



## Improving maternal and neonatal care throughout Liberia: an innovative task-sharing approach



*Presentation ceremony for the first two qualifying obstetric clinicians (in white coats)*

### Summary and Introduction

In order to improve hospital-based maternal and neonatal care throughout Liberia, a Partnership operating under a Memorandum of Understanding between the Liberian Ministry of Health, WHO Liberia, UNFPA Liberia and the Scottish charity, MCAI, agreed to start an innovative task-sharing project in advanced obstetric care and, later, a similar task-sharing project in advanced neonatal care. Regulation and licensing was, and continues to be, provided by the Liberian Medical and Dental Council (LMDC) and the Liberian Board for Nursing and Midwifery (LBNM)

Experienced midwives and nurses are carefully selected by representatives of the Partnership to undertake extensive training and undergo rigorous continuous assessment, to become qualified obstetric clinicians (after three years) and qualified neonatal clinicians (after two years). At the end of their training, each qualified clinician is capable of safely and independently performing advanced obstetric care, including abdominal surgery, and advanced neonatal care, respectively.

Now in its fifth year, the landmark task-sharing project in advanced obstetrics has led to two qualified obstetric clinicians, currently supports nine interns who have completed 2 of the 3 years of training, and from 1<sup>st</sup> February 2018 will take on 10 new trainee obstetric clinicians. The success of this project has recently led to the task-sharing project in advanced neonatal care, which is currently in its first year and supports four trainees.

From the start of the advanced obstetric training in October 2013 to the beginning of November 2017, **a total of 1,654 Caesarean sections have been undertaken by the first 11 trainee obstetric clinicians.** Improved neonatal care can be shown by the number of neonates that have received nasal CPAP for life-threatening breathing difficulties. From 1<sup>st</sup> August 2017 to end November 2017, **sixty-five babies with respiratory failure were successfully treated with nasal CPAP and discharged home.** This treatment would not be available without the neonatal program and most of these 65 babies would have died without this treatment.



*Trainees, trainers and administrator CH Rennie Hospital*



*Dr Johnson, Medical Director at CH Rennie Hospital, with recently delivered baby (by Caesarean section) and the baby's 10-year old mother. Children as mothers are common in Liberia.*

Both of these projects require much logistical organization, substantial financial commitment, and full political support, but importantly, contribute to improved maternal and neonatal health throughout Liberia, helping to save and improve the lives of many Liberian women (and adolescent girls) and their babies.

These programs have received funding from WHO Liberia, UNFPA Liberia, MCAI, and The Advanced Life Support Group but substantial further funding is required.

This report describes these training programs, shares the experiences of those involved, and highlights their impact.

## **The problems**

### **High levels of maternal and neonatal mortality**

Latest figures from UNICEF (July 2016) show a Liberian maternal death rate of 1072 per 100,000 live births and a neonatal death rate of 26 per 1000 live births. This figure for neonatal mortality is, in our experience, a serious underestimate. Similar figures for Norway, for example, are 5/100,000 Maternal and 5/1000 Neonatal respectively.

Many deaths relate to three important areas of delay: 1) delay in recognizing the presence of a life-threatening emergency in the community; 2) delay in reaching a hospital with appropriate facilities and staff to treat the emergency; and 3) delay in recognizing the emergency by staff at the hospital and subsequent delay in providing appropriate emergency treatment and management. If this third area of delay cannot be prevented by having sufficient doctors trained in advanced maternal and neonatal care available 24 hours a day, this situation soon becomes known by the community and as a consequence, families may decide not to go to a hospital and so the mother may deliver and sometimes die at home. The real anonymized case study below illustrates the fatal consequences of delay.

