's as a means to expand access to services became recognised by the international community as a pathway to meet MDG5. In 2010, the *'Gaining Momentum for Change Report"*[xxxix] and the *2013 World Health Report*[xl] referred to training more NPC's as a possible solution to the workforce crisis and an intervention to improve child survival (recalling that so many pregnancies occur in children). Training NPCs has been argued as a potential solution to workforce retention. Non-physicians, compared with physicians, stay longer in rural areas. After 7 years, around 90% of non-physicians are still working in district hospitals, while almost no physicians remain there[xli].

In 2006, *Health Workforce in Africa Challenges and Prospects*; a report of the Africa Working Group of the Joint Learning Initiative on Human Resources for Health and Development recommended the following as a way of managing the workforce crisis [xlii]:

> "*Managing the shortages and financial constraints affecting health services requires that each country should seriously consider expansion of the roles of mid-level health workers who perform clinical (medical assistants, clinical officers, health officers, etc.) and nursing (enrolled midwives, practical nurses, nurse assistants) tasks at primary care levels. These cadres probably serve a much larger percentage of the population, are affordable and are less likely to emigrate out of their country. It will*

be important to gain the cooperation of professional bodies and to study and understand how these work in countries that have tried this out". As the number of health workers declines, survival declines proportionately[xliii].

On the 6th June 2008, The Global Health Workforce Alliance (GHWA) called on the Group 8 Nations to "*Recognize the need for scaling up all cadres of health workers, with the mix of health workers determined by each country's epidemiological profile and other factors"*[xliv]

5.3. Historical Perspective

The WHO refers to NPC practices as *'a radical departure from traditional delivery models that depend only on specialist workers"*[xlv]. However task-shift training has long been used by both rich and resource-limited countries, though rapidly increasing health inequalities within and between countries has given the practice of task shifting new urgency and prominence.

5.3.1. Colonial Era

Many countries in sub-Saharan Africa had healthcare provisions by staff members that were not trained as physicians. The British in particular trained health workers known as apothecaries, who dispensed medicines and often assumed additional clinical duties. In Uganda, an African Native Medical Corps was formed in 1918, with training programmes at the government hospital in Malaga. In Kenya, from the 1920s, health workers known as dressers and dispensers were trained to provide basic surgical and medical care, respectively.

Agents-Sanitaire were trained in the Congo and elsewhere in French-speaking colonial Africa. Ethiopia initiated education of health officers at the University of Gonder in 1954,[xlvi] and in Mozambique the exodus of physicians during war prompted initiation of NPC cadres[xlvii]. Much or rural health care in northern Ghana is now provided by these medical assistants[xlviii].

5.3.2. Post-Colonial Era

In countries such as Kenya, clinical officers have become the backbone of the health system, and run most of the health centres. Faced with critical shortages of physicians trained to do surgery, plus the preference of those with the training to work in big cities, three African countries - Mozambique, Tanzania and Malawi – chose to give surgical training to Assistant Medical Officers (AMOs), health personnel without the medical degree. These programs began 40 years ago in Tanzania and 23 years ago in Mozambique. The AMOs provide most of the clinical health care outside the cities and a significant fraction of the surgical services within the cities. All have had two or three years of special training to equip them for the job and to provide them with surgical experience under supervision.

Many countries in sub-Saharan Africa have a history of healthcare provision by staff members that are not trained physicians. Twenty-five of the forty-seven countries in sub-Saharan Africa have NCPs, although their roles varied widely between countries.

In Liberia, non- physician nurses have been administering anaesthesia under supervision[xlix] [l]. In nine countries, numbers of NPCs equalled or exceeded numbers of physicians. In the 1970's and 1980's in the Democratic Republic of the Congo (then Zaire), shortages of fully trained health workers made it necessary to use auxiliary personnel in health care. This freed doctors to use their time and expertise for people with more complicated diseases and people benefited from receiving treatment closer to home[li].

5.3.3. Wider Situation

Success stories from Sri Lanka [lii] and Malaysia [liii] point to human resources as a crucial factor in reducing maternal mortality. Currently, more than 300,000[liv] [lv] NPCs practice alongside physicians in the USA. On a large scale, Brazil created "family health teams" in the early 1990's. These teams were composed of one physician, one nurse, a nurse assistant and four community health workers, all taking responsibility for providing a broad range of primary health care services[lvi].