### **Case Study: Maternal death audit completed by one of the trainee obstetric clinicians**

*Mother aged 28 years, 5<sup>th</sup> pregnancy with 3 children who was admitted to hospital at 38 weeks' gestation from a county health clinic. She had been in labour for 7 days and given oxytocin (a powerful drug to strengthen contractions of the uterus) during this time. On admission, the head of her unborn baby was stuck in the birth canal due to a brow mal-presentation. She was very anaemic and shocked. Immediate ABC resuscitation by a team led by the obstetric clinician was undertaken and she was taken immediately (around 30 minutes following admission) to the operating theatre where a doctor and obstetric clinician undertook emergency caesarean section.*

*A live male infant was delivered weighing 3.5 Kg needing a period of resuscitation. The uterus was full of blood (more than 1 litre) and there was a posterior rupture of the uterus which was surgically repaired.*

*The mother began to bleed from multiple sites (including vomiting of fresh blood) despite 6 units of a fresh blood transfusion. This post-partum haemorrhage could not be stopped and the mother died 2 hours after admission.*

### **Not enough doctors**

One of the main problems in the provision of hospital care for pregnant women and newborn infants in low-income countries, particularly those in sub-Saharan Africa, is a lack of appropriately trained doctors who can care for patients most at risk of death or serious long-term harmful complications. Such complications include obstetric fistulae in women and adolescent girls who have experienced obstructed labour without access to immediate Caesarean section, and permanent, but preventable, brain damage (cerebral palsy) in children where fetal monitoring has been inadequate, newborn resuscitation has been delayed, or performed incorrectly.

Emergency hospital obstetric and neonatal care frequently involves long periods overnight where doctors have to work extremely hard without sleep and where mistakes due to tiredness, can be fatal. Such pressures can usually be endured where there are sufficient numbers of well-trained doctors to provide adequate care, but in situations where doctors are scarce, the rotas required to provide life-saving care 24 hours a day, 7 days a week, are difficult to fulfill and many doctors become "burnt out" as a result. This situation often leads to doctors leaving the country, working only in well-resourced hospitals in cities rather than in rural hospitals, or undertaking private health work where overnight, front-line clinical care is minimal. Some doctors may also decide to accept offers of desk-based jobs from international organizations.

The loss of doctors from front-line clinical care progressively makes the situation worse. It leads, not only to a lack of quality care for patients, but reduced opportunities for junior doctors to become trained by senior experienced specialists in advanced obstetric and neonatal care. There

is little doubt that this human resource problem is one of the most serious root causes of maternal and neonatal mortality in low-income settings.

There is an extreme shortage of doctors in Liberia; one of the worst situations in the world as shown below.

**The situation in Liberia: doctors in Liberia (Population 4.5 million.) Report by Liberian Medical and Dental Association in July 2016**

203 Liberian doctors (1 for 22,000 persons) and 95 international doctors; Total 298 (1 for 15,000 persons)

10 obstetricians based in only 3 of the 15 counties in Liberia with 6 obstetricians in the capital. 15 counties in Liberia and 75% (the most rural) each have only 1 or 2 doctors There is a proliferation of private facilities: many unregulated



*Dr. Obed Dolo, Master Obstetric Trainer with 6 of the 9 in the second group of trainee obstetric clinicians.*

## **Task-sharing a possible solution to these problems**

Given the shortage of doctors, other types of health workers can be appropriately trained to assist doctors as part of a team to treat serious medical problems.

Registered midwives are present in all countries, including those with the smallest number of doctors. In low-income countries, their workload is high and those working in hospitals have, after a few years, great experience in managing normal and abnormal deliveries as well as major complications such as massive haemorrhage, sepsis, shock or fits (eclampsia). However, they are not trained in the more advanced obstetrics needed to treat a significant proportion of patients with complications.

By enhancing the training of senior experienced midwives in advanced obstetrics, including abdominal surgery, to work as a team with the small number of doctors available, a task-shifting approach can provide improved obstetric care, particularly in rural district hospitals.

Midwives, unlike most doctors, are rooted in their communities and are extremely unlikely to migrate to seek better pay and conditions. Unlike most physician assistants/medical officers, midwives usually have a strong grounding in maternity care.

Similar factors apply to the provision of hospital-based quality neonatal care provided by appropriately trained nurses.

*Hannah Gibson one of the first two obstetric clinicians, and at the time fully qualified, undertaking an emergency Caesarean section at Redemption Hospital in 2016*



At present most such care relies on untrained midwives, nurses, or nurse assistants. A task-sharing approach to create advanced neonatal nurse clinicians is also easier to achieve over a shorter duration of time than training in advanced obstetrics, which has a major surgical component.

Good neonatal care relies on effective obstetrics and a task-sharing approach that encompasses both advanced obstetric and basic neonatal hospital care can be particularly effective.



*A section of the newly equipped neonatal unit at CB Dunbar Hospital. At the far end of the ward is Advanced Neonatal Nurse Practitioner volunteer, Alysia Humphrey from the UK.*

## The Training Programs

In these programs, experienced senior midwives are trained in advanced hospital maternal care and senior nurses are trained in the advanced hospital care of newborn infants to work in partnership with doctors to effectively treat patients and to avoid dangerous delays in managing life-threatening emergencies. The training follows a strict curriculum developed by MCAI with technical input from WHO and approved by the Partnership.

## The Obstetric Program

### Structure

This three-year program consists of two years of “hands on” practical training under close supervision by experienced expert doctors (apprenticeship training) complimented by “classroom” teaching in the form of weekly distance-learning, interactive tutorials from experts in the UK using video-conferencing software.

The final year of the program is an “internship” based at a rural hospital selected by the Ministry of Health in which the trainees gain more experience, while still under supervision.



*Naomi and Hannah having just undertaken a Caesarean section*

Once they successfully complete the training program, qualified obstetric clinicians are granted a five-year license by the Liberian Medical and Dental Council and contracted by the Ministry of Health to work in a public hospital selected by the Ministry.

### Training

Training is based at three Liberian Hospitals: CB Dunbar in Bong County (Dr. Dolo); CH Rennie Hospital in Kakata (Drs. Johnson and Asinya; and Redemption Hospital in Monrovia (Drs. Gorpudolo and Whesseh). Training is undertaken by experienced Liberian doctors (and overseen by the master trainer, Dr. Dolo and MCAI’s Honorary Medical Director, Professor Southall). International expert doctors (Drs. Casement, Clack, Creemers and Lallemand) have provided additional support. The trainees regularly rotate between the three hospitals.

The training program starts with a six-month foundation course in the basics of advanced obstetric care, including basic surgical skills, pelvic anatomy, obstetric ultrasound, and post-operative care. After successful completion, the trainees move on to apprenticeship training. The first component of the apprenticeship training involves performing essential obstetric procedures and treating major complications of pregnancy and delivery under the supervision of the trainers. Trainees gradually progress from assisting with procedures and emergency management, through to direct and indirect supervision, and finally, being able to perform the procedures, including undertaking Caesarean Sections, independently.

The training also involves handover meetings (where staff who have been on duty during the previous 24 hours discuss the patients that have been admitted for care), ward rounds, and case Presentations alongside continued supervision of the labour and delivery wards.

All of this training is complimented by weekly distance-learning, interactive tutorials led by international expert doctors. During these sessions, a clinical topic is taught and discussed in detail supplemented by presentations and clinical audits.

Each trainee is given a tablet or laptop computer with an extensive E-library of relevant publications and videos pertinent to low resource settings for training purposes. Each is also provided with an electronic and hard copy of MCAI's comprehensive textbook and pocketbooks in maternal and neonatal health care.

### **Continuous assessment**

All trainees are continuously assessed to ensure that they are competent, knowledgeable, and safe.

After completion of the foundation course, each trainee must pass the Objective Structured Clinical Examination (OSCE) in obstetric anatomy, ultrasound and basic surgical skills conducted by the Liberian master trainer accompanied by an international obstetrician, before progressing to apprenticeship training.

During the apprenticeship training, each trainee undertakes a weekly written test (produced by Professor Southall and marked by international expert doctors (Dr. Casement, Dr. Diane Watson) on the topics on which they were taught the week before. The results of each test are fed-back to the trainees through international audio visual conferencing and provide continuous evaluation while highlighting any areas where further support is needed.

In the internship year, trainees will continue their distance-learning tutorials by discussing with international experts, difficult cases that they have been involved with in the previous week.

Before graduating as qualified obstetric clinicians, the trainees must pass a written examination marked by the Registrar of the Liberian Medical and Dental Council, Dr. Dolo and Professor Southall.

### **Monitoring and Evaluation**

The progress of each individual trainee is monitored by them recording each procedure that they have performed and the outcome in a paper and electronic log book.

The results of their weekly written exams, OSCEs, and high-level written exams are also recorded.

MCAI has developed a specific clinical audit form that trainees have to complete if they have been involved in managing a maternal death. National and international trainers review these forms on a regular basis with the trainee involved and discuss any pertinent issues.