5.4. Current Status on NPCs and Task Shifting in Healthcare

The World Health Organization[lvii] stated that it was expanding its programme to train health care staff in low- and middle-income countries in essential emergency, basic surgery and anaesthesia skills. The programme, which already existed in 22 countries, would boost the capacity of first-level health facilities (rural or district hospitals and health centres) to deal with simple but essential surgery in a growing number of regions of resource limited countries. With the WHO African Region estimating a shortfall of 817,992 doctors, nurses and midwives, task shifting projects are already underway in Ethiopia, Malawi, Namibia, Rwanda, Uganda and Zambia. The WHO are continuing to identify tasks and develop frameworks, believing task shifting could make a major contribution to expanding access to services. Using Uganda as an example, with only one doctor for every 22,000 patients, nurses are now undertaking a range of tasks that were formally the responsibility of doctors.

Acknowledging that the world is facing a shortage of health workers, Frances McConville – Midwifery expert at the WHO in Geneva stated[lviii] *"When midwifery is in place, there is much less need for emergency interventions because problems requiring prompt attention are managed or referred before they become life-threating complication"*. The *State of the World's Midwifery 2014 Report* by the UNFPA found that midwives can reduce mortality by over 80% and decrease infant mortality by 75%[lix]. The report states a *Vision by 2030* for every woman or reproductive age to have universal access to a midwife. The *Midwifery 2030: A Pathway to Health* [lx] will offer strategies for maximizing the contributions that midwives can make to global health care. Due to the training crisis, WHO has collaborated with the Office of the US Global AIDS Coordinator (OGAC), to launch a *task shifting project.*[lxi]

The WHO Task Shifting Report[lxii] specifies recommendations and guidelines to make sure this approach is safe, efficient, effective and sustainable. The framework creates certification training programmes to provide career paths with learning assessments to ensure enlistment and equitable access for community members who have already learned valuable attributes and skills through practical responses to community needs[lxiii]. The AMREF Health Africa[lxiv] strongly supports task shifting when implemented alongside a

broad range of other strategies and relevant policies to ensure adequate resources and leadership from national governments, resulting in the establishment of regulatory frameworks and financial commitments.

Through the *Stand Up for African Mothers*[lxv] campaign, AMREF Health Africa had prioritised training midwives. In 2013 WHO launched the Confederation of African Midwives Associations to advocate for better education and regulation of midwives[lxvi].

The African Union had set up a *National Maternal and Neonatal Health (NMH) Roadmap*[lxvii] to improve health service delivery and collect data to prepare African health statistics. From 2012-2025 the African region will implement strategies to follow the *Sustainable Development Goals* (SDGs) under the MDG 3 – 'which seeks to increase sustainable health recruitment, development and training and retention of the health workforce'. With support from the UNFPA and WHO priority areas are[lxviii]:

- Strengthening health workforce leadership and governance capacity
- Strengthening human resources for health regulatory capacity
- Scaling up education and training of health workers
- Optimising the use, retention and performance of active health workforce
- Improving health workforce information and evidence for decision making
- Strengthening health workforce dialogue and partnership

The First Global Forum on *Human Resources Health conference* in March 2008 discussed the training of mid-level health professionals, such as clinical officers and midwives, to provide essential clinical and surgical services which could save mothers' lives. Delegates at the conference argued that employment of well-trained mid-level health workers would ease human resource constraints caused by loss of doctors to international migration or reluctance to be deployed to rural areas[lxix]. The Global Health Workforce Alliance[lxx] (GHWA) has been making an on-going effort to address migration of health workers by identifying worker migration as one of the fundamental issues to be addressed for a solution to the workforce crisis.

In 2007, GHWA worked with WHO to compose the *Health Worker Migration Initiative* (HWMI) – with global codes of practice which were later adopted at the *World Health Assembly* in 2010. The 2007 Bellagio Conference on *'Increasing Access to Surgical Services in Resource-Constrained Settings in sub-Saharan Africa'* summarised that assistant medical officers can be trained to provide emergency obstetrical care safely and effectively.[lxxi] Simple calculations indicate that, over the long-term, providing rural services by surgically trained doctors is likely to be unsustainable.