Monitoring of maternal and neonatal mortality rates in the catchment areas of the 3 hospitals in which the training is being undertaken is an essential task undertaken jointly by WHO Liberia, MCAI and the MOH.

### **The Neonatal Program**

The two-year neonatal program is currently in its first year and is based on the structure of the obstetric program, that is, apprenticeship training supplemented by weekly distance-learning tutorials, and an internship year. However, as no surgery is involved, the training program can be

completed in two years. And because of a major shortage of Liberian pediatricians, the program is taught by international expert trainers (led by Advanced Neonatal Nurse practitioner Adeyemo Kola) and overseen by master trainer, Professor Southall. The training is currently based at CB Dunbar Hospital.

*First 4 trainee neonatal clinicians along with advanced neonatal nurse practitioner Kola Adeyemo, their master trainer.*

*From left to right: Clement Z. Whenda, Christina W Nyenabo, Gertrude Y Makor Agnes M. Smith and Kola Adeyemo*



Once they successfully complete the training program, qualified neonatal clinicians will be granted a five-year license by the Liberian Medical and Dental Council and contracted by the Ministry of Health to work in a public hospital selected by the Ministry.



*The team of 4 trainee neonatal clinicians with International Volunteer from the University Hospital of Southern California (Dr. Jean Junior) and Dr. Dolo in the office of the newly renovated neonatal intensive care unit at CB Dunbar Hospital.*

### **Training**

The training program rigorously follows a curriculum developed by MCAI and approved by all partners. It covers neonatal resuscitation and managing major complications seen in the neonatal period such as overwhelming infection (sepsis), breathing problems (asphyxia) and brain injury due to lack of oxygen and circulation to the fetus during pregnancy and delivery.



As with the obstetric training, the neonatal trainees are involved in handover meetings, ward rounds, and case presentations. Apprenticeship training is complimented by weekly distance learning, interactive tutorials led by volunteer international expert doctors (Dr. Alison Earley, Professor Neil McIntosh and Professor Southall). During these sessions, a clinical topic is taught and discussed in detail supplemented by presentations and clinical audits.

Each trainee also receives a laptop computer with the extensive neonatal care E-Library and MCAI's textbook and pocketbooks.

### **Continuous assessment**

Again, as with the obstetric training program, each trainee undertakes a weekly written test (produced and marked by international expert doctors) on the topics on which they were taught the week before. The results of each test are feedback to the trainees and provide continuous evaluation, while highlighting any areas where further support is needed.

Before continuing to their internship year (year two of training), each trainee must pass an OSCE and before being licensed as a qualified Neonatal Clinician by the Liberian Medical and Dental Council, they must pass a high-level written exam marked by the LMDC.

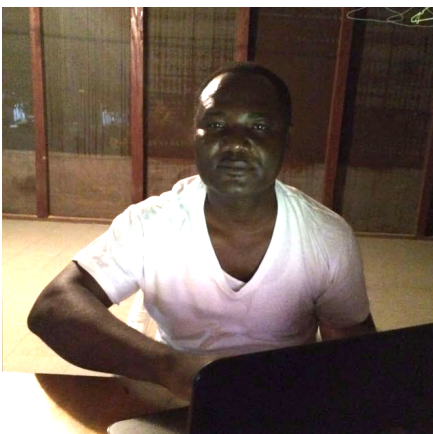
### **Monitoring and Evaluation**

The monitoring and evaluation of the neonatal program follows the same requirements as the obstetric program: each trainee must record all performed procedures and the outcome in a paper and electronic logbook; weekly exam results are recorded, and monitoring of neonatal mortality rates in the catchment area of CB Dunbar Hospital is undertaken jointly by MCAI the MOH, and WHO Liberia.

### **Health System Support (Strengthening) to support the training**

For both programs, to ensure safe and high quality obstetric and neonatal care, it is essential that all hospitals in which the trainees (and subsequently the licensed obstetric and neonatal clinicians) are based, are upgraded to ensure the integrity and suitability of the buildings, such as surgical theatres, labor and delivery wards and neonatal units, and that necessary equipment and medical and surgical supplies are readily available. Such health system support is a crucial component of both programs. The following section shows the health system support that has been provided by MCAI on behalf of the partnership to date.

*MCAI's Programme Manager Amos Davis and Finance Manager Jeremiah Akoi*



## Additional resources provided for health system support

All of the seven hospitals where training and internship are being undertaken have major problems in the availability of vital equipment and essential emergency drugs, medical and surgical supplies. Training is difficult, if not impossible, without these essential materials.

<b>Table Medical equipment provided by MCAI on behalf of the partnership</b>	
5 cooper surgical vacuum delivery kits Emergency room extension Phebe Hospital 3 obstetric ultrasound scanners 9 surgical headlight torches 1 neonatal thermometer (Thermoflash) 1 3-way oxygen splitter 2 Response FC biochemistry analysis machines 11 stethoscopes (Littmann) 2 nasal CPAP systems (Diamedica) 1 major oxygen generator system for Phebe Hospital 1 UPS system 6 doppler ultrasound fetal monitors 5 oxygen concentrators 2 small oxygen storage systems based on oxygen concentrators Oxygen splitting system IV drip stands 4 second hand IPADS Bed mattresses	9 pulse oximeters 1 obstetric forceps 14 nurse fob watches 20 skin to skin wraps 1 set obstetric forceps 2 neonatal resuscitaires 4 air conditioners 2 delivery beds 3 Caesarean section delivery sets 3 Laparotomy instrument sets 9 patella hammers 8 anti-shock garments 6 BP monitors 12 uterine tamponade connectors for condom catheters 4 low reading thermometers 15 Samsung tablets 4 ASUS laptops 8 second hand iPhones

<b>Table Emergency drugs for both maternity and neonatal care provided by MCAI on behalf of the partnership</b>	
<b>Neonatal</b>	<b>Obstetric</b>
IV Ceftriaxone, Gentamicin, Flucloxacillin, Ampicillin, Benzyl penicillin, Metronidazole Vitamin K Glucogel 40% glucose Lidocaine 1% Tetracycline eye ointment Phenobarbital Multivitamins for neonates Rectal paracetamol	IV Ceftriaxone, Gentamicin, Flucloxacillin, Ampicillin, Benzyl penicillin, Metronidazole Oxytocin and Misoprostol Adrenaline and Ephidrene Marcaine and spinal needles Tramadol and IV paracetamol Tranexamic acid



*Emergency drug kits given to each trainee obstetric clinician*





*A portable ultrasound scanner for advanced obstetric care of pregnant women provided to CB Dunbar Hospital. Similar scanners were provided to Redemption and CH Rennie Hospitals.*

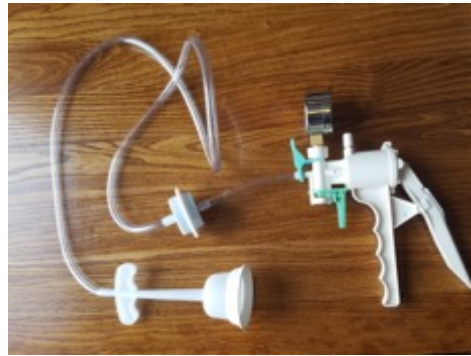


*Because of the unreliability of electrically powered oxygen supply systems (oxygen concentrators), during the Ebola outbreak, MCAI provided an oxygen generator system based at Phebe Hospital that produces large cylinders full of medical grade oxygen for 4 nearby hospitals, including CB Dunbar Hospital*

Because of frequent losses of electrical power, required to keep machines that supply respiratory support and oxygen, as well as the electronic monitoring of patients, MCAI has provided a power supply that automatically switches equipment to receive power from a large battery is available in the neonatal high dependency ward.



*The respiratory support system, non-invasive nasal CPAP, provided for the care of newborn infants with respiratory failure*



*Re-usable vacuum delivery systems for each training hospital (Cooper Surgical)*

*Trainee obstetric clinician William Korboi, using high quality surgical head torch to undertake vacuum delivery*

MCAI also funded prior to the Ebola outbreak an extension to the Emergency Room at Phebe Hospital as well as large amounts of anaesthetic and critical care equipment for this hospital.