6. Non Physician Training in Africa

Traditionally, NPC training programmes have relied less on hospitals and advanced technology than training programmes for physicians. The training is practical and focuses on local health challenges and treatment of indigenous disorders. In general, NPCs can be trained in less time and with less cost than physicians[lxxii]. In the context of limited resources, some workforce strategists consider investments in community health workers (village workers with local and minimal training) to be the most effective and rapid approach to building health-worker capacity[lxxiii]. Educational programmes were developed and operated by Ministries of both health and education; these arrangements have varied between countries[lxxiv].

The training of non-physician providers in emergency obstetric care has been supported by a number of organisations and leading authorities in world health. Education and training for NPCs has been identified as the key to improving healthcare for mothers and babies in rural and urban areas of Africa[lxxv].

Recommendation 9 of the WHO report on Task Shifting states that *'Countries should adopt a systematic approach to harmonized, standardized and competency-based training that is needs-driven and accredited. This recommendation places high value on appropriate training as an essential precondition for task shifting of any kind. In-service training is needed to enable the existing health workforce to undertake new tasks; pre-service training must be revised to cover new skills; and new training curricula must be developed to match the competencies that will be required for newly created cadres. In-service training, to add to the competencies of experienced health workers, is quicker and more cost-effective than recruiting and training new cohorts'*[lxxvi].

6.1. Outcomes – Country and Programme/Project Analysis

Some of the most well documented models of NPC training are as follows:

Malawi and Tanzania - ETATMBA (Enhancing Training and Appropriate Technologies for Mothers and Babies in Africa):
This is an EU funded (FP7) project, managed by The University of Warwick Medical School (WMS)[lxxvii]. This project trains Assistant Medical Officer's (AMOs), health professionals without a medical degree. Tanzania started a 2year AMO training programme in the 1960s. AMOs are licensed to perform major surgery independently, including caesarean section. However, there is no provision for internship, residency, or other formal post-graduate training for AMOs. Indeed, most have done fewer than the required five caesarean sections at the time of graduation[lxxviii]. These NPCs are crucial to their countries health system. Unlike doctors, they are unlikely to emigrate but still there is a high attrition rate as they lack opportunities for personal development. The ETATMBA project aims to address this issue by training NPCs as advanced leaders, providing them with skills and knowledge in advanced Comprehensive Emergency Obstetric Care (CEmOC). The modules taught are accredited by The University of Warwick at BSc level. In Malawi, a BSc degree is being developed by the University of Malawi, the College of Medicine and the University of Warwick.

Unique to the Tanzanian ETATMBA project, Nurse Midwives are recruited to undertake training in obstetric anaesthesia[lxxix]. It is worth noting that this is the only reference found whilst researching this report which discusses specifically training midwives in EmOC. This is surprising as midwives are trained and experienced at recognizing, diagnosing and referring obstetric emergencies so should be ideal candidates for task shifting to undertake advanced CEmOC.

Features of the ETATMBA programme are described by Mbaruku and Pemba as follows[lxxx]:

The trainers comprise of the following:

- Obstetricians, local and international
- Anaesthetists/Anaesthetic Officers
- General Medical Officers working in obstetrics and gynaecology departments

- Nurse midwives working in the in maternity ward
- Leadership and Management experts

There are 12 -16 trainees per intake. Trainees selected were AMOs and nurses already working in facilities (preferably those already upgraded for advanced surgical procedures) that were remote and hardly accessible during rainy season. They returned to these facilities post training. Duration of Training was 16 weeks undertaken centrally in a training centre and major hospital.

- AMOs: 10 weeks on CEmOC, 2 weeks on Leadership (all full time) and 4 weeks of internship.
- Nurse midwives: 10 weeks on Anesthesia, 2 weeks on leadership and 4weeks on internship

Trainees were exposed to the following:

- A curriculum designed to guide and support the refresher training of AMOs to handle and manage all emergency obstetric cases at the health facility level[lxxxi] and which addresses priorities for that region.
- Decision making on ward rounds
- Night duty
- Elective and emergency obstetric surgeries, either as assistant or operating independently
- AMOs managed the Maternity wards as well as labour wards under supervision
- AMOs did surgical procedures (for examples Caesarean section and vacuum delivery) on patients with indications.
- Internships were carried out in the trainees' Regional Hospital where no lectures were given. Supervision occurred informally through 'on-the-job' training.