*Dr Sibley, Medical Director, at the opening of the new Emergency Room at Phebe County Hospital*



## The Obstetric and Neonatal Programs in Practice

### The pilot phase of the obstetric program

The first two trainee obstetric clinicians (Ms. Hannah Gibson and Ms. Naomi Lewis) began their training at CB Dunbar Hospital in October 2013. The Partnership viewed this initial phase of the project as the pilot period, to test the feasibility of the program. Under Dr. Dolo's supervision, expert international doctors from Europe provided further support for the beginning of the apprenticeship training.

The Ebola outbreak disrupted the supportive training from international experts but Hannah and Naomi continued to work throughout the Ebola outbreak, providing much needed support to Dr. Dolo and his team.



*Outside CB Dunbar Maternity Hospital in Bong County, during the Ebola outbreak. Standing just outside a cordon protecting visitors from entering the hospital until they have washed their hands in chlorinated water and had their temperatures taken are from left to right Jeremiah Akoi (MCAI logistician), Naomi Lewis, Hannah Gibson (first two trainee obstetric clinicians). On the right is Dr. Dolo, master-trainer, consultant obstetrician and the Director of the Hospital.*

Both Hannah and Naomi successfully passed their OSCE with high marks (81% and 76%) and in October 2015, these first two trainee obstetric clinicians were registered by the LMDC to begin their internship. During this period, they worked at 3 additional hospitals (Phebe, CH Rennie, and Redemption) and in addition to their continued learning, they assisted in the training of junior doctors and participated in the management of all activities within the maternity unit. Their work, particularly overnight, helped to provide better sleep patterns for the doctors they worked with and generally created an efficient working environment that made all involved proud of what they were achieving.

Since the start of their apprenticeship part of their training in October 2014 until April 2016, both trainees performed 671 advanced obstetric procedures, including 424 Caesarean sections. They were both successful in their final examinations, undertaken by the Liberian Medical and Dental Council. One achieved a distinction and the other passed with merit. They are now contracted to work as licensed obstetric clinicians in public hospitals chosen by the MOH and for a minimum of 5 years. Representatives from the Partnership attended their graduation ceremony in July 2017.

### Rolling out the obstetric program

Because of the encouraging results of the pilot phase, in 2015, the Partnership agreed to roll out the program and recruited a further nine trainee obstetric clinicians who began their training in October 2015. Seven of the trainees are midwives (Mrs. Oretha Buway; Ms. Saneh Kollie; Mrs. Lucretia Kokoi; Mr. Emmanuel Hne; Ms. Jackie Sudue; Ms. Korpu Borzie; and Ms. Ariza Jolo and 2 are physician assistants with prior extensive experience in hospital based midwifery; Mr. Jonathan Lobbo and Mr. William Korboi. Four of the nine trainees were originally working in Martha Tubman Memorial Hospital, a rural and very difficult to reach hospital in Grand Jedeh county. They will return there after successfully completing their training. All nine trainees are registered with the LMDC.

Dr. Dolo and Professor Southall continue to oversee the training for all trainees. In CB Dunbar Hospital, apprenticeship based training is led by Dr Dolo, in Redemption hospital by Dr. Nowiah Gorpudolo and in CH Rennie hospital by Dr. Kumblytee Johnson and Dr. Magnus Asinya. Two obstetricians from the UK (Dr. Maire Casement and Dr. Camille Lallemand) have visited to further support their training. Professor Southall leads on the weekly tutorials with support from Dr. Casement, a consultant obstetrician from Northern Ireland and Dr. Diane Watson, a consultant obstetric anaesthetist from Wales.

In February 2017, all trainees passed their OSCE and all performed well in their weekly exams. They are all now beginning their internship in three rural hospitals: Martha Tubman Memorial in Grand Jedeh County, Fishtown Hospital in River Gee County, and Tellewoyan Hospital in Lofa County. Here they will work for one year in partnership with local doctors to care for pregnant patients. They will also work closely with community midwives to enhance the integration necessary to reduce delays in recognising, treating and referring patients.

At this stage, the nine trainees are fully competent in the medical and surgical management of critically ill patients, including Caesarean section and abdominal operations for situations where there is catastrophic haemorrhage and obstructed delivery as well as the emergency treatment of fitting (eclampsia), of life threatening infection, of fetal distress requiring urgent intervention and a number of other dangerous problems during pregnancy and delivery.



*Team from Tellewoyan County Hospital in Lofa County including Medical and County Health Directors, Nursing Director and Dr. Rosette Namulindwa, a consultant obstetrician from Uganda funded by UNFPA.*



*Dr Dolo being welcomed by a sign on the door and by the Medical Director Dr Detoh Toe King to Fishtown Hospital in RiverGee County*



*Meeting with staff at Fishtown Hospital prior to internship*



*Meeting with staff at Martha Tubman memorial Hospital prior to internship*

During internship, there will be monthly audit by internet using audiovisual links from an I-pad of cases of serious maternal emergencies encountered during the work of the three groups of nine trainees in the three rural hospitals in which they are based. These audiovisual audits will be undertaken by Dr. Dolo from C.B. Dunbar Hospital and by the UK experts, Professor Southall, Dr. Casement, and Dr. Watson.

### **The next phase of the project**

Because of the success of the program to date, in November 2017, the Partnership recruited and appointed ten further trainees (out of 26 candidates), deliberately selected from the most rural areas of Liberia. These ten trainees will start the training program in February 2018 and follow the same training plan as the previous trainees.

### **The Neonatal program**

#### **The first year of the neonatal program**

In January 2017, 4 nurses were selected from 12 applicants following a rigorous recruitment and interview process by a joint panel consisting of representatives from the Partnership. One of the trainees is from Martha Tubman Memorial Hospital in Grand Jedeh county, two from CB Dunbar Hospital and one from Phebe Hospital. The selected trainees (Clement Zawolo Whenda, Getrude Y Makor, Christina W Nyenabo and Agnes M. Smith) commenced the training programme on 1<sup>st</sup> April 2017.

Because of the extreme shortage of experienced Liberian pediatric doctors, the training in advanced neonatal care is being led by international experts, selected and recruited by MCAI and approved by the Partnership. Mr. Adeyemo Abbas Kola, an experienced advanced neonatal nurse practitioner from Nigeria is the master trainer along with Professor Southall. Expert volunteers in neonatal care from the UK (Professor Neil McIntosh and Ms Alysia Humphrey) and the USA (Dr Jean Junior) have visited to further support the apprenticeship training. Professor Southall leads the weekly distance learning tutorials with support from retired UK Consultant Pediatricians Dr. Earley and Professor McIntosh. All 4 trainees are doing well in their weekly exams.

*Preterm newborn infant receiving oxygen treatment in the Neonatal Intensive Care Unit*



## Future plans

The 4 neonatal trainee clinicians will sit their OSCE in April 2018 and if successful, will start their internships.

Although still in its initial phase, the project has been so successful to date that the partnership has already requested that two more nurses are recruited to begin their training in advanced neonatal training at CH Rennie Hospital in Kakata, which currently has no neonatal services. Recruitment and appointment of the trainees will commence when additional funding is secured.

The Partnership also expects that 6 more trainees will be selected to begin their training at CB Dunbar in April 2018



Neonatal clinician trainees with professor Neil McIntosh who has worked with them in Liberia during the last year

## Impact of the obstetric and neonatal task-sharing programs

Both programs have had a positive impact on maternal and neonatal care as shown by the following.

### Improved treatment of life-threatening emergencies

From the start of training in October 2013 to the beginning of November 2017 a **total of 1,654 Caesarean sections have been undertaken by the first 11 trainee obstetric clinicians.**

Improved neonatal care can be shown by the number of neonates that have received nasal CPAP for life-threatening breathing difficulties. From 1<sup>st</sup> August 2016 to end November 2016, **sixty-five babies with respiratory failure were successfully treated with nasal CPAP and discharged home.** This treatment would not be available without the neonatal program and most of these 65 babies would have died without this treatment. Eighteen babies who received nasal CPAP sadly died. Most were born with severe sepsis or extreme prematurity.





## The experience of the trainee obstetric clinicians (including some case histories)

“As an obstetric clinician I have learned a lot. From this training I'm able to attend to obstetric emergency promptly, timely, confidently and with no fear while calling or waiting for a doctor's help. I can also manage and or supervise the labor ward properly because we are also trained as manager and supervisor. And most of all I'm able to do a caesarean section. This training has also helps to build my confidence and most of all my self-esteem.