Medical officers in remote rural hospitals need an on-the-job surgical training, which cannot just be covered by periodical visits of a surgeon. It is very likely that the visiting specialist will oversee elective surgical cases and facing very few life-saving emergencies during the short period of his/her visit. There is a need for medical officers to attend a selected, busy teaching centre where the number of different surgical emergencies is high. On the other hand it is important that the specialist visits regularly the rural hospital to face, together with the medical officer, the most common surgical problems of that area.

The training in Tanzania takes place in intensive blocks of 3-4 months rather than in the separate 5-day modules over 3 years as occurs in Malawi. The latter arrangements are dictated by MOPH restrictions on how long AMOs could be released for training[lxxxii].

Trainees identified the 'leadership training' as enabling them to confidently change their own practice and initiate change in their health facility[lxxxiii]. It was also noted that the newly trained NPCs found that their work load had 'increased tremendously' and interfered with leave and holidays; it was inferred that on - call - allowances and accreditation from the Ministry would have been compensating factors. However, rest and relaxation/recreation is an important entitlement and contributes towards work force retention.

Malawi and Zambia - COST-Africa:
This is a partnership between in-country organisations and Royal College of Surgeons Ireland funded by a European Union (EU) FP7 grant.

It was initiated in 2011 and has provided additional surgical training to the 3-year Medical Licentiate training programme for Clinical officer (CO) NPCs in Zambia. In Malawi, a BSc in Surgery for COs started in 2013. The programme includes procedures to manage major haemorrhage, uterine obstruction and other obstetric emergencies in childbirth and hopes to deliver cost-effective and safe health benefits to patients attending district hospitals in the two countries[lxxxiv lxxxv].

Rwanda – CARE:
The WHO Emergency and Essential Surgical Care Project trains health staff in simple surgical procedures, anaesthesia and emergency care. After training and with the help of basic equipment, health care staff are able to perform surgical procedures that save lives and prevent disability[lxxxvi]. Kayongo et al[lxxxvii] assessed CARE's work in Rwanda. This had been designed to improve the functional capacity of health facilities for delivery of EmOC services. The program implementation was modeled after Columbia University's Averting Maternal Death and Disability Program (AMDD) program which addresses technical competence, management capacity and human rights. The technical component focuses on staff acquiring the necessary skills to manage obstetric complications. This competency-based module was conducted in conjunction with the American College of Nurse and Midwives. Additional training resulted in an increased level of preparedness for emergencies and ability to manage common obstetric complications according to evidence based practices. Essentially, it was established that skilled care can save lives.

Ethiopia:
A three-year MSc programme for mid-level health professionals (Health Officers and nurses trained at the BSc level with two years of service) was established by the Ministries of Health and Education, with the support of UNFPA, in 2009. The Government aims to train up to 1,000 obstetric non-physician clinicians to deploy one to each Ethiopian health district. By 2013 a total of 136 NPCs (called emergency surgical officers or ESOs) had been trained and deployed. They carry out Caesarean sections and other procedures that were once strictly relegated to medical doctors. This shifting of tasks was met with some resistance from most specialist physicians, who were key stakeholders as trainers.

Another problem is that gaps are being observed with respect to their clinical decision making skills. Mechanisms still need to be strengthened to build the clinical decision making skills of the deployed NPC by, amongst other recommendations, encouraging NPCs to work in team with *midwives* to provide more emergency obstetric and newborn care experience. This recommendation supports the training of midwives as NPCs in Liberia[lxxxviii lxxxix].

Making it Happen (MiH) - piloted in Somaliland and Swaziland in 2007; and delivered in Ghana, Kenya, Malawi, Nigeria, Republic of South Africa, Sierra Leone, Tanzania and Zimbabwe between 2012 and 2015:
The CMNH-LSTM (a partnership with the Liverpool School of Tropical Medicine) EmONC (emergency obstetric and neonatal care) training package is a competency-

based 'skills-and-drills' training package that is of 'short duration' and is delivered as close to the working environment as possible. It was developed specifically for low- and middle-income settings in 2006 at the request of the World Health Organization (WHO)[xc]. In each country, the generic package is reviewed and adapted if necessary through consultation with the in-country professional associations (*including midwives*) and the Ministry of Health (MoH) of the respective country.

The authors have found that there is some evidence that short competency-based EmONC training programmes based on adult learning methodology are more effective in improving professional practice than longer didactic-based training. Kenya developed a 5-day curriculum for EmONC under the MiH project to be used for training from 2013 onwards.

Two quotes from a LSTM publication suggest that midwives have been some of the 3,000 health care providers trained under the MiH programme[xci] For example: *"Our midwives have been able to carry out assisted vaginal deliveries using the vacuum extractor with very good outcomes. This has prevented unnecessary caesarean sections and long delays before women get a caesarean section with the risk of further complications."*

WHO launched the Emergency and Essential Surgical Care (EESC) programme to address the deficit of adequately trained and experienced health professionals who can perform basic life-saving surgery. Sierra Leone is one of the 35 countries that have adopted the programme.

Sierra Leone: Emergency and Essential Surgical Care (EESC) programme:
The Sierra Leone EESC programme is a cooperation between the Ministry of Health and Sanitation (MoHS), the Norwegian NGO CapaCare set up in 2010 to design a Surgical Training Programme (STP) to train doctors and NPCs in basic life-saving surgery and obstetrics[xcii].

EESC STP course features:

- A two-year training programme
- Two parts, theoretical and practical.
- The first six months of basic training are conducted at the central training centre.
- The curriculum is divided into seven modules taught by visiting consultant specialists
- In the second part, students are assigned to rotations at two or three of the 12 partner hospitals.
- All procedures where students participate are recorded in a logbook.
- During the rotations the progress of the student is evaluated on a regular basis.

By July 2014, 30 NPC students were enrolled on the STP course. Eleven have passed the exam and are now in houseman-ships or have started working in district hospitals. One doctor was also trained in the STP. To put this experience into the perspective of advanced EMOC, of all the surgical procedures performed by students during the STC, 41% were unplanned (emergency). 21% of the total were caesarean sections, with 37.5% being of an obstetric or gynaecology nature.

It has been shown that the presence of an in-country regulatory body that ensures proper certification, supervision and continuous learning helps to ensure a high standard of care[xciii]. At the moment this is lacking in in some countries such as Sierra Leone. Such CEmOC programmes to train NPC will only be successful if the MoPH or other relevant political body is able to set up a control mechanism that certifies, supervises and regulates the surgical practice of NPCs.

It has been shown that in East Africa, surgical task-shifting is deeply rooted in its colonial history. Task shifting in EmOC is now common practice. However in West Africa, task-shifting in obstetrics to NPCs is much less common and is much less a part of the medical culture. Medical officers in remote rural hospitals need an on the job surgical training, which cannot just be covered by periodical visits of a surgeon. It is very likely that the specialist is operating very complicated elective cases and facing very few life-saving emergencies during the short period of his visit. There is a need for medical officers to attend a selected, busy teaching centre where the number of different surgical emergencies is high. There was shortage of health workers who could administer safe anaesthesia in rural hospitals in Malawi, where clinical officers provide medical care, do surgical procedures, and give anaesthetics[xciv] [xcv]. On the other hand it is important that the specialist visits regularly the rural hospital to face together with the medical officer the most common surgical problems of that area[xcvi].

Sweden:
It is worth mentioning this course as it is unique in stressing the targeting of midwives for task shifting in CEmOC.

Didactica:
An advanced training course in Gotland, Sweden, for mid-level providers of maternal and neonatal health care (NPCs) in Comprehensive Emergency Obstetric Care. This course has been running since 2006 and has a special focus on "task-shifting" for maternal and neonatal survival. The target group is "mid-level providers of care", *including midwives* (their italics) in various African, Asian and Latin American countries. Didactica understands the course to be *'the only course in the world targeting these health workers'*. They would appear to be correct in regard to targeting midwives[xcvii].

The course objectives are:

- Share task-shifting experiences between participants from different countries in CEmOC (comprehensive emergency obstetric care) including major obstetric surgery.
- Provide tools for improving quality of CEmOC care through use of audit and process indicators.
- Develop occupational profiles of NPCs cadres in a team approach.
- Upgrade clinical knowledge and technical skills in emergency obstetric care.

7. Summary

The combination of high maternal mortality and a serious work force crisis demands a solution. There is a direct relationship between the ratio of health workers to population and the survival of women during childbirth and children in early infancy. The training of NPCs in emergency obstetric care has been supported by a number of organisations and leading authorities in world health. Low training costs, reduced training duration, and success in

rural placements suggest that NPCs could have substantial roles in the scale-up of health workforces in sub-Saharan African countries. There has been a wide variety of training models implemented in Africa; the Liberian project appears to follow all the recommendations studied for this report.

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