One of my challenges during the course of training happened about a year ago with a patient who was transferred for obstructed labor and my senior doctor had just left to find food to eat. So he asked me to do the caesarean section along with the intern Doctor. During the surgery, the patient had a deep posterior tear in the uterus which was repaired without senior doctor help. It was difficult but it was done. I monitored the patient, especially the vital signs the whole night worrying about bleeding, but she did not bleed. She was discharged a 8 days later along with her baby. Eight days because we kept the urinary catheter in for seven days to prevent a fistula forming because of the original obstructed labour. “

*Korpo Borzoi Trainee obstetric clinician*

“One of my greatest experience has to do with a patient who had a home delivery and was rushed on the labor ward because she was bleeding and this time was my second year in training. On arrival, my MD was in surgery and I was left on the ward with the midwives. Guess what happens! The midwives were all terrified because of the excessive bleeding. I quickly informed my MD who was in surgery and he ask me to start with some management until he can come. These were the managements. Established intravenous lines, resuscitated with normal saline 1000ml to help shock, put on an anti- shock garment, ordered lab tests and requested for 3 units of blood for transfusion. We continued monitoring vital signs and tried to find out the cause (s) for the bleeding. I found that our patient had bilateral tears in her cervix and these were repaired and our patient was stabilized. I firstly thank God for the opportunity given me through MCAI, MOH, and our trainers especially Dr. Dolo to improve my professional life and taking me to another higher level of work. I am grateful that other women can benefit from my achievement today. May our God who gave the training to me bless you all. “

*Naomi N. Lewis qualified obstetric clinician*



## Extract from the clinical experience of the trainee neonatal clinicians

### **Mrs. Garmai Paye's baby "Success" and his story**

*Success was delivered by Caesarean section at CB Dunbar Hospital at 28weeks gestation weighing 1.25Kg. His mother was suffering prolonged eclampsia (fitting) with persistent coma and tragically died soon after Success was born. Success was resuscitated for 3 minutes with bag and mask assisted ventilation and later started to breath spontaneously and taken to the NICU.*

*He was placed inside the incubator for warmth and on nasal CPAP to help with his breathing and keep the lungs open. He was also started on intravenous fluids and antibiotics. On the second day of life, Success started responding well and was weaned off CPAP to continue with additional inspired oxygen. Due to the death of his mother, no breast milk was available and so he was started on Formula feeding. At present there is no breast milk bank available; although this is planned.*

*His relatives were taught how to undertake skin to skin care (KMC) which they complied with. The baby's father later moved into the hospital to continue with the provision of KMC and it was amazing for other mothers in the NICU to see a man taking up this challenge. Doctor Jean Junior also participated in the KMC challenge!*

*Success's care and treatment continued for more than a month in the NICU before he was later discharged home having reached a weight of 2kg. Relatives were counselled on the need to return back to the hospital for follow up care. At his last visit he weighed 2.8kg and was doing well with relatives helping to continue his care.*



*Gamai's baby (Success) in an incubator in NICU with his father and with Dr Jean Junior, international volunteer*



*Success with international volunteer Alysia Humphrey when he returned to NICU for follow up*



*The trainee neonatal clinicians and nurses with Success and his father when he was discharged from the NICU. In the forefront is master trainer Nurse Adeyemo Kola.*

## **Courses in medical ethics and professional standards**

Following a request from the Late Deputy Minister for Curative services, Dr. Saye Baawo [RIP], and The Registrar of the Liberian Medical and Dental Council, Dr. Nyaquoi Kargbo, 3 courses in medical ethics and professional standards have been undertaken by the Partnership during the last two years. All obstetric and neonatal trainees have successfully completed this course.



*Dr. Baawo addressing the first 3-day conference on medical ethics and professional standards in Monrovia July 2015*

## **Conclusion**

This “task sharing” approach to hospital maternity and neonatal care is feasible and provides a sustainable solution to improving maternal and neonatal healthcare and in saving the lives of pregnant women and their babies by implementing an innovative training program to meet the challenge of the lack of obstetricians and pediatricians in rural and poverty-stricken areas of Liberia.

## **Funding**

These programs have received funding from WHO Liberia, UNFPA Liberia, MCAI, and The Advanced Life Support Group, UK. We would like to thank David Parker MBE for all his personal support to this programme.



**MCAI** | Maternal & Childhealth  
Advocacy International

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